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Surgical management of pelvic organ prolapse in women (Withdrawn Paper. 2007, art.no. CD004014) — Source link

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[Intervention Review]

Surgical management of pelvic organ prolapse in women

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ABSTRACT

Background

Pelvic organ prolapse may occur in up to 50% of parous women. A variety of urinary, bowel and sexual symptoms may be associated with prolapse.

Objectives

To determine the effects of the many different surgeries in the management of pelvic organ prolapse.

Search strategy

We searched the Cochrane Incontinence Group Specialised Trials Register *(searched 3 May 2006)* and reference lists of relevant articles. We also contacted researchers in the field.

Selection criteria

Randomised or quasi-randomised controlled trials that included surgical operations for pelvic organ prolapse.

Data collection and analysis

Trials were assessed and data extracted independently by two reviewers. Six investigators were contacted for additional information with five responding.

Main results

Twenty two randomised controlled trials were identified evaluating 2368 women.

Abdominal sacral colpopexy was better than vaginal sacrospinous colpopexy in terms of a lower rate of recurrent vault prolapse (RR 0.23, 95% CI 0.07 to 0.77) and less dyspareunia (RR 0.39, 95% CI 0.18 to 0.86), but the trend towards a lower re-operation rate for prolapse following abdominal sacrocolpopexy was not statistically significant (RR 0.46, 95% CI 0.19 to 1.11). However, the vaginal sacrospinous colpopexy was quicker and cheaper to perform and women had an earlier return to activities of daily living. The data were too few to evaluate other clinical outcomes and adverse events. The three trials contributing to this comparison were clinically heterogeneous.

For the anterior vaginal wall prolapse, standard anterior repair was associated with more recurrent cystoceles than when supplemented by polyglactin mesh inlay (RR 1.39, 95% CI 1.02 to 1.90) or porcine dermis mesh inlay (RR 2.72, 95% CI 1.20 to 6.14), but data on morbidity, other clinical outcomes and for other mesh or graft materials were too few for reliable comparisons.

For posterior vaginal wall prolapse, the vaginal approach was associated with a lower rate of recurrent rectocele and/or enterocele than the transanal approach (RR 0.24, 95% CI 0.09 to 0.64), although there was a higher blood loss and postoperative narcotic use. However, data on the effect of surgery on bowel symptoms and the use of polyglactin mesh inlay or porcine small intestine graft inlay on the risk of recurrent rectocele were insufficient for meta-analysis.

Meta-analysis on the impact of pelvic organ prolapse surgery on continence issues was limited and inconclusive, although about 10% of women developed new urinary symptoms after surgery. Although the addition of tension-free vaginal tape to endopelvic fascia plication (RR 5.5, 95% CI 1.36 to 22.32) and Burch colposuspension to abdominal sacrocolpopexy (RR 2.13, 95% CI 1.39 to 3.24) were followed by a lower risk of women developing new postoperative stress incontinence, but other outcomes, particularly economic, remain to be evaluated.

Authors' conclusions

Abdominal sacrocolpopexy is associated with a lower rate of recurrent vault prolapse and dyspareunia than the vaginal sacrospinous colpopexy. These benefits must be balanced against a longer operating time, longer time to return to activities of daily living and increased cost of the abdominal approach. The use of mesh or graft inlays at the time of anterior vaginal wall repair may reduce the risk of recurrent cystocele. Posterior vaginal wall repair may be better than transanal repair in the management of rectoceles in terms of recurrence of prolapse. The addition of a continence procedure to a prolapse repair operation may reduce the incidence of postoperative urinary incontinence but this benefit needs to be balanced against possible differences in costs and adverse effects. Adequately powered randomised controlled clinical trials are urgently needed.

PLAIN LANGUAGE SUMMARY

Surgical management of pelvic organ prolapse in women

Pelvic organs, such as the uterus, bladder or bowel, may protrude into the vagina due to weakness in the tissues that normally support them. The symptoms that they cause vary, depending on the type of prolapse and include bladder, bowel and sexual problems, pain and prolapse sensation. The types of surgery also vary, depending on the type of prolapse and associated symptoms. The impact of pelvic organ prolapse surgery on bowel, bladder and sexual function can be unpredictable and may make symptoms worse, or result in new symptoms such as leakage of urine or problems with intercourse. The review found 22 trials amongst 2368 women with a variety of types of prolapse. The trials show that abdominal sacral colpopexy may be better than vaginal sacrospinous colpopexy for uterine or vault prolapse. Limited evidence suggests that vaginal surgery may be better than transanal surgery for posterior vaginal wall prolapse. However, there was not enough evidence about most types of common prolapse surgery nor about mesh or grafts used in vaginal prolapse surgery.

BACKGROUND

Pelvic organ prolapse is common and is seen in 50% of parous women (Beck 1991). The annual aggregated rate of associated surgery is in the range of 10 to 30 per 10,000 women (Brubaker 2002). Pelvic organ prolapse is the descent of one or more of the pelvic organs (uterus, vagina, bladder, bowel). The different types of prolapse include:

- upper vaginal prolapse i.e. uterus, vaginal vault (after hysterectomy when the top of the vagina drops down);
- anterior vaginal wall prolapse i.e. cystocele (bladder descends), urethrocele (urethra descends), paravaginal defect (pelvic fascia defect);
- posterior vaginal wall prolapse i.e. enterocele (small bowel descends), rectocele (rectum descends), perineal deficiency.

A woman can present with prolapse of one or more of these sites.

The aetiology of pelvic organ prolapse is complex and multi-factorial. Possible risk factors include pregnancy, childbirth, congenital or acquired connective tissue abnormalities, denervation or weakness of the pelvic floor, ageing, hysterectomy, menopause and factors associated with chronically raised intra-abdominal pressure (Bump 1998; Gill 1998; MacLennan 2000).

Women with prolapse commonly have a variety of pelvic floor symptoms, only some of which are directly related to the prolapse. Generalised symptoms of prolapse include pelvic heaviness, bulge/lump or protrusion coming down from the vagina, dragging sensation in the vagina or backache. Symptoms of bladder, bowel or sexual dysfunction are frequently present. For example, women may need to reduce the prolapse to aid urinary voiding or defecation by using their fingers to push the prolapse up. These symptoms may be directly related to the prolapsed organ, e.g. poor urinary stream when a cystocele is present or obstructed defecation when a rectocele is present. They may also be independent of the prolapse, e.g. symptoms of overactive bladder when a cystocele is present.

Treatment of prolapse depends on the severity of the prolapse and its symptoms, the woman's general health and surgeon preference and capabilities. Options available for treatment are conservative, mechanical or surgical.

Generally, conservative or mechanical treatments are considered for women with a mild degree of prolapse, for those who wish to have more children, the frail, or those unwilling to undergo surgery. Conservative and mechanical interventions have been considered in separate Cochrane reviews (Adams 2004; Hagen 2004). There was no evidence to guide management in either of these reviews as no randomised controlled trials of either type of intervention were found.

The aims of surgery in the management of pelvic organ prolapse include:

- the restoration of normal vaginal anatomy;
- the restoration or maintenance of normal bladder function;
- the restoration or maintenance of normal bowel function;
- the restoration or maintenance of normal sexual function.

A wide variety of abdominal and vaginal surgical techniques are available for the treatment of prolapse.

- Vaginal approaches include vaginal hysterectomy, anterior or posterior vaginal wall repair, McCall culdoplasty, Manchester repair (amputation of the cervix with uterus suspension to the cardinal ligaments), prespinous and sacrospinous colpopexy, enterocele ligation, paravaginal repair, Le Fortes procedure and perineal reconstruction.
- Abdominal approaches include sacral colpopexy, paravaginal repair, vault suspending and uterosacral ligament plication, enterocele ligation and posterior vaginal wall repair. Abdominal surgery can be performed through an open incision or with laparoscopy requiring small incisions.

A combination of some of these procedures may be employed in the surgical correction of prolapse.

In addition to the variety of prolapse operations, the surgeon must choose whether to use absorbable sutures such as polyglycolic acid based materials (e.g. polyglactin), delayed-absorption sutures such as polydioxanone or non-absorbable sutures such as polypropylene. Furthermore, some techniques require the routine use of grafts (e.g. sacral colpopexy, where different materials can be used to bridge the gap between the vaginal cuff and the hollow of the sacrum) whereas for others, grafts are optional. Graft material can be synthetic (e.g. mesh), autologous (e.g. fascia), alloplastic (e.g. porcine dermis) or homologous (e.g. cadaveric fascia lata).

The choice of operation depends on a number of factors which includes the nature, site and severity of the prolapse, whether there are additional symptoms affecting urinary, bowel or sexual function, general health of the woman and surgeon preference and capability. To aid the assessment of the success of surgery, clear pre- and postoperative site specific vaginal grading and details of the operative intervention should be recorded.

The term de novo stress urinary incontinence is used to describe stress incontinence that develops following surgical correction of the prolapse amongst women who were continent prior to surgery. De novo stress urinary incontinence is clearly disappointing to women and will be one of the outcome measures considered in this review. Occult stress incontinence is the term used to describe stress urinary incontinence which is demonstrable only when the prolapse is reduced in otherwise continent women.

The wide variety of surgical treatments available for prolapse indicates the lack of consensus as to the optimal treatment. Guidelines using the available literature have been published but are based on studies of mixed type and quality (Carey 2001). Provided that sufficient numbers of trials of adequate quality have been conducted, the most reliable evidence is likely to come from the consideration of randomised controlled trials, and this is the basis for the review. The aim is to help identify optimal practice, and highlight where there is a need for further research.

OBJECTIVES

To determine the effects of surgery in the management of pelvic organ prolapse and associated bladder, bowel and sexual function.

The following specific comparisons were made, and trials that made other related comparisons were described:

A For the management of upper vaginal prolapse (uterine and vaginal vault)

1. Abdominal sacral colpopexy versus vaginal sacrospinous colpopexy.

2. Vaginal hysterectomy versus uterine preservation.

3. Vaginal hysterectomy with McCall culdoplasty versus vaginal hysterectomy and sacrospinous colpopexy.

4. Vaginal McCall culdoplasty and uterosacral ligament plication versus vaginal sacrospinous colpopexy and repair.

B For the management of anterior vaginal wall prolapse

5. Anterior vaginal wall repair versus the abdominal paravaginal repair in the management of anterior vaginal wall prolapse.

6. For midline cystocele defects, a traditional anterior vaginal wall repair versus anterior vaginal wall repair with graft reinforcement.

C For the management of posterior vaginal wall prolapse

7. Posterior vaginal wall repair versus a transanal repair.

8. Posterior vaginal wall repair versus an abdominal posterior repair.

9. Posterior vaginal wall repair versus posterior vaginal wall repair with graft reinforcement.

D For the management of any type of prolapse

10. Surgical treatment versus conservative treatment in the management of symptomatic pelvic organ prolapse.

11. Surgical treatment versus mechanical devices in the management of pelvic organ prolapse.

12. Open abdominal surgery versus the laparoscopic approach for the management of prolapse.

13. Potential stress urinary incontinence (e.g. detected on reduction of prolapse prior to surgery) treated with formal continence surgery at the time of prolapse surgery, versus being left untreated.

14. Use of native (no mesh) tissue versus mesh or grafts.

15. One type of mesh / graft versus another type of mesh / graft.

16. One type of suture versus another type of suture.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCT) or quasi-randomised controlled clinical trials (CCT) in which at least one arm is a surgical intervention for pelvic organ prolapse.

Types of participants

Adult women seeking treatment for symptomatic pelvic organ prolapse. Both primary and recurrent prolapse will be considered. Pelvic organ prolapse includes:

- upper vaginal prolapse (uterine or vaginal vault);
- anterior vaginal wall prolapse (cystocele, urethrocele, paravaginal defect);
- posterior vaginal wall prolapse (enterocele, rectocele, perineal deficiency).

Types of interventions

Trials including any type of abdominal or vaginal surgery for pelvic organ prolapse in at least one trial group. Comparison interventions may include no treatment, conservative management, a mechanical device or an alternative approach to surgery.

Types of outcome measures

Women's observations:

- perceived improvement in prolapse symptoms;
- acceptability of procedure/satisfaction with outcome.

Clinicians' observations:

Site-specific grading of prolapse, for example:

- Baden-Walker half-way system (Baden 1972);
- International Continence Society Pelvic Organ Prolapse Quantification System (POP-Q) classification (Bump 1996b).

Quality of life:

- prolapse-specific quality of life questionnaire (e.g. Prolapse - Quality of Life (P-QOL), Sheffield Prolapse Symptoms Questionnaire);
- generic quality of life or health status measures (e.g. Short-Form 36, Ware 1992);
- psychological outcome measures (e.g. Hospital Anxiety and Depression Scale (HADS), Zigmond 1983).

Measures of associated symptoms (objective or subjective):

- bladder symptoms, including symptomatic and occult incontinence;
- bowel symptoms;
- sexual problems.

Surgical outcome measures:

- operating time;
- further pelvic floor repair;
- further continence surgery.

Complications:

- blood loss;
- need for transfusion;
- infection including mesh or graft infection;
- adverse effects (e.g. return to theatre, damage to surrounding viscera, mesh or graft erosion, graft rejection);
- other adverse effects.

Economic measures:

(For example, catheter days, inpatient days, days to return to activities of daily living)

- use of resources;
- costs of interventions or resources;
- resource implications of effects of treatment;
- formal economic evaluations.

Search methods for identification of studies

This review has drawn on the search strategy developed for the Incontinence Review Group. Relevant trials were identified from the Group's Specialised Register of controlled trials which is described, along with the group search strategy, under the Incontinence Group's details in *The Cochrane Library* (For more details please see the 'Specialized Register' section of the Group's module in The Cochrane Library). The Register contains trials identified from MEDLINE, CINAHL, the Cochrane Central Register of Controlled Trials (CENTRAL) and hand searching of journals and conference proceedings. The Incontinence Group Trials Register was searched using the Group's own keyword system, the search terms used were:
({design.cct*} OR {design.rct*})
AND
({topic.prolapse*})
AND
({intvent.surg*})
(All searches were of the keyword field of Reference Manager 9.5 N, ISI ResearchSoft).
Date of the most recent search of the register for this review: 3 May 2006.

The trials in the Incontinence Group Specialised Register are also contained in CENTRAL.
For this review extra specific searches were performed. These are detailed below.
We searched the reference lists of relevant articles and contacted researchers in the field.
We did not impose any language or other limits on the searches.

Data collection and analysis

Titles and, if available, abstracts of all possibly eligible studies were assessed by two reviewers for their methodological quality (method of randomisation and adequacy of concealment of randomisation process) and relevance to the review objectives. Full reports of each study likely to be eligible were then assessed by at least two reviewers independently using the Incontinence Group's assessment criteria. They agreed on whether or not to include the study according to the inclusion criteria for the review. Data extraction was undertaken independently by at least two reviewers and comparisons made to ensure accuracy. Discrepancies were resolved by discussion or by referral to a third party. Where trial data were not reported adequately, attempts were made to acquire the necessary information from the trialists.
Studies were excluded if they were not randomised or quasi-randomised trials of surgery for women with pelvic organ prolapse. Excluded studies are listed with the reasons for their exclusion.
Included trial data were processed as described in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2005). Meta-analyses were undertaken to synthesise trial data when appropriate. The method of meta-analysis depended on the nature of the outcomes. For categorical outcomes we related the numbers reporting an outcome to the numbers at risk in each group to derive a relative risk (RR). For continuous variables we used means and standard deviations to derive a weighted mean difference (WMD). As a general rule, a fixed effects model was used for calculations of summary estimates and their 95% confidence intervals (CI).
Trials were only combined if the interventions were similar enough on clinical criteria. When important heterogeneity was then suspected from visual inspection of the results, the chi-squared test for heterogeneity (at 10%) or the I-squared statistic (Higgins 2003), this was investigated by looking for further differences between the trials. When concern about heterogeneity persisted, a random effects model could be used.

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.
Full reports of 33 potentially eligible studies were assessed. Eleven studies were excluded from the review: full details are given in

the Characteristics of Excluded Studies. In this update to the first version of the review (Maher 2004), eight new trials were added (Brubaker 2006; Cervigni 2005; Culligan 2005; De Ridder 2004; Gandhi 2005; Jeng 2005; Meschia 2007; Paraiso 2006) and one was an update of a previously included trial (Meschia 2004a). Thus, twenty two randomised controlled trials were identified on the surgical management of pelvic organ prolapse. These were conducted in seven countries (seven from Italy, eight from the United States of America, two from Taiwan and one each from Australia, Netherlands, Great Britain, Belgium and Finland) involving 2368 women, all of whom received a surgical intervention. All but three trials (Brubaker 2006; Cervigni 2005; Jeng 2005) reported median follow up of greater than one year but only two trials reported outcomes at greater than five years (Colombo 1997; Colombo 2000). There are a further four ongoing trials whose findings are awaited (Allahdin 2007; Freeman 2007; Tincello 2004; Verleyen 2004).

Given the diverse nature of pelvic organ prolapse, to allow a meaningful analysis of the data, the review was divided into sections related to the site of the prolapse: upper vagina including cervix, uterus and vault; anterior vaginal wall; posterior vaginal wall; and to continence issues following prolapse surgery in continent women. Further comparisons were made according to the use of mesh or not.

Upper vaginal prolapse (cervix, uterus, vault) (Objectives 1, 2, 3, 4 and 15)

Eight trials compared the management of upper vaginal prolapse (Benson 1996; Brubaker 2006; Culligan 2005; Jeng 2005; Lo 1998; Maher 2004; Meschia 2004a; Roovers 2004). Three of these are new included trials (Brubaker 2006; Culligan 2005; Jeng 2005) and one is an update of a previously included trial (Meschia 2004a).

Abdominal sacral colpopexy versus vaginal sacrospinous colpopexy

Three trials addressed this comparison (Benson 1996; Lo 1998; Maher 2004). Benson's trial reported data for 80 of 101 randomised women with uterovaginal or vault prolapse: the women with uterovaginal prolapse all underwent hysterectomy (Benson 1996). Lo's trial reported follow up of 118 of 138 continent women who had at least Stage 3 prolapse: some underwent anterior or posterior repairs or abdominal or vaginal hysterectomy in addition to repair of the prolapse actually being compared in the trial (Lo 1998). Maher's trial included 89 women with post-hysterectomy vaginal vault prolapse (Maher 2004). In the Benson and Maher trials, the abdominal group underwent sacral colpopexy with procedures such as colposuspension, paravaginal repair or a vaginally performed posterior vaginal wall repair as required. In the vaginal arm of Benson's trial, a bilateral vaginal sacrospinous colpopexy was performed, in contrast to a unilateral sacrospinous colpopexy in Maher's trial. In Lo's trial this was not specified but Nichols' method was referenced. Thus, there was clinical heterogeneity as some women in two of the trials (Benson 1996; Lo 1998) underwent hysterectomy in addition to a prolapse procedure.

Women with stress urinary incontinence were treated with a needle suspension in the vaginal arm (n = 20) of Benson's trial and a colposuspension in the abdominal arm (n = 14) (Benson 1996). Women with stress urinary incontinence or occult incontinence (n = 14 and 15 in the abdominal and vaginal arms respectively) received an abdominal colposuspension in both arms of Maher's trial (Maher 2004). In that trial, 27 women had symptoms of overactive bladder at baseline (n = 13 and 14 respectively). Simple costs were calculated by Benson and Maher incorporating length of stay and operating theatre cost. Formal cost effectiveness was not reported in either study. However, there was significant variation in the outcome measures (Benson and Lo: incomplete site specific prolapse reporting; Maher and Lo: failure to report time to recurrent prolapse; Lo: optimal surgical cure of prolapse was considered to be Stage 2 prolapse or less). These factors contributed to heterogeneity. Despite these caveats, all three trials were considered to be similar enough to be combined in meta-analysis for certain outcomes.

Abdominal sacral colpopexy with solvent dehydrated cadaveric fascia lata (Tutoplast) versus polypropylene mesh (Trelex)

One new double-blind randomised controlled trial compared a cadaveric fascia lata graft (Tutoplast, n = 46) with polypropylene mesh (Trelex, n = 54) for abdominal sacral colpopexy for post-hysterectomy vaginal vault prolapse (Culligan 2005). 41% and 44% had undergone previous prolapse or incontinence surgery. Tension free vaginal tape operation was performed for stress urinary incontinence, abdominal paravaginal repair for paravaginal support defects and rectocele repair as required. The methodology stated that bladder, bowel, sexual function and quality of life were assessed by questionnaires, but these results have not yet been published. The postoperative evaluation was performed by a nurse specialist who was blinded to treatment allocation. This study was analysed in a separate subcategory as women in both arms received a graft or mesh.

Abdominal sacrohysteropexy versus vaginal hysterectomy and repair

Roovers' trial evaluated only women with uterine prolapse who underwent sacrohysteropexy (with uterine preservation) in the abdominal group (n = 41) and vaginal hysterectomy and vaginal repair with the vault being fixed to the uterosacral cardinal ligament complex in the vaginal group (n = 41) (Roovers 2004). Roovers' trial is analysed as a separate subcategory in the analyses as the

vaginal arm did not include a sacrospinous colpopexy and the abdominal group included uterine preservation.

Vaginal sacrospinous uterine suspension versus vaginal hysterectomy

One trial examined sexual function outcomes after vaginal sacrospinous uterine suspension (with uterine preservation) compared with vaginal hysterectomy (Jeng 2005), but no prolapse or incontinence outcomes were reported.

Posterior intravaginal slingplasty (infracoccygeal sacropexy) versus vaginal sacrospinous colpopexy

Meschia compared two vaginal procedures: the infracoccygeal sacropexy (posterior intravaginal slingplasty, n = 33) and the sacrospinous colpopexy (n = 33) for uterine or vault prolapse Meschia 2004a. This study is an update of a previously included trial using unpublished data from the authors. Again, it was analysed as a separate subcategory.

Abdominal sacrocolpopexy versus abdominal sacrocolpopexy plus Burch colposuspension

In one new trial (Brubaker 2006), the effect of adding a continence operation to a prolapse operation was evaluated, but only surgical and urinary outcomes were reported.

Anterior vaginal wall prolapse (Objectives 5, 6 and 15)

Eleven trials included various surgical procedures for treating anterior vaginal wall prolapse, with or without stress urinary incontinence (Bump 1996a; Cervigni 2005; Colombo 1996a; Colombo 1997; Colombo 2000; De Ridder 2004; Gandhi 2005; Meschia 2004; Meschia 2007; Sand 2001; Weber 2001). Due to clinical heterogeneity in stage of prolapse, types of operations and whether women with previous surgery, urinary incontinence or occult incontinence were included, only four of these could be combined for meta-analysis: (Sand 2001) with (Weber 2001); and (Bump 1996a) with (Colombo 1997).

1. Trials not using mesh

Cystopexy without pubo-urethral ligament plication versus cystopexy with pubo-urethral ligament plication

Colombo enrolled only continent women with cystocele Stage 2 or more (Colombo 1996a). None of the women had preoperative detrusor overactivity. The trialists studied the prevention of de novo stress urinary incontinence after cystopexy with (n = 50) or without (n = 52) pubo-urethral ligament plication.

Cystopexy with posterior pubo-urethral ligament plication versus cystopexy with needle suspension

Columbo enrolled women with cystocele Stage 2 or more and either occult (n = 73) or symptomatic (n = 36) urinary incontinence (Colombo 1997). None of the women had preoperative detrusor overactivity. The trialists compared cystopexy with posterior pubo-urethral ligament plication (n = 55) versus cystopexy plus Pereyra bladder neck suspension (n=54).

Anterior repair with urethrovesical plication versus anterior repair with needle colposuspension

In Bump's trial, women were all continent but had bladder neck hypermobility in addition to Stage three or four prolapse (pelvic organ prolapse quantification recommended by the International Continence Society (ICS)) (Bump 1996a). Six women had detrusor overactivity successfully treated before operation. All women had an anterior vaginal wall repair for anterior vaginal wall prolapse ICS Stage 3 or 4. The trialists compared the effects of needle colposuspension (n = 14) with plication of the urethrovesical junction endopelvic fascia (n = 15) on postoperative development of stress incontinence. They analysed 29 women; 10 out of 15 in the fascia plication group and 10 out of 14 in the needle colposuspension group had potential stress incontinence (defined as a mean pressure transmission ratio of less than 90% for the proximal three quarters of the urethra or a positive stress test during barrier testing). This trial was considered to be sufficiently similar to the previous one (Colombo 1997) to allow the data to be combined in meta-analysis.

Anterior vaginal wall repair versus Burch colposuspension

In a third trial from Italy, women were studied who had primary Stage 2 or 3 cystocele and concomitant urodynamic urinary stress incontinence (Colombo 2000). None of the women had preoperative detrusor overactivity. The 68 women were randomised to receive either Burch colposuspension (n = 35) or anterior vaginal wall repair (n = 33).

Prolapse repair and urethrovesical endopelvic fascia plication versus prolapse repair and TVT

In a recently published fourth Italian trial, women with severe genital prolapse and occult stress urinary incontinence were enrolled (Meschia 2004). None of the women had preoperative detrusor overactivity. The women were randomised to receive either urethrovesical endopelvic fascia repair (n = 25) or tension-free vaginal tape (TVT) (n = 25) in addition to vaginal hysterectomy and prolapse repair. Most also had a posterior repair (23 out of 25 and 20 out of 25 respectively).

2. Trials using mesh

Six trials incorporated mesh in one or both arms of the comparisons (Cervigni 2005; De Ridder 2004; Gandhi 2005; Meschia 2007; Sand 2001; Weber 2001). Two of the trials excluded women who needed a concomitant continence procedure such as colposuspension, sling or needle suspension (Weber 2001, Cervigni 2005). Two trials compared traditional anterior vaginal wall repair with anterior vaginal wall repair supplemented by the use of absorbable mesh inlay (polyglactin mesh, Vicryl) for cystocele (Sand 2001; Weber 2001). These two trials were considered similar enough to combine in meta-analysis. To enable meaningful comparison between the trials the standard and ultralateral anterior vaginal wall repair groups in Weber's trial (Weber 2001) were combined mimicking Sand's groups (Sand 2001) when comparing anterior vaginal wall repair with and without polyglactin mesh inlay.

Anterior vaginal wall repair versus anterior vaginal wall repair with polyglactin mesh (Vicryl) inlay

Sand randomly allocated women with cystocele to or beyond the introitus to anterior vaginal wall repair alone (n = 70) or anterior vaginal wall repair and polyglactin mesh inlay (n = 73) (Sand 2001). The surgery was for primary cystocele in 85% of cases. Concomitant surgery was performed as required including vaginal hysterectomy, vaginal sacrospinous colpopexy, posterior vaginal wall repair (n = 67 out of 70 and 65 out of 73) and continence surgery. The women who underwent posterior vaginal wall repair and were assigned to the polyglactin mesh inlay for the cystocele also had their posterior vaginal wall repair augmented with polyglactin mesh.

Anterior vaginal wall repair versus anterior vaginal wall repair with polyglactin mesh (Vicryl) inlay versus ultralateral anterior vaginal wall repair

Weber evaluated the efficacy of standard anterior vaginal wall repair (n = 33), ultralateral anterior vaginal wall repair (n = 24) and standard anterior vaginal wall repair plus polyglactin mesh inlay (n = 26) in women who underwent surgery for anterior vaginal wall prolapse (Weber 2001). Other concomitant prolapse surgery was performed as required but women who required a continence operation were excluded. However, no data for continence outcomes were provided.

Anterior vaginal wall repair versus anterior vaginal wall repair with cadaveric fascial lata (Tutoplast)

Gandhi compared the anterior colporrhaphy without (n = 78) and with cadaveric fascial lata (Tutoplast 2 x 4 cm) (n = 76) for primary or recurrent anterior vaginal wall prolapse stage II or more (Gandhi 2005). Standardised concomitant surgery included vaginal hysterectomy and McCall sutures for uterine prolapse and sacrospinous colpopexy for vault prolapse. For stress urinary incontinence a Cooper's ligament sling was initially used, later suburethral slings were performed. Success rates for stress incontinence were not published.

Anterior vaginal wall repair versus anterior vaginal wall repair with porcine dermis (Pelvicol)

Meschia assessed anterior colporrhaphy (fascial plication) without (n = 106) and with porcine dermis (Pelvicol) (n = 100) for primary anterior vaginal wall prolapse stage II or more (Meschia 2007). Concomitant surgery was standardised and included vaginal hysterectomy with culdoplasty for uterine prolapse, posterior repair for posterior compartment defects and suburethral slings for stress urinary incontinence as required.

Anterior vaginal wall repair comparing different types of mesh

De Ridder (conference abstract only) performed a four-defect-cystocele repair and reinforced the repair with porcine dermis (Pelvicol) (n = 65) or polyglactin mesh (Vicryl) (n = 69) for primary or recurrent stage III anterior vaginal wall prolapse. Concomitant surgery included vaginal hysterectomy and posterior repair (De Ridder 2004).

Cervigni (abstract with further information provided by the authors) evaluated women having anterior colporrhaphy including a high levator plication reinforced with either monofilament polypropylene (Prolene Soft, Gynecare) (n = 40) or porcine dermis (Pelvicol, Bard) (n = 42) (Cervigni 2005). Exclusions included prior pelvic floor surgery and women requiring a concomitant anti-incontinence procedure. Length of follow up was only 8.1 and 8.8 months, respectively. Statistical significance was considered at P less than 0.001.

Posterior vaginal wall prolapse (Objectives 7, 8 and 9)

Four trials included women with posterior vaginal wall prolapse (Kahn 1999; Nieminen 2004; Paraiso 2006; Sand 2001).

Two trials (Kahn 1999; Nieminen 2004) compared vaginal and transanal approaches for the management of rectoceles. In addition, another trial provided data for women with rectoceles undergoing posterior repair with and without mesh (Sand 2001). A fourth trial compared rectocele repair using traditional posterior colporrhaphy (n = 28), site specific repair (n = 27) and site specific repair augmented with a porcine small intestine submucosa graft inlay (Fortagen, Organogenesis; n = 26) (Paraiso 2006).

The trials involving transanal repair were only published as abstracts at scientific meetings, but the authors have provided additional data. Each trial had slightly different inclusion criteria. Kahn included women who had symptoms of prolapse or symptoms

of impaired rectal evacuation with incomplete emptying on isotope defecography and normal compliance on anorectal manometry (Kahn 1999). Nieminen included women with symptomatic rectoceles not responding to conservative treatment (Nieminen 2004). Importantly, women with compromised anal sphincter function and other symptomatic genital prolapse were excluded. In both trials the vaginal repair was performed by gynaecologists and the transanal repair by colorectal surgeons. In Kahn's trial the posterior vaginal wall repair was performed using levator plication and in Nieminen's trial the rectovaginal fascia was plicated. The trials were considered to be similar enough to be combined in a meta-analysis.

The Paraiso trial was funded from an unrestricted research grant from Organogenesis (Paraiso 2006). The trialists included women with posterior wall prolapse, although women could have prolapse at other vaginal sites or urinary incontinence. They excluded women who required other colorectal surgery or had a pork allergy. Outcomes were independently assessed by nurse assessors blinded to treatment allocation, using prolapse quantification and validated prolapse, bowel, bladder and sexual function questionnaires.

In the fourth trial (Sand 2001), the women were included if they had a central cystocele with or without urinary incontinence, for which they required an anterior repair. The majority of the women were also having a posterior repair for rectocele (132 out of 143, 92%). The women allocated to the mesh augmentation arm for their anterior repair also had their posterior repair augmented with mesh, and recurrence rates of rectocele were reported separately. However, no clinical outcomes relating to urinary, bowel or sexual function were reported.

Any type of prolapse (Objectives 10, 11, 12, 13, 14, 15 and 16)

There were no trials which compared surgery with either conservative treatment (Comparison 11) or mechanical devices (Comparison 12), nor open surgery with laparoscopy (Comparison 13), nor did any trials address the choice of suture types (Comparison 17).

Occult or new urinary incontinence (Objective 13)

Occult urinary incontinence is diagnosed when women with prolapse normally have no symptoms of stress urinary incontinence but do have demonstrable stress urinary incontinence when the prolapse is reduced. One trial included women with occult stress urinary incontinence and provided data separately for their urinary outcomes (Meschia 2004). Five trials included only continent women or reported outcomes separately for a continent subsample (Brubaker 2006; Cervigni 2005; Colombo 1996a; Colombo 1997; Lo 1998; Maher 2004); and one other trial included as a single group both continent women and those with 'potential' incontinence (the term 'potential' was interpreted as 'occult') (Bump 1996a).

1. UI in anterior vaginal wall prolapse trials

- In one Italian trial in women with anterior prolapse, all the women were continent but a continence procedure was only performed in one arm (pubo-urethral ligament plication in addition to a standard colpopexy) (Colombo 1996a).
- In another Italian trial, all the women were continent but demonstrated to have occult stress urinary incontinence on preoperative prolapse reduction (Meschia 2004).
- Another included a mixed sample of women, with and without incontinence (Colombo 1997). However, data were presented separately, allowing assessment of prolapse surgery on urinary outcomes in the 73 continent women.
- In Bump's trial, 20 out of 29 women (10 out of 15 in the fascia plication group and 10 out of 14 in the needle colposuspension group) had urodynamically defined potential stress incontinence (defined as a mean pressure transmission ratio of less than 90% for the proximal three quarters of the urethra or a positive stress test during barrier testing) (Bump 1996a). However, all the women were symptomatically continent and both arms included a continence procedure. Data from this trial were aggregated with those from Colombo 1997.
- In a trial of two different types of mesh (monofilament polypropylene (Prolene Soft, Gynecare) and porcine dermis (Pelvicol, Bard) (Cervigni 2005), women who required a concomitant anti-incontinence procedure were excluded. The trialists reported pre- and post-operative overactive bladder rates but not post-operative continence rates.

2. UI in upper vaginal prolapse trials

- Although Lo did not report the total number of women who developed new urinary incontinence after surgery, he did report how many women required subsequent surgery for incontinence (Lo 1998).
- In another trial, Maher performed additional Burch colposuspensions for all women with urodynamically proven or occult stress urinary incontinence in women randomly allocated to abdominal sacral colpopexy (14) or vaginal sacrospinous colpopexy (15) for vaginal vault prolapse (Maher 2004). Women undergoing concomitant colposuspension were stratified to ensure equal representation in the groups. Occult stress urinary incontinence at baseline was detected in 5 out of 14 (11% of 46 in whole arm) of the abdominal group and 6 out of 15 (13% of 43) of the vaginal group, but urinary outcomes were not available separately according to this baseline diagnosis. However, data were provided about the occurrence of new urinary incontinence in women previously continent (n = 22 and 24 respectively) and new overactive bladder symptoms in women

previously unaffected by urgency, detrusor overactivity or overactive bladder syndrome (n = 33 and 29).

- In a third trial (Brubaker 2006) whose aim was specifically to evaluate the effect of adding Burch colposuspension to abdominal sacrocolpopexy in 322 women who were continent at baseline, a separate analysis was reported excluding the 19% of women (n = 60) who reported mild incontinence.

Use of mesh for prolapse surgery (Objectives 14 and 15)

Objective 14. Use of native (no mesh) tissue versus mesh or grafts.

Four trials included mesh or graft material for anterior prolapse repair, as described above (Gandhi 2005; Meschia 2007; Sand 2001; Weber 2001). The data from two similar arms in one trial (standard anterior vaginal wall repair and ultralateral anterior vaginal wall repair) were combined for the purpose of comparing with the arm including polyglactin mesh (Vicryl, Weber 2001). In two trials, data were available for women who underwent a posterior vaginal wall repair (Paraiso 2006; Sand 2001). Two other trials compared the use of grafts (cadaveric fascial lata (Tutoplast, Gandhi 2005) and porcine dermis (Pelvicol, Meschia 2007)) with no graft.

Objective 15. One type of mesh / graft versus another type of mesh or graft.

Two trials compared two different types of inlay in women having anterior repair:

- monofilament polypropylene mesh (Prolene Soft, Gynecare) with porcine dermis graft (Pelvicol, Bard) (Cervigni 2005); and
- porcine dermis graft (Pelvicol) with polyglactin mesh (Vicryl) (De Ridder 2004).

One trial used an inlay in both arms in women with vault prolapse :

- cadaveric fascia lata graft (Tutoplast) versus polypropylene mesh (Trelex) (Culligan 2005).

Use of different suture types for prolapse surgery (Objective 16)

One ongoing trial compared two different suture types but data are not yet available (Allahdin 2007).

Full details of the included trials are given in the Characteristics of Included Studies Table.

Risk of bias in included studies

Sufficient detail was provided in 13 trials to confirm that secure concealment of the randomisation process was used, e.g. allocation by remote person or computer (Benson 1996; Brubaker 2006; Bump 1996a; Culligan 2005; Gandhi 2005; Maher 2004; Meschia 2004; Meschia 2004a; Meschia 2007; Paraiso 2006; Roovers 2004; Weber 2001). However, in one of these trials, four women received the opposite treatment to their randomised allocation (mesh instead of fascia) and were subsequently analysed in the mesh group, thus compromising the randomisation process and not using intention to treat analysis (Culligan 2005). Of the remainder, eight stated that they used computer generated number lists but it was unclear whether the allocation was concealed before assignment, and another gave no details of the randomisation process (Jeng 2005). The last trial stated that a computer-generated but open number list was used, and it was therefore classified as a quasi-randomised trial (Colombo 2000).

Women and surgeons could not be blinded as to the procedure when different surgical routes were being compared (Benson 1996; Colombo 2000; Lo 1998; Maher 2004; Meschia 2004a; Roovers 2004). Blinding of patients and the postoperative reviewer was performed in three trials (Brubaker 2006; Culligan 2005; Paraiso 2006). Outcome assessments were conducted by non-surgeons in five trials (Benson 1996; Culligan 2005; Paraiso 2006; Roovers 2004; Weber 2001). Only the Roovers and Paraiso trial data were reported according to the CONSORT guidelines. In seven trials, data were analysed on an intention to treat basis (Brubaker 2006; Jeng 2005; Lo 1998; Maher 2004; Paraiso 2006; Roovers 2004; Weber 2001).

Loss to follow up was a variable problem ranging from zero (Colombo 1997; Jeng 2005; Kahn 1999; Meschia 2004; Meschia 2004a) to 24% (26 out of 109) (Weber 2001). Weber also reported a statistically significant higher loss to follow up in one arm of that trial (ultralateral anterior vaginal wall repair).

Baseline descriptive characteristics were reported in all trials and were equally distributed except in three trials: Sand 2001 reported that previous hysterectomy was more common in the mesh inlay group; Kahn (Kahn 1999) reported a difference in menopausal status and previous hysterectomies between the groups; and women in the vaginal sacrospinous colpopexy arm in Meschia's trial were significantly older (Meschia 2004a). Preoperative prolapse status was reported in all trials but one (De Ridder 2004), but equal distribution and severity of prolapse between groups was not specifically reported in four trials (Benson 1996; Bump 1996a; Meschia 2004; Sand 2001). One trial included 7% of women with stage one anterior vaginal wall prolapse preoperatively (at time of inclusion) which would also have been classified as a postoperative success (Weber 2001). Length of follow up was less than one year in three trials (Brubaker 2006; Cervigni 2005; Jeng 2005) and greater than five years in another three trials (Colombo 1997; Colombo 2000; Lo 1998), with all other trialists reporting results between one and five years.

Effects of interventions

A. Upper vaginal prolapse (uterine and vaginal vault) (Comparison 01)

Six trials provided data regarding the outcome of prolapse surgery for upper vaginal prolapse (Benson 1996; Culligan 2005; Lo 1998; Maher 2004; Meschia 2004a; Roovers 2004). All the trials which used mesh used non-absorbable, permanent mesh except one trial in which an absorbable was compared with a non-absorbable mesh (Culligan 2005).

Objective 1: abdominal sacral colpopexy versus vaginal sacrospinous colpopexy

Three trials were considered to be similar enough to allow combination of data for comparison of abdominal sacral colpopexy and vaginal sacrospinous colpopexy (Benson 1996; Lo 1998; Maher 2004). Abdominal sacral colpopexy was better than vaginal colpopexy in terms of:

- a lower rate of recurrent vault prolapse (3 out of 84 versus 13 out of 85; RR 0.23, 95% CI 0.07 to 0.77, Comparison 01.03.01) (Benson 1996; Maher 2004);
- the number of women failing to improve to Stage 2 or better (3 out of 52 versus 13 out of 66; RR 0.29, 95% CI 0.09 to 0.97, Comparison 01.02.02) (Lo 1998);
- less postoperative dyspareunia (7 out of 45 versus 22 out of 61; RR 0.39, 95% CI 0.18 to 0.86, Comparison 01.13.01) (Benson 1996; Lo 1998; Maher 2004);
- less postoperative stress urinary incontinence (14 out of 47 versus 28 out of 81, RR 0.55, 95%CI 0.32 to 0.95, Comparison 01.05.01) (Benson 1996; Maher 2004). However, caution should be exercised when evaluating these data due to significant variation in the methodology of the two trials as described above. There was no statistically significant difference in reoperation rates for stress urinary incontinence (RR 0.6, 95% CI 0.21 to 1.73, Comparison 01.22.01) (Benson 1996; Lo 1998; Maher 2004);
- The lower reoperation rate for prolapse after abdominal surgery did not reach statistical significance (6 out of 84 versus 14 out of 85, RR 1.46, 95% CI 0.19 to 1.11, Comparison 01.21.01) (Benson 1996; Maher 2004).

The results for intraoperative blood loss were inconsistent in two studies with a mean difference of 298 ml less blood loss in the abdominal group in Lo's study (Lo 1998) and 33 ml more blood loss in Maher's trial (Maher 2004) (Comparison 01.15.01). Benson did not report blood loss but the postoperative change in haemoglobin was not statistically different (Benson 1996).
Women treated abdominally took significantly longer to present with recurrent prolapse (WMD for months to recurrence -10.90, 95% CI -17.12 to -4.68, Comparison 01.24.01) in one trial (Benson 1996). On the other hand, the sacral (abdominal) colpopexy was associated with a longer operating time (WMD 21 minutes, 95% CI 12 to 30, Comparison 01.17.01) (Benson 1996; Lo 1998; Maher 2004), longer time to recover (WMD 8.3 days, 95% CI 3.9 to 12.7, Comparison 01.19.01) (Maher 2004) and was more expensive (WMD US$1334, 95% CI 1027 to 1641, Comparison 01.20.01) (Benson 1996; Maher 2004) than the vaginal approach.
Although the results for subjective prolapse symptoms favoured the abdominal group, the difference was statistically not significant (subjective failure after abdominal surgery: 9/84 versus 18 out of 85, RR 0.53, 95% CI 0.25 to 1.09, Comparison 01.01.01) (Benson 1996, Maher 2004). On the limited evidence available, patient's satisfaction (RR 0.82, 95% CI 0.32 to 2.06, Comparison 01.04.01) (Maher 2004) and objective failure at any site (any pelvic organ prolapse: RR 0.77, 95% CI 0.39 to 1.53, Comparison 01.02.01) (Maher 2004) were not clearly different in both groups. Although data were available for bowel outcomes (Comparisons 01.10 and 01.11) and adverse events (Comparison 01.25), they were too few to provide sufficiently precise estimates to identify or rule out clinically important differences.

Objective 2: vaginal hysterectomy versus uterine preservation

In the fourth trial, Roovers compared abdominal sacral hysteropexy against vaginal hysterectomy and repair with vault fixation to the uterosacral-cardinal ligament complex (Roovers 2004). Although more women had subjective prolapse symptoms at one year after abdominal surgery (RR 3.2, 95% CI 1.29 to 7.92, Comparison 01.01.02), there was no statistically significant difference in the prolapse domain of the urinary distress inventory (UDI) (mean difference 4.1, 95% CI -5.4 to 13.6); nor the score for urinary incontinence (mean difference 6, 95% CI -2 to 14). However, at one year after surgery the vaginal group scored significantly better (lower) scores on the discomfort /pain domain (7.1, 95% CI 1.1 to 13.2), overactive bladder domain (8.7, 95% CI 0.5 to 16.9) and the obstructive micturition domain (10.3, 95% CI 0.6 to 20.1) as compared to the abdominal group. More women in the abdominal group required repeat prolapse repair (RR 9.00, 95% CI 1.19 to 67.85, Comparison 01.21.02): in the abdominal group, five women (13%) had a reoperation for recurrent cystocele and four women (10.5%) for recurrent uterine prolapse, whereas in the vaginal group only one patient required surgery in the first year for vaginal vault prolapse. The operating time was less for the abdominal group (WMD -10 minutes, 95% CI -12 to -8, Comparison 01.17.02), possibly reflecting the less invasive nature of the abdominal procedure in this trial (the uterus was preserved in the abdominal group as opposed to removed in the vaginal group).
In another trial, sacrospinous uterine suspension with uterine preservation was compared with vaginal hysterectomy (Jeng 2005). There were few reports of dyspareunia in either group (Comparison 01.13.03) but there were more adverse symptoms in

the sacrospinous suspension arm, mostly due to buttock pain (RR 4.23, 97% 1.25 to 14.25, Comparison 01.25.06) (Jeng 2005). This trial could not be combined with the Roovers 2004 trial as the non-hysterectomy groups were too different (clinical heterogeneity).

Objective 3: vaginal hysterectomy with McCall culdoplasty versus vaginal hysterectomy and sacrospinous colpopexy:

No trials identified.

Objective 4: vaginal McCall culdoplasty and uterosacral ligament plication versus vaginal sacrospinous colpopexy and repair:

No trials identified.

Objective 13: Potential stress urinary incontinence (e.g. detected on reduction of prolapse prior to surgery) treated with formal continence surgery at the time of prolapse surgery, versus being left untreated.

One trial evaluated the effects of adding Burch colposuspension to abdominal sacrocolpopexy (Brubaker 2006). The trial was terminated early (after the first 232 women had been randomised, but data were finally available for a total of 322 women) because of a significant difference in the incontinence rates at 3 months after surgery. Data were not provided for prolapse outcomes, but the addition of Burch colposuspension significantly decreased the incidence of stress urinary incontinence at 3 months after surgery (67 out of 152, 44% versus 35 out of 147, 24% with Burch, RR 1.85, 95% CI 1.32 to 2.6, Comparison 01.05.03) (Brubaker 2006). However, the operating time was longer (MD -20 minutes, 95% CI -33 to -7, Comparison 01.17.05) and the blood loss higher (MD -73 ml, 95% CI -73 to -30, Comparison 01.15.05) (Brubaker 2006) in the Burch group.

Objective 14: Use of native (no mesh) tissue versus mesh or grafts:

In one trial (Meschia 2004a) the data were too few to address possible differences in the objective recurrence rate between a repair using the sacrospinous colpopexy and the posterior intravaginal (mesh) sling (0 out of 33 versus 1 out of 33; RR 0.33, 95% CI 0.01 to 7.90, Comparison 01.03.02) (Meschia 2004a). The operating time was 11 minutes shorter (WMD 11 minutes, 95% CI 2.8 to 19.2, Comparison 01.17.03) (Meschia 2004a) and blood loss less (WMD 70ml, 95% CI 56 to 84, Comparison 01.15.03) (Meschia 2004a) with the intravaginal sling. Other clinical outcomes included dyspareunia, faecal incontinence, constipation, stress urinary incontinence, overactive bladder syndrome and voiding dysfunction, but the numbers were too few to draw conclusions. Mesh erosions occurred in 3 out of 33 (9%) women in the IVS group of events.

Objective 15: One type of mesh / graft versus another type of mesh / graft:

One trial (Culligan 2005) compared the abdominal sacral colpopexy using either absorbable cadaveric fascia lata graft (Tutuplast) or nonabsorbable (permanent) monofilament polypropylene mesh (Trelex). There were no recurrences of vaginal vault prolapse in either group, but the objective failure rate for recurrence at any other vaginal site was 14 out of 44 in the fascial graft group and 4 out of 45 in the mesh group (RR 3.58, 95% CI 1.28 to 10.03, Comparison 01.02.04) (Culligan 2005). There were no vaginal erosions in the 46 women in the fascial graft group but 2 out of 54 women had mesh erosion in the non-absorbable mesh group. No data on bladder, bowel or sexual function were provided.

B. Anterior vaginal wall prolapse (cystocele, urethrocele, paravaginal defect) (Comparison 02)

Eleven trials included a variety of surgical procedures to treat anterior vaginal wall prolapse, with or without stress or occult stress urinary incontinence. (Bump 1996a; Colombo 1996a; Colombo 1997; Colombo 2000; Meschia 2004; Sand 2001; Weber 2001; Cervigni 2005; De Ridder 2004; Gandhi 2005; Meschia 2007). Combination of data was possible for two sets of trials: two were comparable in terms of type of population (women with prolapse only) and types of operation (anterior repair with and without mesh) (Sand 2001; Weber 2001); and the other two in terms of types of operation (endopelvic fascia plication versus needle suspension) (Bump 1996a; Colombo 1997).

Objective 5: anterior vaginal wall repair versus the abdominal paravaginal repair in the management of cystocele:

No trials identified.

Objective 6: for midline cystocele defects, a traditional anterior vaginal wall repair versus anterior vaginal wall repair with mesh reinforcement:

Data from two small trials suggested that traditional anterior repair may be followed by higher objective failure rates than after polyglactin mesh reinforcement of anterior repair (RR 1.48, 95% CI 1.07 to 2.04, Comparison 02.03.03) (Sand 2001; Weber 2001), but data on reoperation rates were not given and complication rates were similar. Weber did not find significant differences in cure rates for cystocele between the standard cystocele repair (30%), ultralateral repair (46%) and standard plus polyglactin mesh inlay (42%) at mean follow up of 24 months, but the trial

was only powered to detect a 30% difference between the groups (Weber 2001).

One trial (Meschia 2007) compared the anterior colporrhaphy without and with porcine dermis inlay (Pelvicol). The trial demonstrated at one-year follow up the objective failure rate of the anterior compartment was 20 out of 103 in the colporrhaphy group as compared to 7/98 in the porcine dermis group (RR 2.72 95% CI 1.20 to 6.14, Comparison 02.03.09) (Meschia 2007). There were no differences between groups in blood loss, inpatient-days, change in haemoglobin, postoperative voiding dysfunction and dyspareunia but all with wide confidence intervals. There was one porcine dermis graft rejection requiring surgical removal.

Another trial (Gandhi 2005) compared the anterior colporrhaphy without or with Tutoplast (solvent dehydrated cadaveric fascia lata). At 13 months the objective and subjective failure rates of the anterior compartment were similar (23 out of 78 and 16/76; RR 1.4, 95% CI 0.8 to 2.44, Comparison 02.03.10 and 6 out of 57 and 6 out of 55; RR 0.96, 95% CI 0.33 to 2.81, Comparison 02.01.02) (Gandhi 2005). Apart from urinary voiding function there were no other bladder, bowel or sexual function outcomes reported.

The nature of the different mesh types in the latter two trials (Gandhi 2005; Meschia 2007)were considered too dissimilar to combine them in a meta-analysis.

Objective 15: One type of mesh / graft versus another type of mesh / graft:

Two trials evaluated different mesh inlays (Cervigni 2005; De Ridder 2004).

Cervigni compared Prolene Soft (n = 36) with porcine dermis (Pelvicol, n = 36) with a mean follow up of 8 months. The objective failure rates (calculated for grade two at the Baden-Walker half-way system) were similar between groups (14 out of 36 and 12 out of 36; RR 1.17, 95% CI 0.63 to 2.16, Comparison 02.03.12) (Cervigni 2005). Dyspareunia occurred in 11 out of 36 (30%) and 5 out of 36 (14%) (RR 2.2, 95% CI 0.85 to 5.69, Comparison 02.09.02) (Cervigni 2005) and mesh erosions in 3 out of 36 and 1 out of 36 (RR 3.00, 95% CI 0.33 to 27.5), Comparison 09.01.04) (Cervigni 2005). Postoperative voiding dysfunction rates were 9 out of 36 and 5 out of 36 (RR 2.07, 95% CI 0.62 to 6.92, Comparison 02.05.02) (Cervigni 2005).

De Ridder (De Ridder) performed four-defect Raz anterior vaginal wall repairs and added a porcine dermis (Pelvicol) or polyglactin (Vicryl) inlay. Both mesh types are absorbable. Objective failure rates of the anterior compartment at 25 months follow up were 6 out of 63 (9.5%) and 19 out of 62 (31%) respectively (RR 0.31, 95% CI 0.13 to 0.73, Comparison 02.03.11) (De Ridder 2004). Further prolapse surgery had to be performed in 3 out of 63 and 9 out of 62 women (RR 0.33, 95% CI 0.09 to 1.16, Comparison 02.18.01) (De Ridder 2004).

The nature of the different types of mesh in the two trials (Cervigni 2005; De Ridder 2004) were considered too dissimilar to combine them in a meta-analysis.

Other comparisons for anterior vaginal wall prolapse:

Five other trials were identified which compared different operations for anterior vaginal wall prolapse or different continence procedures for women with urinary incontinence or occult urinary incontinence as well as anterior vaginal wall prolapse (Bump 1996a; Colombo 1996a; Colombo 1997; Colombo 2000; Meschia 2004). One single trial comparing anterior repair with Burch colposuspension showed statistically significant lower rates of cystocele recurrence (RR 0.09, 95% CI 0.01 to 0.64, Comparison 02.03.05) (Colombo 2000), but higher rates of persisting urinary incontinence (RR 3.39, 95% CI 1.40 to 8.22, Comparison 02.06.03) (Colombo 2000). However, this was not reflected in differences in reoperation rates for either prolapse or incontinence (Comparisons 02.18.03 and 02.19.03) (Colombo 2000). Another small trial reported that more women were incontinent after endopelvic fascia plication than after TVT supplementing prolapse surgery (RR 9, 95% CI 1.23 to 65.85, Comparison 02.07.08) (Meschia 2004) but the data were too few to comment on the effect on prolapse or other clinical outcomes. However, there was a shorter operating time for the former operation (WMD -19 minutes, 95% CI -29 to -9, Comparison 02.10.08) (Meschia 2004).

C. Posterior vaginal wall prolapse (rectocele) (Comparison 03)

Two small trials compared vaginal and transanal approaches to the management of rectoceles (Kahn 1999; Nieminen 2004), and two others examined posterior repair with and without mesh reinforcement (Paraiso 2006; Sand 2001). The most recent of these trials compared three techniques to correct posterior vaginal compartment prolapse (Paraiso 2006).

Objective 7: posterior vaginal wall repair versus a transanal repair:

Many of the important outcome parameters were not reported thus limiting the data available and the ability to perform meta-analyses. The results for posterior vaginal wall repair were better than for transanal repair in terms of subjective (RR 0.36, 95% CI 0.13 to 1, Comparison 03.01.01) (Kahn 1999; Nieminen 2004) and objective (RR 0.24, 95% CI 0.09 to 0.64, Comparison 03.02.03) (Kahn 1999; Nieminen 2004) failure rates (persistence of rectocele and/or enterocele). Analysing women with rectocele alone showed that recurrent rectocele occurred in 2 out of 39 in the vaginal group and 7 out of 48 following the transanal repair, a difference that did not reach statistical significance (RR 0.32, 95% CI 0.07 to 1.34, Comparison 03.02.01) (Kahn 1999; Nieminen 2004). Postoperative enterocele was, however, significantly less common following the vaginal surgery as compared to

the transanal group (RR 0.23, 95% CI 0.07 to 0.83, Comparison 03.02.02) (Kahn 1999; Nieminen 2004).

Postoperative hospital stay was longer after vaginal surgery than after transanal surgery in one trial (mean difference (MD) 1 day, 95% CI 0.47 to 1.53, Comparison 03.15.01) (Kahn 1999) despite a shorter operating time (MD -7 minutes, 95% CI -12 to -2) (Kahn 1999). The operating times in the other trial (Nieminen 2004) were the same for both groups (35 minutes). When data for operating time were combined (WMD -3.6 minutes, Comparison 03.11.01), there was significant heterogeneity (P = 0.07, I-squared = 69%) and the difference was not significant if a random effects model was used (95% CI -10.4 to 3.3 minutes). The vaginal approach was associated with a significantly higher blood loss (79 ml, 95% CI 40 to 119, Comparison 03.09.01) (Kahn 1999; Nieminen 2004) and postoperative narcotic use (Comparison 03.12.01, Kahn 1999) as compared to the transanal approach. Nieminen reported that the mean depth of rectocele on postoperative defecography was 4.13 cm in the transanal group and this was significantly larger than the 2.73 cm in the vaginal group (WMD -1.43, 95% CI -2.86 to 0, P = 0.05, data not shown). Postoperative difficulties in bowel evacuation were seen in 9 out of 31 in the vaginal group as compared to 14 out of 34 in the transanal group, a difference that was not significantly different (RR 0.73, 95% CI 0.37 to 1.42, Comparison 03.06.01) (Kahn 1999; Nieminen 2004). No significant differences were seen in the rate of incontinence to flatus or faeces postoperatively between the groups, nor in rates of postoperative dyspareunia but the trials were too small for these data to be reliable. There were differences between the trials for the outcome postoperative complications: in one trial, four women had a haematoma and one needed a blood transfusion in the vaginal arm (Kahn 1999) whereas in the other, one woman had a wound infection after transanal operation (Nieminen 2004) (Comparison 03.13.01).

Objective 8: posterior vaginal wall repair versus an abdominal posterior repair:

No trials identified.

Objective 14: posterior vaginal wall repair versus posterior vaginal wall repair with mesh reinforcement:

One trial compared posterior repair with and without mesh reinforcement (Sand 2001). Rectocele recurrence appeared equally common with and without polyglactin (Vicryl) mesh augmentation (7 out of 67 versus 6 out of 65), but the confidence intervals were wide (RR 1.13, 95% CI 0.40 to 3.19, Comparison 03.02.04) (Sand 2001). No trial reported mesh erosion.

Another trial compared posterior colporrhaphy, site specific repair and site specific repair augmented with porcine small intestine submucosa graft inlay for repairing rectoceles (Paraiso 2006). There was no statistical difference in objective failure between posterior colporrhaphy and site specific repair (RR 0.64, 95%CI 0.20 to 2.03, Comparison 03.02.05) (Paraiso 2006). There was a lower objective failure rate at 1 year following the posterior colporrhaphy as compared to porcine graft inlay (RR 0.31, 95% CI 0.11 to 0.84, Comparison 03.02.06) (Paraiso 2006). However, there were no differences in subjective report of prolapse symptoms (Comparison 03.01.02 and 03). Rates of postoperative dyspareunia were similar between posterior colporrhaphy and site specific repair (RR 1.65, 95%CI 0.71 to 3.81, Comparison 03.08.02) (Paraiso 2006) and between posterior colporrhaphy and porcine graft groups (RR 2.85, 95% CI 0.91 to 8.96, Comparison 03.08.03) (Paraiso 2006). There were no significant differences between the groups in operating time (Comparison 03.11), change in haematocrit, postoperative complications (Comparison 03.13), duration of hospital stay, postoperative bowel and sexual function or reoperation rate for prolapse recurrence (Comparison 03.16). The nature of the different grafts utilised in the Sand and Paraiso study did not allow for meta-analysis.

D. Any type of prolapse (Comparisons 04, 05, 06, 07, 08)

Objective 10: surgical treatment versus conservative treatment in the management of pelvic organ prolapse (Comparison 04)

No trials addressed this comparison.

Objective 11: surgical treatment versus mechanical devices in the management of pelvic organ prolapse (Comparison 05)

No trials addressed this comparison.

Objective 12: open abdominal surgery versus the laparoscopic approach for the management of prolapse (Comparison 06)

No trials addressed this comparison.

Objective 13: potential stress urinary incontinence (e.g. detected on reduction of prolapse prior to surgery) treated with formal continence surgery at the time of prolapse surgery, versus being left untreated (Comparison 07)

The effects of surgical management of pelvic organ prolapse on urinary symptoms were addressed in eight trials which included data for women without urinary symptoms at baseline (Brubaker 2006; Bump 1996a; Cervigni 2005; Colombo 1996a; Colombo 1997; Lo 1998; Maher 2004; Meschia 2004).

The trials involved several different operations and different populations. Some single trials were too small to demonstrate differences in new urinary symptom outcomes between the two arms, in terms of new stress urinary incontinence (Comparisons 07.01 and 07.02), persistent or new urgency, detrusor activity or overactive bladder (Comparison 07.04), in postoperative voiding dysfunction (Comparison 07.05) or in the need for subsequent incontinence surgery (Comparison 07.06). However, three trials which used concomitant continence procedures demonstrated less incontinence in the groups with the extra procedure:

- One trial showed a higher rate of new stress urinary incontinence after pubo-urethral ligament plication than after Pereyra needle suspension, although in only one outcome, objectively demonstrated stress urinary incontinence (RR 2.06, 95% CI 1.05 to 4.06, Comparison 07.02.02) (Colombo 1997);
- In another trial, more women (who were continent at baseline) had UI in the group who did not have Burch colposuspension in addition to abdominal sacrocolpopexy (RR 2.13, 95% CI 1.39 to 3.24) (Brubaker 2006). The additional operation resulted in higher blood loss (MD -73 gms, 95% CI -115 to -31, Comparison 01.15.05) (Brubaker 2006) and a longer operating time (-20 minutes, 95% CI -33 to -7, Comparison 01.17.05) (Brubaker 2006). Longer term outcomes are awaited.
- Another small trial included continent women with occult stress urinary incontinence. More women were incontinent after endopelvic fascia plication than when TVT was used as a continence procedure to supplement prolapse surgery, in respect of both subjective stress urinary incontinence (36% versus 4%, RR 9, 95% CI 1.23 to 65.85, Comparison 07.01.08) and objective stress urinary incontinence (44% versus 8%, RR 5.5, 95% CI 1.36 to 22.32, Comparison 07.02.08) (Meschia 2004). However, subsequent continence surgery was too infrequent to allow possible differences to be identified (or ruled out) confidently (Comparison 07.06.04).

Since all the women in Comparison 07 were continent before prolapse surgery, it was possible to provide estimates of the effects on subsequent urinary function. Overall, 111 out of 539 (21%) of women reported new subjective stress urinary incontinence (Comparison 07.01), and 32 out of 389 (8%) new symptoms of overactive bladder (Comparison 07.04). Long-term voiding dysfunction (difficulty emptying the bladder) was reported by 32 out of 365 (9%) of women (Comparison 07.05).

Objective 14: Use of native (no mesh) tissue versus mesh or grafts (Comparison 08)

Two trials evaluated the effects of using absorbable polyglactin (Vicryl) mesh to augment prolapse repairs (Sand 2001; Weber 2001). The data were aggregated in meta-analysis, and two non-mesh arms from one trial (traditional anterior vaginal wall repair and ultralateral anterior vaginal wall repair) were also aggregated for comparison with the mesh arm in one of the trials (Weber 2001). Standard anterior repair was associated with a significantly higher recurrence rate of cystocele compared with augmentation with polyglactin mesh inlay (RR 1.39, 95% CI 1.02 to 1.90, Comparison 08.01.01) (Sand 2001; Weber 2001). One vaginal polyglactin mesh erosion was reported in total from both trials (Weber 2001).

Rectocele recurrence appeared equally common with and without polyglactin mesh augmentation in another trial, but the confidence intervals were wide (RR 1.13, 95% CI 0.40 to 3.19, Comparison 08.02.01) (Sand 2001). There were no significant differences in failure rates or symptomatic outcomes in a comparison of two types of posterior repair with a method including a porcine intestine mucosa graft inlay (Paraiso 2006).

Two further trials compared native tissue anterior vaginal wall repairs without and with porcine dermis (Pelvicol, Meschia 2007) and without and with cadaveric fascia lata (Tutoplast, Gandhi 2005). Given the different nature of the grafts, these trials could not be combined to perform a meta-analysis. While there were fewer women with objective recurrence of prolapse in the graft inlay arms of both trials, this only reached significance in one trial (RR 2.72, 95% CI 1.20 to 6.14, Comparison 08.02.02) (Meschia 2007). There were too few data reported for the other outcomes to provide reliable estimates.

Objective 15: One type of mesh / graft inlay versus another type of mesh / graft (Comparison 09)

Two trials in women having anterior repair compared two types of inlay:

- semi-absorbable Prolene Soft mesh versus absorbable porcine dermis graft (Pelvicol) (Cervigni 2005); and
- absorbable porcine dermis graft (Pelvicol) versus absorbable polyglactin mesh (Vicryl, De Ridder 2004).

Both trials were small, and the data too few to be conclusive, although there were fewer women with objective recurrence of prolapse when porcine dermis was used rather than polyglactin to reinforce an anterior repair (RR 3.22, 95% CI 1.38 to 7.52, Comparison 09.02.02) (De Ridder 2004).

Objective 16: one type of suture is better than another type of suture:

No trials addressed this comparison (one trial is ongoing, Allahdin 2007).

DISCUSSION

This is one of three reviews of interventions for pelvic organ prolapse and it should be viewed in that context (Adams 2004; Hagen

2004). In the other two reviews, no randomised trials evaluating either conservative, physical or lifestyle interventions (Hagen 2004) or mechanical devices or pessaries (Adams 2004) were identified.

Amongst the 21 trials that addressed surgical management of pelvic organ prolapse, the quality of the trials was variable. All trials reported an objective evaluation of the specific pelvic floor defect that was repaired, but full vaginal site specific outcomes were only available for seven trials (Colombo 1996a; Colombo 1997; Colombo 2000; Maher 2004; Weber 2001, Cervigni 2005; Meschia 2004a). All but three trials (Brubaker 2006; Cervigni 2005; Jeng 2005) reported median follow up of greater than one year but only three trials reported outcomes at greater than five years (Colombo 1997; Colombo 2000; Lo 1998).

Generally, the impact of surgery on associated pelvic floor symptoms including bladder, bowel and sexual function, quality of life, cost and patient satisfaction were poorly reported. Validated pelvic floor questionnaires were reported in two trials (Maher 2004; Roovers 2004), cost issues also by two trialists (Benson 1996; Maher 2004) and impact of surgery on quality of life and patient satisfaction in one trial (Maher 2004). These deficiencies generally reflect the difficulties associated with prolapse surgery. One of the principal aims of prolapse surgery is to correct the vaginal protrusion and any associated pelvic floor dysfunction, but the anatomical correction itself is likely to impact upon bladder, bowel and sexual function in unpredictable ways. Until recently, neither standardised history, validated pelvic organ prolapse or specific quality of life questionnaires or other outcome assessment tools were available.

It was disappointing that few trials were found which evaluated conservative, physical, lifestyle or mechanical means of prolapse treatment (Adams 2004; Hagen 2004), and none which compared these interventions with surgery. One ongoing trial is comparing different types of sutures (Allahdin 2007).

Upper vaginal prolapse (middle compartment)

The abdominal sacral colpopexy was associated with a lower rate of recurrent vault prolapse (Benson 1996; Maher 2004), reduced grade of residual prolapse (Lo 1998), greater length of time taken to recurrence of prolapse (Benson 1996) and less dyspareunia (Benson 1996; Lo 1998; Maher 2004) as compared to the vaginal sacrospinous colpopexy. The data were too few to assess possible differences in satisfaction, bowel outcomes or adverse effects reliably. However, the abdominal sacral colpopexy was associated with a longer operating time (Benson 1996; Lo 1998; Maher 2004), a longer time for recovery (Maher 2004), and it was more expensive (Benson 1996; Maher 2004) than the vaginal approach. The finding of less postoperative stress urinary incontinence after the abdominal approach must be viewed with caution due to the different continence procedures performed in the two trials (as described in the Methodology section). The trend towards a lower reoperation rate in the abdominal group did not reach statistical significance (Benson 1996, Maher 2004). Culligan 2005 reported that there were no recurrent vault prolapses using either abdominal sacral colpopexy with monofilament polypropylene mesh or sacral colpopexy using cadaveric fascia lata graft inlay (Tutoplast), but there was less recurrence of prolapse at any other vaginal site at one year of follow up when mesh was used.

In a fifth trial, more women needed repeat prolapse surgery after abdominal sacral hysteropexy (without hysterectomy), and fewer women had pain, overactive bladder symptoms or obstructive micturition symptoms after vaginal surgery which included hysterectomy (Roovers 2004). A further trial in which women in one arm had uterine preservation reported few relevant outcomes (Jeng 2005). However, the clinical relevance of these trials, which compared different approaches and uterine preservation in one arm and hysterectomy in the other, is debatable.
One trial was too small to demonstrate a difference in anatomical outcome between the vaginal sacrospinous colpopexy and posterior intravaginal slingplasty (Meschia 2004a). Although the posterior intravaginal sling was quicker to perform and showed a significantly reduced blood loss, it was associated with a 9% rate of mesh complications (Meschia 2004a).

Anterior vaginal wall prolapse

There is increasing information available on the repair of the anterior vaginal compartment.
There was some evidence from two small trials that absorbable polyglactin mesh (Vicryl) might reduce objective prolapse recurrence compared with anterior repair alone (Sand 2001; Weber 2001). A single randomised controlled trial demonstrated that the porcine dermis augmentation of the anterior vaginal wall might be beneficial in reducing recurrent anterior vaginal wall prolapse (Meschia 2007). Cadaveric fascia lata (Tutoplast) augmentation of anterior vaginal wall was not beneficial in reducing recurrent anterior vaginal wall prolapse (Gandhi 2005). Two further RCTs compared various mesh augmentations. In a single RCT (De Ridder 2004) it was demonstrated that porcine dermis reduces recurrent anterior vaginal wall prolapse compared to polyglactin augmentation whereas Prolene Soft and porcine dermis inlays resulted in similar failure rates (Cervigni 2005). It is pertinent, however, that of these four types of mesh or grafts, only one (Prolene Soft) was non-absorbable, and only used in 36 women in one trial (Cervigni 2005). Data for other symptoms were not reported. Importantly, long-term outcome data were not available, in particular regarding adverse effects such as mesh erosion.

These four studies evaluated five interventions, anterior colporrhaphy and four different grafts, making a meta-analysis inappropriate. The heterogenicity of the meshes used made the compari-

son of mesh complications impossible. There was a lack of information on functional (subjective) outcomes.

Julian et al found in a non-randomised prospective study that in women who had undergone at least two previous vaginal repairs, the overlaying of a Marlex (Bard) mesh to the anterior vaginal wall repair was associated with lower recurrence rates of cystocele from 33% to 0% (Julian 1996). The Marlex mesh was associated with a mesh erosion rate of 25% (Julian 1996). Flood et al, in a retrospective review of 142 women with Marlex mesh augmentation of anterior vaginal wall repair, reported a 100% success rate for cystoceles at 3.2 years and a mesh erosion rate of only 2% (Flood 1998).

In one other trial concerning women all of whom had stress urinary incontinence as well as prolapse, Burch colposuspension was subjectively better at curing the incontinence and anterior repair was better for the prolapse (Colombo 2000) but the trial was too small to judge whether this affected subsequent reoperation rates or the effect on other aspects of bladder, bowel or sexual function.

Posterior vaginal wall prolapse

Posterior vaginal wall repair performed better than the transanal repair of rectocele in terms of a significantly lower recurrence rate of posterior vaginal wall prolapse in two trials, despite a higher blood loss and greater use of pain relief (Kahn 1999; Nieminen 2004). However, the data were too few to comment on clinical outcomes such as flatus or faecal incontinence, or dyspareunia. More women had difficulties in bowel evacuation after transanal operation but this did not reach statistical significance. In total, five serious adverse effects were reported amongst the 87 women in the two trials.

The trials evaluating mesh augmentation of posterior repair were too small to address this question reliably (Paraiso 2006; Sand 2001), although no woman reported mesh erosion (Sand 2001). In one single well conducted study the posterior colporrhaphy was demonstrated to have a lower failure rate as compared to the site specific repair with Porcine small intestine submucosa graft for rectoceles. There were no significant other differences between the posterior colporrhaphy, site specific repair or site specific repair augmented with Porcine small intestine submucosa in terms of perioperative and postoperative morbidity, functional outcomes, quality of life and bowel and sexual function (Paraiso 2006).

Prolapse surgery and potential urinary symptoms

Eight trials provided information about changes to urinary function in women who had not had urinary symptoms before operation. In view of the potential for prolapse surgery to impact on urinary function, it was disappointing that so little information was available. The slight evidence in favour of needle suspension in one trial (Colombo 1997) needs to be viewed in the light of a Cochrane review of bladder neck needle suspension, which found that there was little evidence for it being better than anterior repair alone in the treatment of urinary incontinence, albeit with wide confidence intervals (RR 0.93, 95% CI 0.68 to 1.26) (Glazener 2004). However, one small trial has demonstrated that TVT was better at preserving continence than endopelvic fascial plication when used as an adjunct to prolapse surgery in women with occult stress urinary incontinence (Meschia 2004). A recent large trial showed that Burch colposuspension resulted in significantly less urinary incontinence when used as a supplement to prolapse surgery, so much so that the trial was stopped early (Brubaker 2006). Longer term outcomes, especially regarding cost-effectiveness, are awaited.

Overall, 111 out of 539 (21%) of women reported new subjective stress urinary incontinence, and 32 out of 389 (8%) new symptoms of overactive bladder. Long-term voiding dysfunction (difficulty emptying the bladder) was reported by 32/365 (9%) of women. However, the data were too few to relate these changes to any particular type of prolapse or prolapse surgery.

There is debate about the value of trying to diagnose occult stress urinary incontinence before prolapse surgery, for example by assessing incontinence when the prolapse is temporarily reduced. The above data show that new urinary symptoms may also occur unexpectedly. Thought should be given to further management of all women who develop new symptoms (whether or not 'occult' urinary incontinence can be demonstrated preoperatively on reduction of the prolapse), as well as those whose preoperative urinary symptoms are not cured by surgery.

Prolapse surgery and mesh augmentation

The use of mesh to augment repair surgery has been successful in other fields such as groin hernia repair (Scott 2004). However, particular issues related to its use in vaginal repair concern the effect on bowel, bladder and sexual function and the possibility of mesh erosion or infection: therefore, evidence of an anatomical cure of the prolapse is not sufficient reason to advocate its use. Evidence from case series suggest possible concerns. Salvatore et al reported functional outcomes after a polypropylene mesh overlay at vaginal repair including a mesh erosion rate of 13%, overactive bladder increasing from 28% to 56% and dyspareunia increasing from 18% to 38% postoperatively (Salvatore 2002). Visco et al suggested that the mesh erosion or infection rate was increased four-fold when mesh was introduced vaginally as compared to the abdominal route in the management of pelvic organ prolapse (Visco 2001). Amongst the four trials in this review which reported mesh erosion rates, 3 out of 36 women (8%) had an erosion after using Prolene Soft mesh (semi-absorbable, Cervigni 2005), 3 out of 33 (9%) after IVS (multi-filament non-absorbable, Meschia 2004a), 0 out of 80 (0%) after absorbable polyglactin mesh (Sand

2001) and 2 out of 139 after porcine dermis (absorbable porcine dermis, Cervigni 2005; Meschia 2007). The rates with the non-absorbable meshes would be clinically significant if larger studies showed that they were sustained.

The evidence supporting the use of polyglactin mesh repair for anterior or posterior vaginal wall prolapse came from small trials with conflicting results. While there was less recurrence of prolapse using porcine dermis (Meschia 2007) or cadaveric fascia lata (Gandhi 2005), the trials were small and data on other outcomes inconclusive. Two other trials evaluating semi-absorbable prolene soft versus absorbable porcine dermis (Cervigni 2005) and absorbable porcine dermis versus absorbable polyglactin mesh (De Ridder 2004) were also small. Thus the evidence is not sufficient to support the use of permanent meshes or grafts at the time of vaginal repair surgery except in the context of randomised controlled clinical trials. These trials must be adequately powered to evaluate the anatomic and functional outcomes and possible adverse events.

AUTHORS' CONCLUSIONS

Implications for practice

The data from randomised trials are currently insufficient to guide practice.

The following conclusions from the review relate to the three areas of surgical management of pelvic organ prolapse where at least two randomised controlled trials have been completed:

- Abdominal sacral colpopexy was associated with a lower rate of recurrent vault prolapse and less dyspareunia than the vaginal sacrospinous colpopexy. The abdominal colpopexy had a longer operating time, longer recovery and higher cost than the vaginal surgery. Data on the subjective success rate, patient satisfaction and impact of the surgery on quality of life were too few for reliable conclusions.

- The limited evidence suggested that the use of an absorbable polyglactin mesh inlay or absorbable porcine dermis at the time of anterior vaginal wall repair may reduce the risk of recurrent cystocele, but information on the effects on bladder, bowel or sexual function are limited and inconclusive.

- The limited evidence suggested that posterior vaginal wall repair may have a better anatomical success rate than transanal repair in the management of posterior vaginal wall prolapse but the clinical effects are uncertain.

There were insufficient data to allow evaluation of the impact of prolapse surgery on continence issues but limited information suggested that concomitant TVT or Burch colposuspension might reduce postoperative incontinence rates: this benefit needs to be balanced against possible differences in costs and adverse effects. There was generally a lack of information on the impact of the surgery on quality of life and cost issues.

Implications for research

None of the objectives prestated in the protocol for this review have been satisfactorily addressed, and all would benefit from testing in further good quality randomised trials.

More broadly, further evidence on the surgical management of pelvic organ prolapse should include but not be limited to the following:

- Upper vaginal prolapse: vaginal surgery (e.g. vaginal hysterectomy, cervical amputation, uterosacral ligament plication, posterior intravaginal slingplasty or sacrospinous colpopexy); abdominal surgery (e.g. open or laparoscopic sacral colpopexy, abdominal hysterectomy); laparoscopic pelvic floor repair; and the use of mesh or grafts.

- Anterior vaginal wall prolapse: vaginal surgery (e.g. anterior vaginal wall repair, vaginal paravaginal repair); and open or laparoscopic abdominal surgery (e.g. paravaginal repair); and the use of mesh or grafts.

- Posterior vaginal wall prolapse: vaginal surgery (e.g. midline posterior vaginal wall repair, fascial repairs); the abdominal or laparoscopic approach to rectoceles; and the use of mesh or grafts.

- Evaluation of different types of sutures, mesh and grafts.

Other trials relating to pelvic organ prolapse should include comparisons with conservative treatment, including but not limited to, pelvic floor exercises, lifestyle changes and mechanical devices (pessaries).

The challenge in prolapse surgery is that while the prolapse itself may cause difficulties with bladder, bowel and sexual function, surgical correction may also affect these functions in unpredictable ways. Therefore, all trials need to include subjective, objective and patient determined outcomes, and the direct interaction with bladder, bowel and sexual function must be measured. The impact of interventions should also be assessed by utilising validated pelvic floor and quality of life questionnaires, morbidity and cost analysis. Ideally, long term outcomes should be reported at least at two and five years after surgery.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Benson 1996

Methods	Single centre RCT for uterine or vault prolapse Number table held by nonsurgical co-author Follow up A+B 2.5 years
Participants	101 randomised 13 withdrawals (10 did not want surgery, 3 in A wanted vaginal surgery) 88 analysed 8 lost to follow up Inclusion: cervix to or beyond hymen, vaginal vault inversion >50% length and anterior wall to or beyond introitus Exclusion: uterus >12 weeks, adnexal mass, short vagina, central cystocele, >2 abdominal surgeries, obesity, prior inflammatory bowel or pelvic disease
Interventions	A (40): abdominal group: sacral colpopexy (mesh not specified), paravaginal repair, Halban, posterior vaginal wall repair with colposuspension or sling for stress urinary incontinence, non standardised continence surgery B (48): vaginal group: bilateral sacrospinous colpopexy, vaginal paravaginal repair, McCall culdoplasty, needle suspension or sling; permanent sutures
Outcomes	Optimal: asymptomatic vaginal apex > levator plate: no vaginal tissue beyond the hymen A: 22/38, B: 12/42 Satisfactory: asymptomatic for prolapse and prolapse improved from preoperative: Symptomatic: prolapse apex descent >50% of its length or vaginal tissue beyond hymen Incontinence A: 10/38, B: 16/42 Dyspareunia A: 0/15, B: 15/26 Peri-operative outcome: Febrile: A 8% /38, B 4% /42 Hospital stay: A 5.4, B 5.1 days Incontinence: A 23% /38, B 44% /42 Cost: Hospital charge: A US$8048, B US$6537 Further prolapse surgery: A 6, B 14 Further continence surgery: A 1, B 5
Notes	After interim analysis study ceased early Satisfactory randomisation? 63% vaginal group underwent continence surgery as compared to 40% abdominal group: 21% slings vaginal group as compared to 5% abdominal group suggesting unequal randomisation Women with a cystocele to the introitus postoperatively were considered to have optimal outcome when this was also part of inclusion criteria Objective outcome not reported No stratification No blinding Standardised surgery, but continence surgery not standardised No intention to treat

Benson 1996 (*Continued*)

	No CONSORT statement No validated questionnaires No quality of life measures

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Brubaker 2006

Methods	RCT (computer-generated block stratification, sealed envelopes opened at time of surgery after anaesthetic was administered) Site: Multicentre study in USA Follow up: 3 months (data at 1 year for 231 women)
Participants	322 women UI outcomes at 3 months not available for: A, 10; B: 13 Inclusion: Stage 2 or more vault (70.1%) or uterine (29.9%) prolapse, none or rare SUI at baseline (but 19.2% had some SUI) Exclusion: Immobile urethrovesical junction, pregnancy, anticipated move away after surgery Groups comparable at baseline on age, race, ethnic group, marital status, education, parity, method of delivery
Interventions	A (157): abdominal sacrocolpopexy with Burch colposuspension B (165): abdominal sacrocolpopexy without Burch colposuspension (control group) Compliance: women treated according to randomised groups: A, 154/157; B, 164/165
Outcomes	No prolapse-specific outcomes reported SUI at 3 months: A, 35/147; B, 67/152. SUI at 1 year: A, 24/115; B, 46/116 OAB at 3 months: A, 50/153; B, 58/151. Urge at 1 year: A, 32/116; B, 42/120 Urge urinary incontinence at 3 months: A, 26/153; B, 35/151 Operation time (N, mean min, SD): A, 157, 190 (55); B, 165, 170 (60) Blood loss (N, mean ml, SD): A, 157, 265 (242); B, 165, 192 (125) Any adverse effects: A, 23/157; B, 24/165 Serious adverse effects: A, 7/157; B, 5/165
Notes	Study terminated after 322 women had been randomised because of significant differences in UI outcomes Results not reported separately according to whether concomitant hysterectomy performed Women remained in allocated groups for analysis (ITT) but analysis based on end-point data actually available

Risk of bias

Item	Authors' judgement	Description

Brubaker 2006 (*Continued*)

Allocation concealment?	Yes	A - Adequate

Bump 1996a

Methods	Dual centre RCT: needle suspension or plication of urethrovesical junction endopelvic fascia for cystocele and potential stress incontinence Computer generated randomisation, blocks of 4 to 6 Follow up A+B 2.9 years
Participants	32 women Withdrawal: 0 Inclusion: stage 3 or 4 anterior vaginal wall prolapse and bladder neck hypermobility Lost to follow up: 4
Interventions	A (14): Needle suspension according to Muzsnai with non-absorbable sutures B (15): Plication of urethrovesical junction endopelvic fascia according to Hurt with non-absorbable suture
Outcomes	Definition of cure: no stress urinary incontinence, no overactive bladder symptoms, no voiding dysfunction Postoperative urodynamic stress incontinence that was not present preoperatively: A 2/14, B 1/15 New overactive bladder symptoms: A 2/14, B 1/15 Describes site specific pelvic organ prolapse
Notes	No blinding No stratification No intention to treat No CONSORT Potential stress incontinence was identified in 20/29 preoperatively The definition of potential stress urinary incontinence included a positive barrier test or pressure transmission ratio of <90% for proximal 3/4 of the urethra Validated questionnaires

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Cervigni 2005

Methods	Single centre RCT (computer generated, concealment unclear): Prolene Soft vs Pelvicol for anterior vaginal wall prolapse Mean follow up: A 8.1, B 8.8 months

Cervigni 2005 (*Continued*)

Participants	82 enrolled: A 40, B 42) analysed: A 36 B 36 Inclusion: symptomatic cystocele stage II or more Exclusion: need for concomitant anti-incontinence procedures; previous pelvic floor surgery
Interventions	A (40): tension free cystocele repair and high levator myorrhaphy (not described in detail), Prolene soft overlay (non-absorbable mesh) B (42): as above with Pelvicol overlay (absorbable mesh) Concomitant surgery: vaginal hysterectomy (58%/77%)
Outcomes	Recurrent cystocele grade II or more (Baden-Walker): A 14/36, B 12/36 Subjective failure: A 3/36 B 1/36 Adverse effects: mesh erosion: A 3/36, B 1/36; postoperative pelvic or suprapubic pain: A 12/36, B 3/36 Total adverse effects: A 15/36, B 4/36 Total OAB: A 9/36, B 13/36 De novo OAB: A 1/19, B 2/18 De novo dyspareunia: A 31% 11/36, B 14% 5/36 Constipation: A 7/36, B 5/36 Voiding dysfunction: A 9/36, B 5/36 Urodynamic voiding dysfunction: A 3/36, B 3/36
Notes	Abstract and further information supplied by authors Not all women were symptomatic for prolapse though inclusion criteria state symptomatic cystocele according to symptoms table Conclusion on voiding function seems unfounded Statistical significance considered at p=0.001 is unusual If statistical significance is considered at 5%, de novo dyspareunia and constipation is significantly higher in the Prolene Soft group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Colombo 1996a

Methods	Single centre RCT (computer generated, unclear if allocation concealed) Cystopexy or cystopexy and pubourethral ligament plication for cystocele Follow up: A 2.6 years, B 2.9 years
Participants	107 randomised Lost to follow up: 4 , 1 died 102 analysed Inclusion: cystocele grade 2 or more Exclusion: positive stress test with or without prolapse reduced, overactive bladder symptoms, MUCP <30, previous incontinence surgery

Colombo 1996a (*Continued*)

Interventions	A (52): Cystopexy alone: interrupted non-absorbable sutures of fascia B (50): Cystopexy and pubourethral ligament plication according to Hurt with absorbable suture McCall culdoplasty and posterior repair in all women
Outcomes	Objective cure of cystocele less than grade 2: A: 50/52, B: 48/50 Reduction in voiding symptoms: Successful prevention stress urinary incontinence: A: 48/52, B 46/50 Dyspareunia: A 2/24, B 13/23 New postoperative overactive bladder symptoms Voiding dysfunction Days in hospital
Notes	No blinding No intention to treat Power calculation post hoc No CONSORT No validated symptom or QOL questionnaire Informed consent not required before randomisation Surgery standardised Who reviewed outcomes was unclear

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Colombo 1997

Methods	Single centre RCT (computer generated, allocation concealment unclear) Follow up: A 6.3 years, B 6.7 years
Participants	109 randomised 109 analysed for 5 years postoperatively 9 died 3-7 years postoperatively Inclusion: positive stress test with or without prolapse reduced, cystourethrocele > grade 2 Exclusion: negative stress test, overactive bladder symptoms, MUCP <30, previous incontinence surgery
Interventions	A (55): Cystopexy with interrupted non-absorbable sutures of fascia pubourethral ligament plication with absorbable sutures B (54): Pereyra with non-absorbable sutures McCall culdoplasty and posterior colporrhaphy in all women
Outcomes	Objective cure of cystocele less than grade 2: A 55/55, B 52/54 Subjective cure SUI: A 43/55, B 48/54 Objective cure SUI: A 24/55, B 37/54 Objective cure of occult SUI: A 20/40, B 25/43 New postoperative overactive bladder symptoms, voiding dysfunction, days in hospital

Colombo 1997 (*Continued*)

Notes	No blinding No intention to treat Power calculation performed post hoc No consort No validated symptom or quality of life measures Informed consent not required before randomisation Surgery standardised Who reviewed outcomes unclear

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Colombo 2000

Methods	Single centre RCT (computer generated open number list) Burch or anterior repair for pelvic organ prolapse and stress urinary incontinence PC-open list Follow up: A 14.2, B 13.9 years
Participants	71 randomised Lost to follow up: 3 (A 2, B 1) 68 analysed Inclusion: USI, cystocele >2 or 3, swab test >30% Exclusion: detrusor overactivity, previous pelvic floor surgery, high risk for abdominal operation
Interventions	A (35): Burch group: total abdominal hysterectomy and vault to uterosacral ligament, Moschcowitz, Burch with 3-4 Ethibond B (33): Anterior colporrhaphy: Vaginal hysterectomy, Pouch of Douglas obliteration and anchoring of vaginal cuff to uterosacral ligament, catgut plication
Outcomes	Definition of cure: no subjective stress urinary incontinence, or no positive stress test Objective cure cystocele: A 23/35, B 32/33 Subjective cure stress urinary incontinence: A 30/35, B 17/32 Objective cure stress urinary incontinence: A 26/35, B 14/32 Overactive bladder symptoms, voiding, dyspareunia Total vaginal length: A 7.9 cm, B 4.7 cm
Notes	No blinding No intention to treat No CONSORT No stratification No power calculation No validated symptom or QOL questionnaire Surgery standardised

Colombo 2000 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	No	C - Inadequate

Culligan 2005

Methods	Single centre RCT (computed generated, blocked, opaque envelopes, double blind) Fascia lata vs polypropylene mesh for sacrocolpopexy Follow up: 1 year
Participants	100 randomised Lost to follow up: 11 (A 2, B 9) Inclusion: post-hysterectomy vault prolapse Groups comparable at baseline on age, weight, height, parity, incontinence severity, POP-Q measurements, prolapse stage, previous prolapse or incontinence surgery (A 19/46, B 24/54) Randomised group compared with women who declined randomisation (101 women), no statistically significant differences found
Interventions	A (46): abdominal sacral colpopexy with cadaveric fascia lata graft (Tutoplast) attached with Goretex to anterior and posterior vaginal wall and to S1-S2, covered with peritoneum B (54): abdominal sacral colpopexy as above, using polypropylene mesh (Trelex) Concomitant surgery: TVT, paravaginal and rectocele repair; conditions not defined
Outcomes	Definition of failure: POP-Q stage 2 or greater at any site: A 14/44, B 4/45 Recurrent vault prolapse at point C: A 0/44, B 0/45 Blood loss N, mean ml (SD): A 46, 265 (261), B 54, 47 (148) Operating time N, mean min (SD): A 46, 233 (7), B 54, 227 (63) Ileus: A 0/46, B 2/54 Adverse effects: Fever: A 2/46, B 2/54; Wound breakdown: A 5/46, B 8/54; Graft erosion: A 0/46, B 2/54 Total adverse effects: A 7/46, B 12/54
Notes	4 women randomised to fascia (A) actually received mesh (B) and were analysed in the mesh group, therefore NOT true ITT. One single blinded examiner No ITT Only mean values of POPQ given for sites apart from point C No analysis of questionnaires, bladder, bowel and sexual function

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

De Ridder 2004

Methods	RCT (unclear randomisation and concealment) Pelvicol vs Vicryl for stage III cystocele repair Follow up: 25/26 months
Participants	134 included A 65, B 69 Inclusion: stage III cystocele
Interventions	A (65): Raz 4 defect cystocele repair reinforced with porcine dermis overlay (Pelvicol) B (69): as above, reinforced with Vicryl Concomitant surgery: vaginal hysterectomy and rectocele repair
Outcomes	Primary outcome: recurrence of cystocele stage II: A 6/63, B 19/62 (p=.002) Number having repeat prolapse surgery: A 3/63, B 9/62 No differences in questionnaires
Notes	Abstract, limited information though requested no subjective outcome, no analysis of bladder, bowel and sexual function

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Gandhi 2005

Methods	Single centre RCT (computer generated, opaque envelopes, adequate concealment) Anterior colporrhaphy with and without Fascia lata for primary or recurrent anterior vaginal wall prolapse
Participants	162 signed consent form 154 randomised A 76, B 78 Loss to follow up 2 in B but in results 78 and 77 analysed Inclusion: Anterior vaginal wall prolapse to hymen or beyond on straining; >18 years of age; willing to comply with return visits Concomitant surgery: vaginal hysterectomy in 49%/47%; sacrospinous fixation in 43%/42% (all cases with vaginal vault prolapse to midvagina or beyond); posterior repair in 99%/94%, Coopers' ligament sling in 67%/55%, midurethral sling 13%/10% Enterocele: A 75%, B 73% Baseline voiding dysfunction (slow stream): A 48/68, B 42/65
Interventions	A (76): "ultralateral" midline plication of anterior endopelvic connective tissue using Vicryl buttress sutures (as described by Weber 2001), plus additional cadaveric fascia lata patch (Tutoplast) anchored at the lateral limits of the colporrhaphy B (78) as above without allograft

Gandhi 2005 (*Continued*)

Outcomes	Definition of failure: recurrent stage II cystocele: A 16/76; B 23/78 Subjective failure (vaginal bulging): A 6/55, B 6/57 (note: the denominator is different to objective outcome) Postoperative voiding dysfunction: A 21/72, B 28/76 Persistent voiding dysfunction: A 19/53, B 22/52 De novo voiding dysfunction: A 3/19, B 6/24
Notes	Unclear patient numbers (disparity with loss to follow up) Questionnaires not used in all patients

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Jeng 2005

Methods	RCT (unclear randomisation and concealment) Total vaginal hysterectomy vs transvaginal sacrospinous uterine suspension Follow up: 6 months
Participants	158 women Dropouts: 0 Inclusion: Age <50 years; Grade 2-3 uterine or cervical prolapse; sexually active Exclusion: Previous anterior or posterior vaginal wall repair, or oophorectomy Groups comparable at baseline on age, parity, height, weight, partners' health status, sexual functioning
Interventions	A (80): transvaginal sacrospinous uterine suspension (without hysterectomy) B (78): total vaginal hysterectomy All operations done by one surgeon
Outcomes	Adverse effects: UTI: A, 1/80; B, 2/78 Buttock pain: A, 12/80; B, 0/78 Acute urinary retention: A, 0/80; B, 1/78 Dyspareunia after surgery: A, 4/80; B, 4/78 Vaginal dryness after surgery: A, 4/80; B, 4/78 Time to resumption of intercourse (mean weeks, range): A, 8 (4-16 weeks); B, 8 (5-16) Sexual functioning: no differences bewteen the groups after surgery (P>0.05)
Notes	No prolapse or incontinence outcomes reported (study was aimed at evaluation of sexual functioning)

Risk of bias

Item	Authors' judgement	Description

Jeng 2005 (*Continued*)

Allocation concealment?	Unclear	B - Unclear

Kahn 1999

Methods	Single centre RCT (number table randomisation, concealment unclear) Follow up: 25 months (8-37) A+B
Participants	63 randomised Withdrawal: 4 (A 2, B 2) Excluded: 2 (one no rectocele surgery because posterior vaginal wall cyst, one did not get the surgery performed) Inclusion: symptomatic rectocele or sense of impaired rectal emptying with >15% trapping on isotope defecography
Interventions	A (24): posterior colporrhaphy with levator plication, enterocele repair, hysterectomy, anterior repair as required B (33): transanal repair by single colorectal surgeon, circular muscle plicated longitudinally, permanent suture
Outcomes	Objective cure of recto/enterocele: A: 21/24, B: 23/33 Change in POP-Q (Ap or Bp) score: A: 1 stage, B: 0 Improved or cured obstructed defecation A: 12/20, B: 14/24 Need for vaginal digitation
Notes	No blinding No stratification No CONSORT Who reviewed outcomes unclear No validated symptom or QoL questionnaires

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Lo 1998

Methods	Single centre RCT (using random number tables) Follow up: 1 to 5.2 years (median 2.1)
Participants	138 randomised, 20 withdrew due to age or not willing to be followed up Inclusion: prolapse at least Grade III (ICS classification) Exclusion: urinary incontinence Past medical history: previous pelvic surgery A: 19, B: 22 Sexually active: A: 11, B: 18

Lo 1998 (*Continued*)

Interventions	A (52): abdominal sacral colpopexy with Mersiline mesh: + 7 posterior repair; + 12 posterior repair and abdominal hysterectomy; + 21 abdominal hysterectomy B (66): vaginal sacrospinous colpopexy with 1-0 nylon: + 20 anterior and posterior repair and vaginal hysterectomy; + 44 anterior and posterior repair Postoperatively, all women had oestrogen treatment
Outcomes	Success defined as ICS grade II or less Objective success rate (all prolapse): A: 49/52, B: 53/66 Operation time (min): A: 157 (SD 35), B: 141 (37) Blood loss (ml): A: 150 (137), B: 448 (258) Hospital stay (days): A: 7.24 (2.07), B: 8.77 (3.8) Prolonged catheter use: A: 0/52, B: 17/66 Postoperative UTI: A: 2/52, B: 4/66 Dyspareunia: A: 1/11, B: 11/18 (4 of the 11 severe) New urinary incontinence requiring later operation: A: 2/52, B: 1/66 Adverse effects requiring re-operation: A: 4/52, B: 7/66 Adverse effects A: 2 continence operations, 1 retroperitoneal infection and mesh removal, 1 ureteral injury Adverse effects B: 1 continence operation, 1 rectovaginal fistula, 2 vaginal vault strictures, 3 perineal infections
Notes	Groups stated to be comparable at baseline on age, parity, weight and previous pelvic surgery No blinding No CONSORT Who reviewed outcomes unclear No validated symptom or QoL questionnaires

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Maher 2004

Methods	RCT (stratified by SUI) Multicentre, multi-surgeon Computer generated randomisation held by nonsurgical co-author Follow up: A: 24 months, B: 22
Participants	95 women Withdrawals: 0 Lost to follow-up: 6 (A: 1, B: 5) Inclusion: Vault prolapse to introitus Exclusion: prior sacral colpopexy, unfit for general anaesthetic, foreshortened vagina
Interventions	A (46): abdominal group = sacral colpopexy prolene mesh, paravaginal repair, Moschcowitz, posterior vaginal repair and colposuspension for SUI B (43): vaginal group: R sided sacrospinous colpopexy, enterocele and anterior and post repair, colposus-

Maher 2004 (*Continued*)

	pension for SUI, PDS (slowly absorbable sutures) Both groups: colposuspension for occult or potential SUI
Outcomes	Subjective cure (no prolapse symptoms): A: 43/46, B: 39/43 Objective cure (site specific stage 2 or greater failure at any site) : A: 35/46: B: 29/42 Satisfied with surgery: A: 39/46, B: 35/43 Number of women sexually active: A: 19/42, B: 17/37 Dyspareunia: A: 6/19, B: 7/17 Dyspareunia (de novo): A: 2/19, B: 3/17 Preoperative SUI cured: A: 11/14, B: 13/15 De novo SUI postoperatively: A: 2/22, B: 8/24 Preoperative voiding dysfunction cured A 7/9: B 4/5 Peri-operative outcomes: Blood loss (ml): A: n=47, mean=362 (SD 239), B: 48, 306 (201) Operating time (minutes): A: 47, 106 (37), B: 48, 76 (42) Postoperative complications: A: 1 mesh infection requiring removal, 2 incisional hernia, B: 0 Further prolapse surgery: Further prolapse or continence surgery: A: 4/46, B: 5/43 Cost: (US dollars) A: 4515: B: 3202 Hospital stay (days): A: 47, 5.4 (2.2), B: 48, 4.8 (1.4) Time to return to normal activity: A: 47, 34 (12), B: 48, 25.7 (9.7)
Notes	No blinding Intention to treat Non surgeon follow up No CONSORT Validated symptom & QoL questionnaires

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Meschia 2004

Methods	RCT (sealed envelopes with numbers assigned from a computer-generated random number list) Comparing TVT and plication of urethrovesical junction endopelvic fascia in addition to prolapse repair Single centre (Milan, Italy) Follow up (median):A: 26 months (range 15 to 31 months), B: 24 (15 to 31)
Participants	50 women Inclusion: severe symptomatic genital prolapse and occult stress urinary incontinence Exclusion: age >70 years, BMI > 30, diabetes, previous pelvic or continence surgery, symptoms of SUI, detrusor overactivity, cotton-swab test > 30 degrees Age: mean 65 years (SD 8) Parity: 2.2 (0.8)

Meschia 2004 (*Continued*)

	BMI: 25 (3)
Interventions	A (25): prolapse repair and TVT (with Prolene tape) B (25): prolapse repair and urethrovesical plication (with 2-0 permanent-braided polyester sutures) All women also had vaginal hysterectomy, McCall culdoplasty and cystocele repair Cystocele (anterior repair) with 2-0 delayed absorbable sutures (polydioxanone) No sacrospinous ligament fixation performed Rectocele repair: A: 20/25, B: 23/25
Outcomes	Subjective prolapse symptoms, failure rate: A: 4/25, B: 8/25 Objective failure (overall): A: 8/25, B: 7/25 Objective failure (anterior): A: 6/25, B: 7/25 Objective failure (posterior): A: 3/25, B: 3/25 Objective failure (apex): A: 0/25, B: 3/25 Further prolapse surgery: offered to 2 women but groups not specified Further continence surgery: A: 0/25, B: 3/25 SUI subjective: A: 1/25, B: 9/25 SUI objective: A: 2/25, B: 11/25 OAB de novo (new): A: 3/25, B: 1/25 Voiding dysfunction and recurrent UTIs: A: 3/25, B: 1/25 Adverse effects: A: 2 (bladder perforation, retropubic haematoma), B: 0 Peri-operative outcomes Operation time (minutes): A: 131 (SD 13), B: 112 (21) Blood loss (ml): 188 (77), B: 177 (102) Hb change: A: 1.8 (1.6), B: 1 (1.2) Days in hospital: A: 6.4 (1.5), B: 6.1 (1.5) Time to spontaneous voiding (days): A: 4.4 (1.7), B: 3.8 (2)
Notes	Power calculation provided Groups comparable at baseline

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Meschia 2004a

Methods	RCT (computer generated number table, opaque envelopes) on posterior IVS and sacrospinous fixation for vault prolapse Median follow up: A 19, B 17 months
Participants	66 randomised A 33, B 33 No withdrawals or losses to follow up Inclusion: vault (vaginal cuff) prolapse ICS stage II or more Baseline stress urinary incontinence: A 11/33, B 7/33

Meschia 2004a (*Continued*)

	Baseline overactive bladder: A 14/33, B 11/33 Baseline voiding dysfunction: A 19/33, B 18/33 Women in Group A were significantly younger than in group B (63 years vs 68 yrs, P<0.05)
Interventions	A (33): infracoccygeal sacropexy (posterior IVS) B (33): sacrospinous ligament fixation (vaginal sacrospinous colpopexy) Concomitant surgery: anterior (A 64% B 66%) and posterior (70%, 88%) repair, high closure of pouch of Douglas if indicated (36%, 42%)
Outcomes	Primary outcome: recurrence of prolapse at any site (data not provided) Subjective prolapse sensation: A 3/33, B 2/33 VAS prolapse sensation (0-10) N, mean (SD): A 33, 2.4 (3.3), B 33, 1.8 (2.1) Vault prolapse at ICS point C stage II: A 1/33, B 0/33 Anterior vaginal wall prolapse stage II or more: A 9/33, B 11/33 Posterior vaginal wall prolapse stage II or more: A 4/33, B 6/33 Operative time mean min, (SD): A 58 (17), B 69 (17) Blood loss mean ml (SD): A 56 (35), B 126 (21) Days in hospital mean (SD): A 3 (1.1), B 4 (1.7) Complications: Pararectal abscess A: 1/33, B 0/33; Vaginal vault erosion: A 3/33, B 0/33; Buttock pain: A 0/33, B 4/33 Postoperative voiding dysfunction: A 6/33, B 8/33 Stress urinary incontinence: A 5/33, B 5/33 Overactive bladder: A 9/33, B 10/33 Dyspareunia: A 0/33, B 1/33 Constipation: A 3/33, B 2/33 Faecal incontinence: A 1/33, B 1/33
Notes	Abstract and further data from authors No stratification No consort statement No intention to treat No power analysis No validated QoL or pelvic floor questionnaires

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Meschia 2007

Methods	Multicentre RCT (Computer generated) on primary surgery anterior vaginal wall prolapse Allocation concealed 14 month mean review
Participants	206 randomized Lost to follow up 5: A 2 B 3

Meschia 2007 (*Continued*)

	Inclusion: primary anterior prolapse POP-Q Point Ba -1 Exclusion: none Baseline stress urinary incontinence: A 22/100, B 18/106 Baseline overactive bladder: A 44/100, B 35/106 Baseline sexually active: A 65/100, B 74/106; with dyspareunia: A 12/65, B 11/74
Interventions	A (100) interrupted fascial plication Vicryl 00 WITH pelvicol overlay fixed with PDS suburethrally and uterosacral cardinal ligament distally B (106): surgery as above WITHOUT pelvicol overlay Concomitant surgery standardised Vaginal hysterectomy McCall culdoplasty, posterior compartment defect fascial plication
Outcomes	Objective (POPQ point Ba -1): A 7/98 (7%) B 20/103 p=0.0019, OR 3.13 CI 1.26-1.78 Subjective symptoms of prolapse: A 9/98 (9%) B 13/103 (13%) VAS prolapse severity: (SD): A 1.5 (1.7), B 1.5 (1.6) Adverse effects: mesh removal A 1/103, B 0/98; haematoma: A 3/98, B 0/98 Length of stay, mean days (SD): A 4.4 (1.5), B 4.7 (1.3) Blood loss ml (SD): A 151 (112), B 167 (96) Time to voiding mean days (SD): A 3 (3.2), B 3.5 (3) Voiding dysfunction: A 15/98 (15%), B 16/103 (15%) Overactive bladder: A 15/98 (15%), B 18/103 (17%) Stress urinary incontinence: A 10/98 (10%), B 14/103 (13%) Sexually active: A 47, B 48 Dyspareunia: A 7/47 (15%), B 5/48 (10%)
Notes	Number of patients approached or declined unclear No consort

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Nieminen 2004

Methods	Single centre RCT (nurse took card from envelope with 15 vaginal and 15 transanal cards) Follow up: A 12 months, B 12 months
Participants	30 women Inclusion: symptomatic rectoceles Exclusion: any other prolapse or compromised anal sphincter function 42 eligible women participated 12 excluded due to compromised anal sphincter function 30 analysed No loss to follow up

Nieminen 2004 (*Continued*)

Interventions	A (15): midline rectovaginal fascia plication Vicryl repair B (15): transanal repair performed by 2 colorectal surgeons Vertical & horizontal Vicryl sutures, enterocele repaired
Outcomes	Improvement symptoms A: 14/15: B 11/15 (P=0.08) Postoperative mean reduction Ap A 2.7: B 1.3 (P=0.01) Depth rectocele defecography Recurrent posterior wall prolapse (rectocele or enterocele): A 1/15, B 10/15 (P=0.01) Continuing need to digitally assist rectal emptying postoperatively A: 1/11, B 4/10 Sexually active: A 12/15, B 11/15 Dyspareunia: A 4/12, B 2/11 Incontinence to flatus: A 4/15, B 3/15 Incontinence to faeces: A 0/15, B 0/15 Peri-operative outcomes: Operating time: A 35 minutes: B 35 minutes Blood loss ml: A 120, B 60 Discharged from hospital in 48 hours: A 13/15: B 11/15
Notes	Full text as yet unpublished ICS abstract No intention to treat No CONSORT

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Paraiso 2006

Methods	Single centre RCT (computer-generated randomisation by sealed envelopes with blinded research nurse) 106 randomised to posterior colporrhaphy (37), site-specific repair (37), site specific repair augmented with porcine small intestine submucosa (32: Fortagen, Organogenesis) study funded unrestricted research grant Organogenesis
Participants	106 women Inclusion: grade II or greater posterior vaginal wall prolapse with or without other prolapse or incontinence or gyneacological procedures Exclusion: concommitant colorectal procedures, allergy to pork
Interventions	A (37): posterior colporrhaphy as per Maher 2-0 ethibond B (37): site specific repair Cundiff 2-0 ethibind C (32): as in B with 4x8 cm porcine small intestine submucosa graft inlay (Fortagen)
Outcomes	Objective failure (Bp greater or equal to -2 at 1 year): A: 4/28, B: 6/27, C: 12/26 Subjective (functional) failure (worsening prolapse or colorectal symptoms at 1 year): A: 5/31, B: 4/29, C: 6/28

Paraiso 2006 (*Continued*)

	Operating time mean mins (SD): A: 150 (68), B: 151 (69), C: 169 (62) Estimated blood loss mean (range): A: 150 (50-950), B: 150 (50- 600), C: 200 (50-3500) Length hospital stay median days (range): A: 2 (1-19), B: 2 (1-6), C: 2 (1-6) Intraoperative complications: A: 1/37 (3%), B: 2/37 (5%), C: 2/31 (6%) Postoperative complications: A: 21/37, B: 14/37, C: 16/31 Reoperation for prolapse at 1 year: A: 1/33, B: 2/37, C: 3/29 Dyspareunia: A: 9/20, B: 6/22, C: 3/19 No differences between groups in condition-related quality of life outcomes (PFDI-20, PFIQ-7, PISQ-12)
Notes	Ongoing study: intial full text review after 1 year Intention to treat basis Consort statement Independent nurse review Limited sample size

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Roovers 2004

Methods	RCT (computer- generated random number table, allocation concealed) comparing abdominal and vaginal surgery for uterine prolapse Follow up: A 12, B 12 months
Participants	82 women Inclusion: uterine prolapse stage 2-4 on POP-Q Exclusion: adnexal mass, 2 or more abdominal surgeries, body mass index >35, prior inflammatory bowel or pelvic disease 124 offered participation 3 excluded 39 refused to participate 2 withdrew from abdominal group as wanted vaginal surgery 82 analysed 8 lost to follow up (A 6, B 2)
Interventions	A (41): Abdominal: sacrocolpopexy with preservation uterus colposuspension for SUI B (41): Vaginal: vaginal hysterectomy with vaginal repair and uterosacral ligament plication: bladder neck needle suspension for SUI
Outcomes	Reoperation performed or planned: A 9/41, B 1/41 Urogenital distress inventory: no significant mean differences between A and B in domain score for genital prolapse (mean difference 4.1, 95% CI -5.4 to 13.6) Scores on the UDI for:

	discomfort/pain domain (mean difference 7.1, 95% CI 1.1 to 13.2), overactive bladder domain (mean difference 8.7, 95% CI 0.5 to 16.9), obstructed micturition domain (mean difference 10.3, 95% CI 0.6 to 20.1) were significantly higher in A than in B Peri-operative outcomes: Operating time: A 97 (SD 3.6) min, B 107 (SD 4.7) min Blood loss: A 244 (51.5) ml, B 248 (34.1) ml Days in hospital: A 7.7 (0.2) B 7.6 (0.3)
Notes	RCT compared vaginal hysterectomy in vaginal group with uterine preservation in abdominal group No blinding No stratification Intention to treat According to CONSORT Non surgeon review Validated questionnaire: UDI No sexual and bowel function outcomes

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Sand 2001

Methods	Single centre RCT (computer generated number table) Vaginal repair with or without Vicryl mesh overlay for cystocele and rectocele Follow up: A 12, B 12 months
Participants	143 women Inclusion: cystocele to or beyond hymenal ring on standing Exclusion: less than 18 years of age, pregnancy, contemplating pregnancy within one year, paravaginal defect only, anterior enterocele 161 randomised 1 excluded (anterior enterocele) 17 lost to follow up
Interventions	A (70): No mesh: Vicryl plication of anterior endopelvic fascia B (73): Mesh: as above with Vicryl mesh folded underneath trigone and cuff and secured Vicryl to fascia: also added to posterior wall if posterior repair performed Posterior repair performed: A: 67/70, B: 65/73
Outcomes	Cure: POP-Q less than grade 2 Objective cure of cystocele: A 40/70, B 55/73 (P=0.02) Objective failure for rectocele: A 7/67, B 6/65 Mesh erosion: A, 0/70 (not applicable); B, 0/73

Sand 2001 (*Continued*)

Notes	No subjective success No urinary, bowel or sexual function data No peri-operative data No intention to treat analysis No CONSORT No blinding Standardised concomitant surgery Review by surgeon

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Weber 2001

Methods	RCT (computer- generated random number tables. Sealed envelopes concealed assignment) comparing 3 surgical techniques 3 arms, 1 centre Length of follow up: A+B+C, 23.3 months
Participants	83 women Inclusion: all women undergoing cystocele repair Exclusion: continence surgery i.e. colposuspension or sling 114 randomised 5 withdrawals 26 lost to follow up (A 2:B 15: C 9:) leaving 83 in trial
Interventions	A (33): anterior repair: midline plication without tension 0 PDS B (24): ultralateral: dissection to pubic rami laterally, plication paravaginal with tension 0 PDS interrupted C: (26) anterior repair plus mesh: standard plication midline Vicryl mesh overlay, Vicryl sutures
Outcomes	Objective Aa & Ba less than or at 1 cm from introitus: A 10/33, B 11/24, C 11/26 Remaining data reported related to 83 women as a whole and did not differentiate between groups
Notes	Number and level of surgeons unknown Adequate power Non-standardised concomitant surgery Intention to treat yes No CONSORT No stratification Significant disparity in total numbers in Table 1 and actual numbers with prolapse reported Except for point Aa POP-Q, no individual outcome data reported in the 3 groups

Risk of bias

Weber 2001 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

BMI = Body Mass Index
Hb = Haemoglobin
ICS = International Continence Society
IVS = intravaginal slingplasty
MUCP = Maximum urethral catheter pressure
OAB = Overactive bladder
PDS = Absorbable Polydioxanone Surgical Suture (PDS)
PFDI = Pelvic Floor Distress Inventory
PFIQ = Pelvic Floor Impact Questionnaire
PISQ = Pelvic organ prolapse / urinary Incontinence Sexual Questionnaire
POP = Pelvic organ prolapse
POP-Q = Pelvic organ prolapse quantification (according to ICS)
QoL = Quality of Life
RCT = Randomised controlled trial
SUI = Stress Urinary Incontinence (symptom diagnosis)
TVT = Tension-free vaginal tape
UDI = Urogenital Distress Inventory
UI = Urinary Incontinence
UTI = Urinary tract infection
VAS = visual analogue scale

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Aka 2004	Unclear study design (participants having a hysterectomy are divided into 2 groups; not all participants had prolapse). Outcome was markers of tissue trauma (acute phase reactants)
Bergman 1989	RCT on anterior colporrhaphy, Pereyra or Burch colposuspension, no data on pelvic organ prolapse given
Boccasanta 2004	RCT on two transanal stapled techniques for outlet obstruction. Outlet obstruction caused not only by rectoceles but also by descending perineum and intussusception. Prolapse data not explicitly presented
Choe 2000	RCT on mesh versus vaginal wall sling for stress incontinence. Not all women had pelvic organ prolapse before the operation
Colombo 1996b	RCT on Burch colposuspension and paravaginal defect repair for stress incontinence, no report on treatment of associated anterior vaginal wall prolapse
Cruikshank 1999	RCT on three operations for prevention of enterocele. Study does not include treatment of prolapse

(*Continued)*

Das 2004	RCT on posterior intravaginal sling versus sacrospinous ligament fixation. Poster abstract only, very limited data, no results presented
Debodinance 1993	Comparison of two different procedures for stress incontinence and prolapse but no results on pelvic organ prolapse are reported postoperatively
Di Palumbo 2003	RCT non-balanced on stress urinary incontinence and urethrocystocele grade 3-4 (Baden-Walker). Very limited prolapse data supplied (mean grading rather than numbers and percentages, failure rates not presented). No clear definition of success or failure
Guvenal 2002	Unclear study design (participants divided into 3 groups): vaginal hysterectomy + sacrospinous fixation; abdominal hysterectomy and sacrocolpopexy; vaginal hysterectomy alone
Kwon 2002	Poster presentation at ICS 2002. Preliminary data, subgroup of an ongoing RCT on additional transvaginal sling for prevention of recurrent anterior vaginal wall prolapse
Mattos 2004	Unclear study design (participants divided into 2 groups): following vaginal hysterectomy, the vault was repaired with (a), Richter's technique or (b) titanium staples to sacrospinous tendon
Rane 2004	RCT of 3 different operations (vaginal sacrospinous fixation SSF, posterior intravaginal slingplasty IVS, sacrocolpopexy SCP (abdominal or laparoscopic)) but presented MRI findings of anatomical results only. SSF said to increase anatomical distortion relative to the other 2 operations

RCT = Randomised Controlled Trial
ICS = International Continence Society

Characteristics of ongoing studies *[ordered by study ID]*

Allahdin 2007

Trial name or title	IMPRESS (Insertion of mesh or sutures for prolapse surgery success)
Methods	
Participants	66 women undergoing primary or secondary anterior and/or posterior prolapse surgery
Interventions	2x2 factorial RCT Vicryl mesh versus no mesh PDS suture vs Vicryl suture for women having anterior and/or posterior repair
Outcomes	Subjective and objective prolapse outcomes, urinary, bowel and sexual function, surgical outcomes, complications
Starting date	May 2005 - August 2005

Allahdin 2007 (*Continued*)

Contact information	Dr Sabeena Allahdin, Aberdeen Royal Infirmary
Notes	Recruitment completed, analysis ongoing

Freeman 2007

Trial name or title	LAS: Sacrocolpopexy for vault prolapse trial
Methods	
Participants	Women with post-hysterectomy vault prolapse
Interventions	Abdominal versus laparoscopic sacrocolpopexy
Outcomes	Objective assessment of prolapse (change in POP-Q score) Subjective global impression of improvement (PGI). Ten secondary outcomes including QOL measures and surgical details
Starting date	March 2006 - September 2007
Contact information	Dr Bob Freeman, Derriford Hospital, Plymouth
Notes	Pilot study Funding from local research grant 20 women recruited (aim 30)

Tincello 2004

Trial name or title	TVT and Colposuspension
Methods	
Participants	Women with urodynamic stress incontinence and anterior vaginal wall prolapse of at least Stage 2 on POPQ
Interventions	TVT or Colposuspension with anterior repair
Outcomes	3 day urinary diary, 24 hour pad test, King's Health questionnaire, POPQ assessment Follow up at 3 and 12 months
Starting date	2004
Contact information	
Notes	

Verleyen 2004

Trial name or title	Porcine dermis versus Vicryl plug in Raz cystocele repair
Methods	
Participants	79 women (76 with concomitant prolapse)
Interventions	RCT, porcine dermis versus Vicryl
Outcomes	UDI, IIQ, urinary urgency, recurrent cystocele
Starting date	2003?
Contact information	Dr P Verleyen, University Hospitals, Gassthuisberg
Notes	Abstract of ongoing study reported ICS/IUGA Paris 2004

TVT = tension-free vaginal tape

DATA AND ANALYSES

Comparison 1. Surgery for upper vaginal (vault/uterine) prolapse

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of women with prolapse symptoms (subjective failure)	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	169	Risk Ratio (M-H, Fixed, 95% CI)	0.53 [0.25, 1.09]
1.2 abdominal sacrohysteropexy with Gore-Tex vs vaginal hysterectomy, vaginal repair, uterosacral ligament plicati	1	82	Risk Ratio (M-H, Fixed, 95% CI)	3.2 [1.29, 7.92]
1.3 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Risk Ratio (M-H, Fixed, 95% CI)	0.67 [0.12, 3.73]
2 Number of women with any prolapse (objective failure)	3		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
2.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy (failed)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2.2 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy (not improved)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2.4 cadaveric fascia lata (Tutoplast) vs polypropylene (Trelex)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
3 Number of women with recurrent vault prolapse (objective)	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	169	Risk Ratio (M-H, Fixed, 95% CI)	0.23 [0.07, 0.77]
3.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Risk Ratio (M-H, Fixed, 95% CI)	0.33 [0.01, 7.90]
3.3 cadavaric fascia lata (Tutoplast) vs polyprolylene (Trelex)	1	89	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4 Number of women unsatisfied with surgery	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
4.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

5 Number of women with post-operative stress urinary incontinence	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
5.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	155	Risk Ratio (M-H, Fixed, 95% CI)	0.55 [0.32, 0.95]
5.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Risk Ratio (M-H, Fixed, 95% CI)	1.0 [0.32, 3.13]
5.3 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1	299	Risk Ratio (M-H, Fixed, 95% CI)	1.85 [1.32, 2.60]
6 Number of women with urgency, detrusor overactivity or overactive bladder	3		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
6.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6.3 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
7 Number of women with de novo (new) urgency, detrusor overactivity or overactive bladder	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
7.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
7.2 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
8 Number of women with persistent voiding dysfunction	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
8.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9 Number of women with new voiding dysfunction	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
9.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
10 Number of women with constipation	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected

10.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
10.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
11 Number of women with faecal incontinence	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
11.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
11.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
12 Number of women with obstructed defecation	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
12.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
13 Postoperative dyspareunia	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
13.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	3	106	Risk Ratio (M-H, Fixed, 95% CI)	0.39 [0.18, 0.86]
13.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Risk Ratio (M-H, Fixed, 95% CI)	3.0 [0.13, 71.07]
13.3 vaginal sacrospinous uterine suspension vs vaginal hysterectomy	1	158	Risk Ratio (M-H, Fixed, 95% CI)	0.98 [0.25, 3.76]
14 Women with de novo (new) postoperative dyspareunia	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
14.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
15 Blood loss (ml)	6		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
15.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	213	Mean Difference (IV, Fixed, 95% CI)	-156.52 [-212.71, -100.32]
15.2 abdominal sacrohysteropexy with Gore-Tex vs vaginal hysterectomy, vaginal repair, uterosacral ligament plicati	1	82	Mean Difference (IV, Fixed, 95% CI)	-4.0 [-22.91, 14.91]
15.3 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Mean Difference (IV, Fixed, 95% CI)	70.0 [56.07, 83.93]
15.4 cadaveric fascia lata (Tutoplast) vs polypropylene (Trelex)	1	100	Mean Difference (IV, Fixed, 95% CI)	218.0 [132.87, 303.13]

15.5 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1	322	Mean Difference (IV, Fixed, 95% CI)	-73.0 [-115.39, -30.61]
16 Postoperative decrease in Hb (gm/dl)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
16.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
17 Operating time (minutes)	7		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
17.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	3	293	Mean Difference (IV, Fixed, 95% CI)	21.04 [12.15, 29.94]
17.2 abdominal sacrohysteropexy with Gore-Tex vs vaginal hysterectomy, vaginal repair, uterosacral ligament plicati	1	82	Mean Difference (IV, Fixed, 95% CI)	-10.0 [-11.81, -8.19]
17.3 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Mean Difference (IV, Fixed, 95% CI)	11.0 [2.80, 19.20]
17.4 cadaveric fascia lata (Tutoplast) vs polypropylene (Trelex)	1	100	Mean Difference (IV, Fixed, 95% CI)	6.0 [-10.92, 22.92]
17.5 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1	322	Mean Difference (IV, Fixed, 95% CI)	-20.0 [-32.56, -7.44]
18 Length of stay in hospital (days)	5		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
18.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	3	293	Mean Difference (IV, Fixed, 95% CI)	0.14 [-0.25, 0.53]
18.2 abdominal sacrohysteropexy with Gore-Tex vs vaginal hysterectomy, vaginal repair, uterosacral ligament plicati	1	82	Mean Difference (IV, Fixed, 95% CI)	0.10 [-0.01, 0.21]
18.3 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Mean Difference (IV, Fixed, 95% CI)	1.0 [0.31, 1.69]
19 Time to return to normal activity (days)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
19.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
20 Cost (US dollars)	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
20.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	169	Mean Difference (IV, Fixed, 95% CI)	1333.95 [1027.24, 1640.65]
21 Women having further prolapse surgery	3		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only

21.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	169	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.19, 1.11]
21.2 abdominal sacrohysteropexy with Gore-Tex vs vaginal hysterectomy, vaginal repair, uterosacral ligament plicati	1	82	Risk Ratio (M-H, Fixed, 95% CI)	9.0 [1.19, 67.85]
22 Women having further continence surgery	3		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
22.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	3	287	Risk Ratio (M-H, Fixed, 95% CI)	0.60 [0.21, 1.73]
23 Women having further prolapse or continence surgery	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
23.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	169	Risk Ratio (M-H, Fixed, 95% CI)	0.47 [0.23, 0.97]
24 Time to recurrence of prolapse (months)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
24.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
25 Adverse effects	8		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
25.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	3	287	Risk Ratio (M-H, Fixed, 95% CI)	1.30 [0.63, 2.69]
25.2 abdominal sacrohysteropexy with Gore-Tex vs vaginal hysterectomy, vaginal repair, uterosacral ligament plicati	1	82	Risk Ratio (M-H, Fixed, 95% CI)	1.2 [0.40, 3.62]
25.3 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1	66	Risk Ratio (M-H, Fixed, 95% CI)	1.0 [0.27, 3.67]
25.4 cadaveric fascia lata (tutoplast) vs polypropylene (Trelex)	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.68 [0.29, 1.59]
25.5 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1	322	Risk Ratio (M-H, Fixed, 95% CI)	0.99 [0.59, 1.68]
25.6 vaginal sacrospinous uterine suspension vs vaginal hysterectomy	1	158	Risk Ratio (M-H, Fixed, 95% CI)	4.23 [1.25, 14.25]
26 Number of women with recurrent rectocele (objective)	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
26.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

26.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
27 Number of women with recurrent cystocele (objective)	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
27.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
27.2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
28 Postoperative voiding dysfunction symptoms	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
28.1 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

Comparison 2. One method of anterior prolapse repair versus another surgical method

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of women with prolapse symptoms (subjective failure)	6		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
1.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.2 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.5 Prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2 Number of women with prolapse (objective failure)	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1	68	Risk Ratio (M-H, Fixed, 95% CI)	0.06 [0.01, 0.39]
2.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	138	Risk Ratio (M-H, Fixed, 95% CI)	0.66 [0.34, 1.27]

2.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	0.88 [0.37, 2.05]
3 Number of women with anterior prolapse / cystocele (objective failure)	11		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.2 traditional anterior colporraphy vs ultralateral anterior colporraphy	1	57	Risk Ratio (M-H, Fixed, 95% CI)	1.29 [0.84, 1.98]
3.3 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	2	202	Risk Ratio (M-H, Fixed, 95% CI)	1.48 [1.07, 2.04]
3.4 ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1	50	Risk Ratio (M-H, Fixed, 95% CI)	0.94 [0.57, 1.54]
3.5 traditional anterior colporraphy vs abdominal Burch colposuspension	1	68	Risk Ratio (M-H, Fixed, 95% CI)	0.09 [0.01, 0.64]
3.6 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	138	Risk Ratio (M-H, Fixed, 95% CI)	0.55 [0.23, 1.29]
3.7 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.14, 6.57]
3.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	1.17 [0.46, 2.98]
3.9 fascial plication vs fascial plication with Pelvicol overlay	1	201	Risk Ratio (M-H, Fixed, 95% CI)	2.72 [1.20, 6.14]
3.10 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1	154	Risk Ratio (M-H, Fixed, 95% CI)	1.40 [0.80, 2.44]
3.11 Vicryl vs Pelvicol	1	125	Risk Ratio (M-H, Fixed, 95% CI)	3.22 [1.38, 7.52]
3.12 Prolene soft vs Pelvicol	1	72	Risk Ratio (M-H, Fixed, 95% CI)	1.17 [0.63, 2.16]
4 Number of women with posterior prolapse / rectocele (objective failure)	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
4.1 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
5 Postoperative voiding dysfunction symptoms	3		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
5.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
5.2 prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

5.3 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6 Number of women with postoperative stress urinary incontinence	3		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
6.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
7 Number of women with de novo (new) stress urinary incontinence	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
7.3 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.25, 3.64]
7.5 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	102	Risk Ratio (M-H, Fixed, 95% CI)	2.62 [0.63, 10.91]
7.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	9.0 [1.23, 65.85]
8 Number of women with urgency, detrusor overactivity or overactive bladder	7		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
8.1 fascial plication vs fascial plication with Pelvicol overlay	1	201	Risk Ratio (M-H, Fixed, 95% CI)	1.14 [0.61, 2.14]
8.2 Prolene soft vs Pelvicol	1	72	Risk Ratio (M-H, Fixed, 95% CI)	0.69 [0.34, 1.41]
8.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1	68	Risk Ratio (M-H, Fixed, 95% CI)	1.06 [0.07, 16.27]
8.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	138	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.20, 4.49]
8.5 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.06, 14.96]
8.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	0.33 [0.04, 2.99]
9 Number of women with dyspareunia	4		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
9.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9.2 Prolene Soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

9.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9.4 cystopexy vs cystopexy + pubourethral ligament plication	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
10 Operating time (minutes)	1	Mean Difference (IV, Fixed, 95% CI)	Totals not selected
10.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
11 Blood loss (ml)	2	Mean Difference (IV, Fixed, 95% CI)	Totals not selected
11.1 fascial plication vs fascial plication with Pelvicol overlay	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
11.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
12 Haemoglobin change	1	Mean Difference (IV, Fixed, 95% CI)	Totals not selected
12.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
13 Time to return to spontaneous voiding (days)	2	Mean Difference (IV, Fixed, 95% CI)	Totals not selected
13.1 fascial plication vs fascial plication with Pelvicol overlay	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
13.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
14 Number of women with postoperative complications	8	Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
14.1 fascial plication vs fascial plication with Pelvicol overlay	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.2 traditional anterior colporraphy vs ultralateral anterior colporraphy	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.3 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	2	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.4 ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.5 traditional anterior colporraphy vs abdominal Burch colposuspension	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.6 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

14.7 cystopexy vs cystopexy + pubourethral ligament plication	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
14.9 Prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
15 Length of stay in hospital (days)	4		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
15.1 fascial plication vs fascial plication with Pelvicol overlay	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
15.3 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
15.4 cystopexy vs cystopexy + pubourethral ligament plication	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
15.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
18 Number of women having further prolapse surgery	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
18.1 Vicryl vs Pelvicol	1	125	Risk Ratio (M-H, Fixed, 95% CI)	3.05 [0.87, 10.73]
18.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1	68	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
18.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	138	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.06, 2.71]
18.5 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
19 Number of women having further surgery for incontinence	4		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
19.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
19.4 cystopexy vs cystopexy + pubourethral ligament plication	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
19.5 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
19.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
20 Persistent voiding dysfunction	6		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
20.1 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1	105	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.73, 1.91]

20.3 traditional anterior colporraphy vs abdominal Burch colposuspension	1	68	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
20.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	138	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.49, 2.26]
20.5 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	0.09 [0.00, 1.54]
20.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	0.33 [0.04, 2.99]
21 Number of women with worse bowel function / constipation	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
21.1 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
21.2 Prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
22 Urodynamic voiding dysfunction	1		Odds Ratio (M-H, Fixed, 95% CI)	Totals not selected
22.1 Prolene soft vs pelvicol	1		Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
23 Death	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
23.1 traditional anterior colporraphy vs ultralateral anterior colporraphy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
23.2 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
23.3 ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
24 De novo overactive bladder symptoms	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
24.1 Prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
26 VAS for severity of prolapse symptoms (repair for anterior vaginal prolapse)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
26.1 fascial plication vs Pelvicol overlay	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable

Comparison 3. One method of posterior prolapse repair versus another surgical method

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of women with prolapse symptoms (subjective failure)	3		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 posterior vaginal colporrhaphy vs transanal repair	2	87	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.13, 1.00]
1.2 posterior vaginal colporrhaphy vs site specific repair	1	60	Risk Ratio (M-H, Fixed, 95% CI)	1.17 [0.35, 3.93]
1.3 posterior vaginal colporrhaphy vs site specific repair with porcine small intestine graft inlay	1	59	Risk Ratio (M-H, Fixed, 95% CI)	0.75 [0.26, 2.20]
2 Number of women with prolapse (objective failure)	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 posterior vaginal colporrhaphy vs transanal repair (rectocele)	2	87	Risk Ratio (M-H, Fixed, 95% CI)	0.32 [0.07, 1.34]
2.2 posterior vaginal colporrhaphy vs transanal repair (enterocele)	2	87	Risk Ratio (M-H, Fixed, 95% CI)	0.23 [0.07, 0.83]
2.3 posterior vaginal colporrhaphy vs transanal repair (rectocele or enterocele))	2	87	Risk Ratio (M-H, Fixed, 95% CI)	0.24 [0.09, 0.64]
2.4 posterior vaginal colporraphy vs posterior colporraphy with mesh reinforcement for rectocele	1	132	Risk Ratio (M-H, Fixed, 95% CI)	1.13 [0.40, 3.19]
2.5 posterior vaginal colporrhaphy vs site specific repair	1	55	Risk Ratio (M-H, Fixed, 95% CI)	0.64 [0.20, 2.03]
2.6 posterior vaginal colporrhaphy vs site specific repair with porcine small intestine graft inlay	1	54	Risk Ratio (M-H, Fixed, 95% CI)	0.31 [0.11, 0.84]
3 Change in hamatocrit	1	142	Mean Difference (IV, Fixed, 95% CI)	-0.48 [-1.64, 0.68]
3.1 Sub-category	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
3.2 posterior colorraphy versus site specific repair	1	74	Mean Difference (IV, Fixed, 95% CI)	Not estimable
3.3 posterior colporrhaphy versus site specific with porcine small intestine submocosa graft	1	68	Mean Difference (IV, Fixed, 95% CI)	-1.0 [-2.67, 0.67]
4 Number of women with faecal incontinence after operation	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
4.1 posterior vaginal colporrhaphy vs transanal repair	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

5 Number of women with anal incontinence to flatus after operation	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
5.1 posterior vaginal colporrhaphy vs transanal repair	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6 Number of women with obstructed defecation / constipation after surgery	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
6.1 posterior vaginal colporrhaphy vs transanal repair	2	65	Risk Ratio (M-H, Fixed, 95% CI)	0.73 [0.37, 1.42]
7 Number of women with sexual function not improved after operation	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
7.1 posterior vaginal colporrhaphy vs transanal repair	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
8 Number of women with dyspareunia	3		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
8.1 posterior vaginal colporrhaphy vs transanal repair	2	80	Risk Ratio (M-H, Fixed, 95% CI)	3.13 [0.87, 11.23]
8.2 Posterior colporrhaphy versus site specific repair	1	42	Risk Ratio (M-H, Fixed, 95% CI)	1.65 [0.71, 3.81]
8.3 posterior colporrhaphy vs site specific augmented with porcine small intestine submucosa graft	1	39	Risk Ratio (M-H, Fixed, 95% CI)	2.85 [0.91, 8.96]
9 Blood loss (ml)	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
9.1 posterior vaginal colporrhaphy vs transanal repair	2	87	Mean Difference (IV, Fixed, 95% CI)	79.38 [39.69, 119.08]
10 Difference in haemoglobin	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
10.1 posterior vaginal colporrhaphy vs transanal repair	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
11 Operating time (minutes)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
11.1 posterior vaginal colporrhaphy vs transanal repair	2	87	Mean Difference (IV, Fixed, 95% CI)	-3.64 [-7.43, 0.15]
11.2 posterior colporrhaphy vs site specific repair	1	74	Mean Difference (IV, Fixed, 95% CI)	-1.0 [-32.22, 30.22]
11.3 posterior colporrhaphy versus site specific and porcine small intestine submucosa graft	1	69	Mean Difference (IV, Fixed, 95% CI)	-19.0 [-49.68, 11.68]
12 Postoperative narcotic (morphine) use	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
12.1 posterior vaginal colporrhaphy vs transanal repair	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable

13 Number of women with postoperative complications	3		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
13.1 posterior vaginal colporrhaphy vs transanal repair	2	87	Risk Ratio (M-H, Fixed, 95% CI)	3.56 [0.80, 15.74]
13.2 posterior vaginal colporrhaphy vs site specific repair	1	74	Risk Ratio (M-H, Fixed, 95% CI)	1.38 [0.87, 2.17]
13.3 posterior vaginal colporrhaphy vs site specific repair with porcine small intestine graft inlay	1	68	Risk Ratio (M-H, Fixed, 95% CI)	1.02 [0.69, 1.53]
14 Persistent postoperative pain	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
14.1 posterior vaginal colporrhaphy vs transanal repair	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
15 Length of stay in hospital (days)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
15.1 posterior vaginal colporrhaphy vs transanal repair	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
16 Number of women having further prolapse surgery	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
16.1 posterior vaginal colporrhaphy vs site specific repair	1	70	Risk Ratio (M-H, Fixed, 95% CI)	0.56 [0.05, 5.90]
16.2 posterior vaginal colporrhaphy vs site specific repair with porcine small intestine graft inlay	1	62	Risk Ratio (M-H, Fixed, 95% CI)	0.29 [0.03, 2.66]

Comparison 7. Prolapse repair and new urinary symptoms

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of women with de novo (new) stress urinary incontinence (subjective diagnosis)	6		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.25, 3.64]
1.2 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	102	Risk Ratio (M-H, Fixed, 95% CI)	2.62 [0.63, 10.91]

1.3 abdominal sacrocolpopexy alone vs abdominal sacrocolpopexy with Burch colposuspension	1	239	Risk Ratio (M-H, Fixed, 95% CI)	2.13 [1.39, 3.24]
1.4 abdominal colpopexy vs vaginal colpopexy	1	46	Risk Ratio (M-H, Fixed, 95% CI)	0.27 [0.06, 1.15]
1.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	9.0 [1.23, 65.85]
2 Number of women with de novo (new) stress urinary incontinence (objective diagnosis)	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
2.2 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4 Number of women with de novo (new) urgency, detrusor overactivity or overactive bladder	6		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
4.1 abdominal colpopexy vs vaginal colpopexy	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.2 cystopexy vs cystopexy + pubourethral ligament plication	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.3 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.4 Prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.5 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
5 Long term new voiding dysfunction	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
5.1 abdominal colpopexy vs vaginal colpopexy	1	75	Risk Ratio (M-H, Fixed, 95% CI)	1.03 [0.07, 15.82]
5.4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	2	138	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.49, 2.26]

5.5 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	0.09 [0.00, 1.54]
5.8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	0.33 [0.04, 2.99]
6 Number of women having further surgery for incontinence	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
6.1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy	2	207	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.28, 3.95]
6.2 cystopexy vs cystopexy + pubourethral ligament plication	1	102	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6.3 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension	1	73	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6.4 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT	1	50	Risk Ratio (M-H, Fixed, 95% CI)	7.0 [0.38, 128.87]

Comparison 8. Use of native (no mesh) tissue versus mesh or grafts

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of women with prolapse symptoms (subjective failure)	3		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
1.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.2 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
1.3 posterior colporrhaphy or site specific repair versus site specific repair with porcine intestine graft inlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2 Number of women with anterior prolapse / cystocele (objective failure)	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 traditional or ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	2	226	Risk Ratio (M-H, Fixed, 95% CI)	1.39 [1.02, 1.90]
2.2 fascial plication vs fascial plication with Pelvicol overlay	1	201	Risk Ratio (M-H, Fixed, 95% CI)	2.72 [1.20, 6.14]
2.3 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1	154	Risk Ratio (M-H, Fixed, 95% CI)	1.40 [0.80, 2.44]

2.4 posterior colporrhaphy or site specific repair versus site specific repair with porcine intestine graft inlay	1	81	Risk Ratio (M-H, Fixed, 95% CI)	0.39 [0.20, 0.79]
3 Number of women with posterior prolapse / rectocele (objective failure)	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
3.1 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4 Number of women with postoperative complications	4		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
4.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.3 traditional or ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	2		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4.4 posterior colporrhaphy or site specific repair versus site specific repair with porcine intestine graft inlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
5 Vaginal mesh erosion	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
5.1 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
5.3 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
6 Death	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
6.1 traditional or ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
7 VAS for severity of prolapse symptoms (repair for anterior vaginal prolapse)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
7.1 fascial plication vs fascial plication with Pelvicol overlay	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
8 Postoperative voiding dysfunction symptoms	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
8.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
8.2 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9 Persistent voiding dysfunction	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
9.1 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

10 Number of women with postoperative stress incontinence	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
10.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
11 Number of women with urgency, detrusor overactivity or overactive bladder	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
11.1 fascial plication vs fascial plication with Pelvicol overlay	1	201	Risk Ratio (M-H, Fixed, 95% CI)	1.14 [0.61, 2.14]
12 Number of women with dyspareunia	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
12.1 fascial plication vs fascial plication with Pelvicol overlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
12.2 posterior colporrhaphy or site specific repair versus site specific repair with porcine intestine graft inlay	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
13 Length of stay in hospital (days)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
13.1 fascial plication vs fascial plication with Pelvicol overlay	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable

Comparison 9. One type of mesh / graft versus another type of mesh / graft

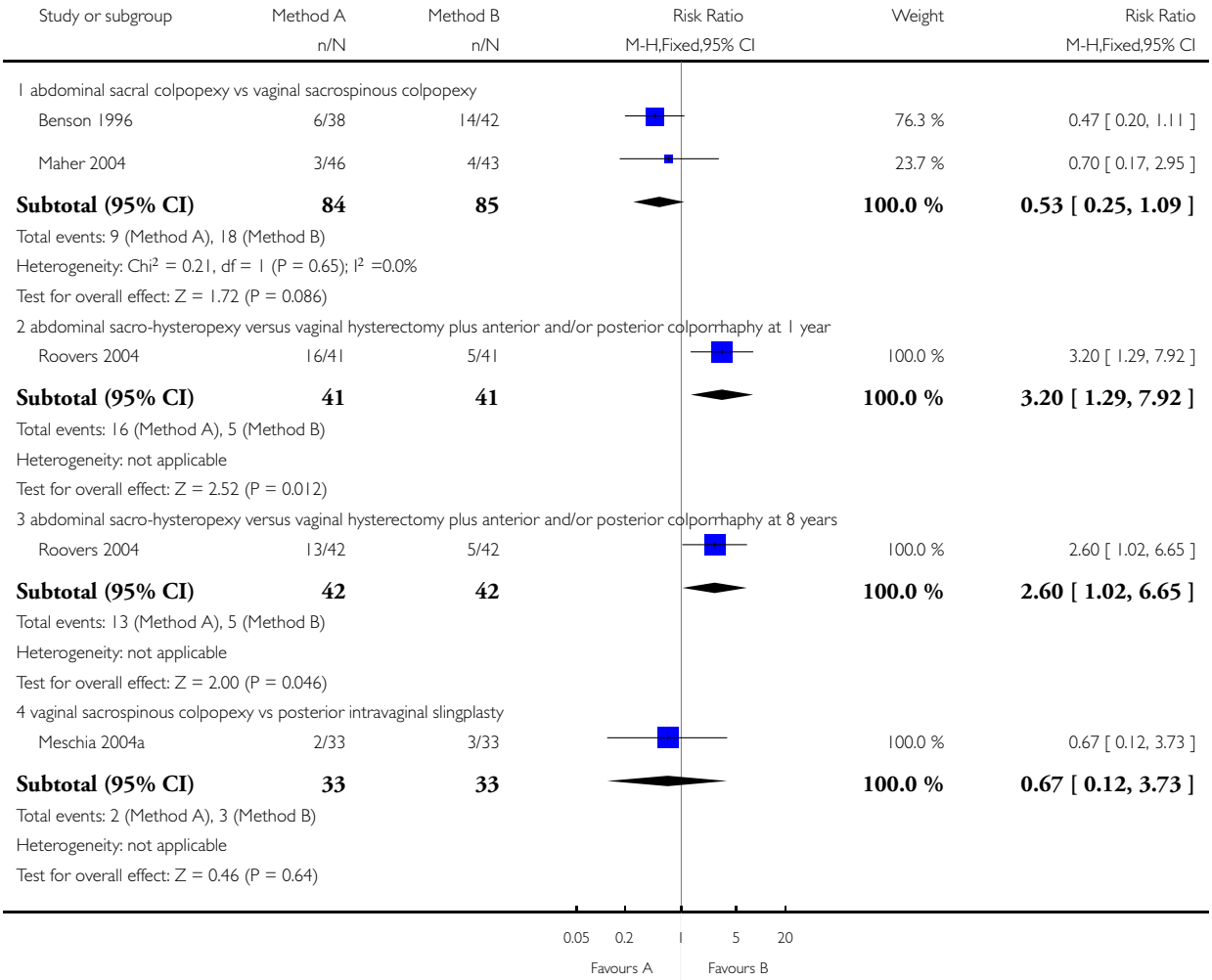
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of women with prolapse symptoms (subjective failure)	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
1.1 Prolene soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2 Number of women with anterior prolapse / cystocele (objective failure)	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 Prolene soft vs Pelvicol	1	72	Risk Ratio (M-H, Fixed, 95% CI)	1.17 [0.63, 2.16]
2.2 Vicryl vs Pelvicol	1	125	Risk Ratio (M-H, Fixed, 95% CI)	3.22 [1.38, 7.52]
3 Number of women having further prolapse surgery	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 Vicryl vs Pelvicol	1	125	Risk Ratio (M-H, Fixed, 95% CI)	3.05 [0.87, 10.73]
4 Vaginal mesh erosion	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
4.1 Prolene Soft vs Pelvicol	1		Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

Analysis 1.1. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 1 Number of women with prolapse symptoms (subjective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 1 Number of women with prolapse symptoms (subjective failure)

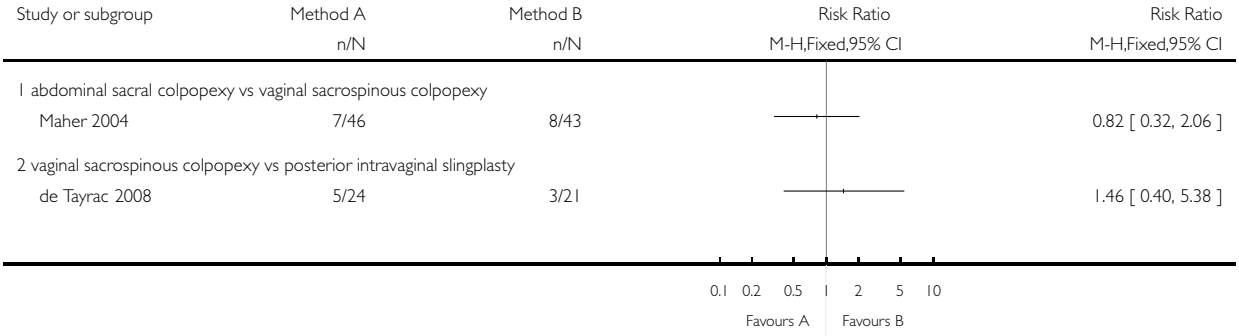


Analysis 1.2. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 2 Number of women with any prolapse (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 2 Number of women unsatisfied with surgery

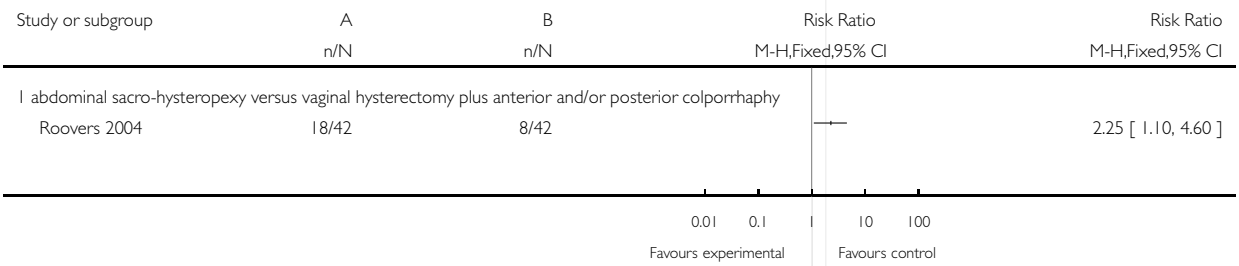


Analysis 1.3. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 3 Number of women with recurrent vault prolapse (objective).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 3 Number of women who visited a physician after surgery because of pelvic floor symptoms



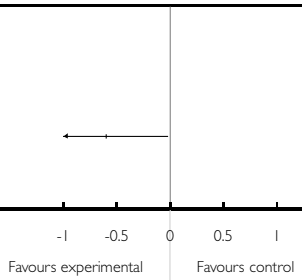
Analysis 1.4. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 4 Number of women unsatisfied with surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 4 Patient satisfaction: VAS (0-10) or Global Impression of Improvement (PGI-I) score

Study or subgroup	A		B		Std. Mean Difference	Std. Mean Difference
	N	Mean(SD)	N	Mean(SD)	IV,Fixed,95% CI	IV,Fixed,95% CI
1 open sacral-colpopexy versus laparoscpic sacral-colpopexy						
Pantazis 2008	15	1 (0)	15	1 (0)		Not estimable
2 sacral colpopexy without colposuspension versus sacral colpopexy with colposuspensio						
Constantini 2008	23	-9 (1.75)	24	-8 (1.5)		-0.60 [-1.19, -0.02]

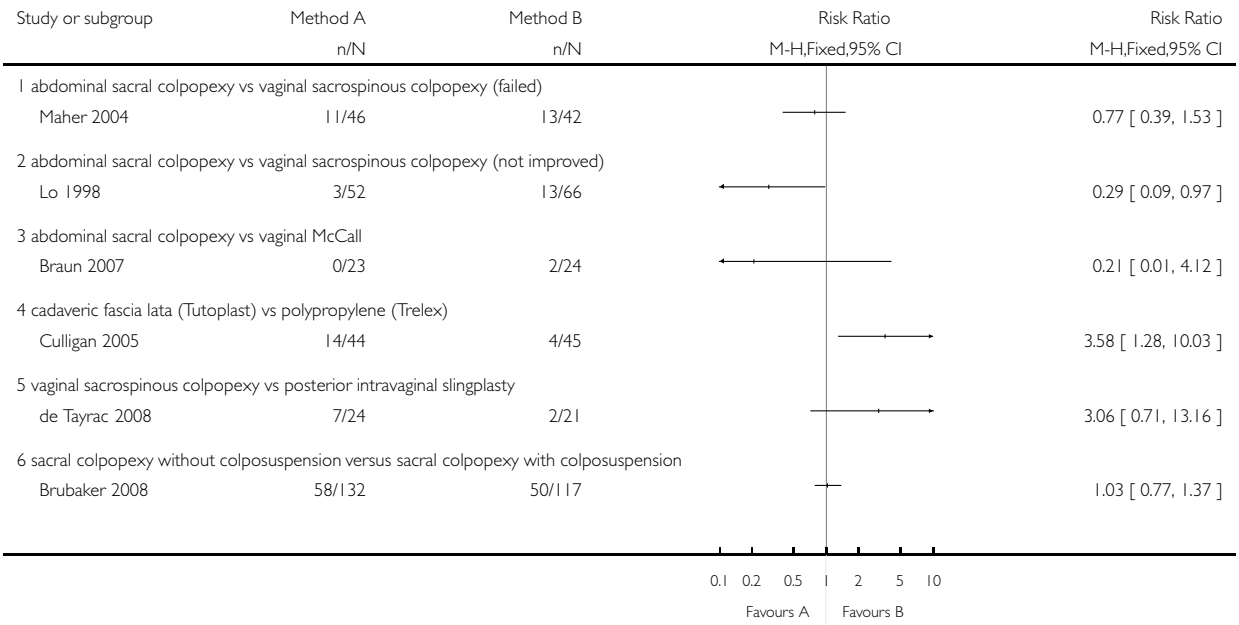


Analysis 1.5. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 5 Number of women with post-operative stress urinary incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 5 Number of women with any prolapse (objective failure)

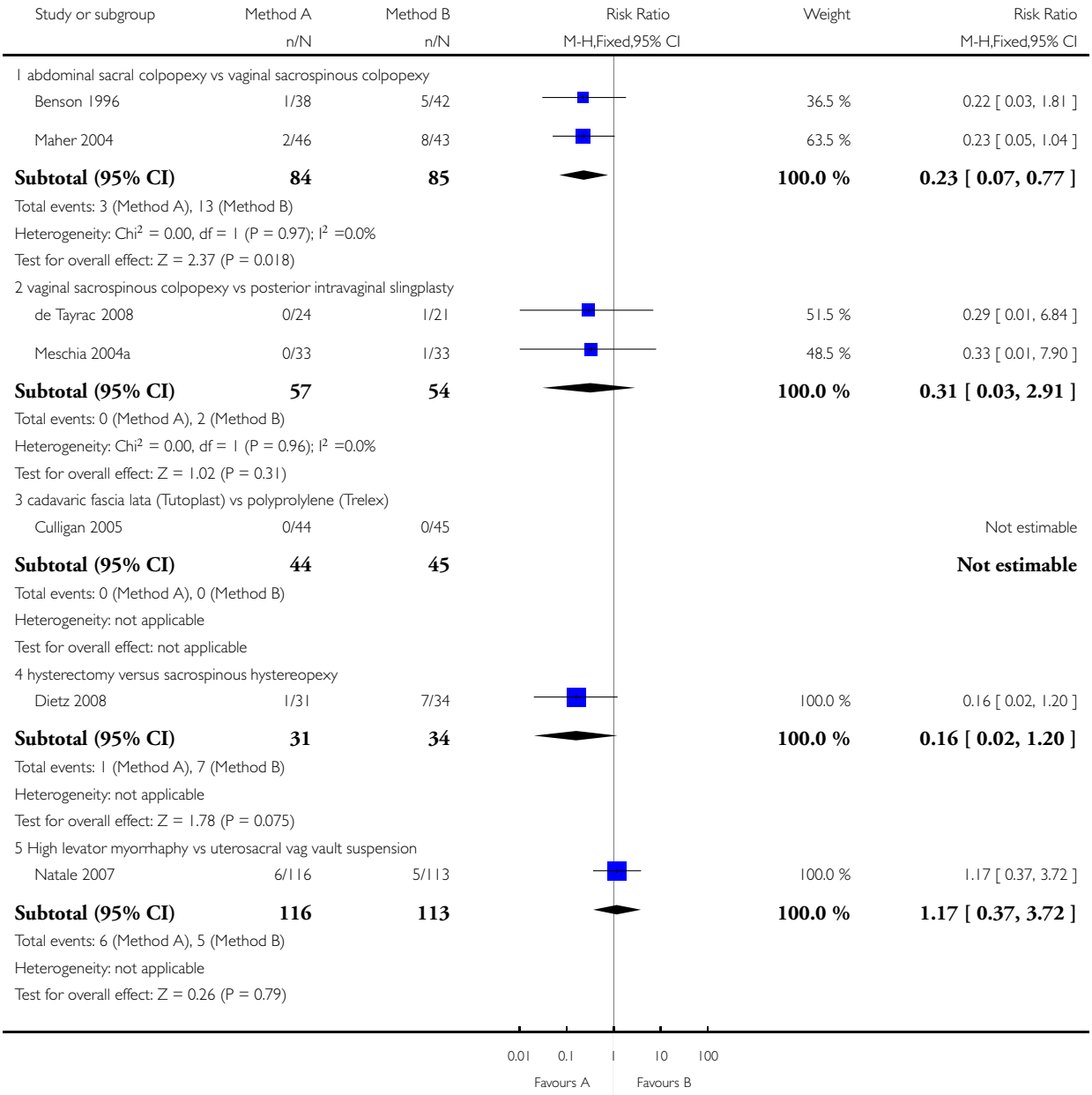


Analysis 1.6. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 6 Number of women with urgency, detrusor overactivity or overactive bladder.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 6 Number of women with recurrent vault/uterine prolapse (objective)

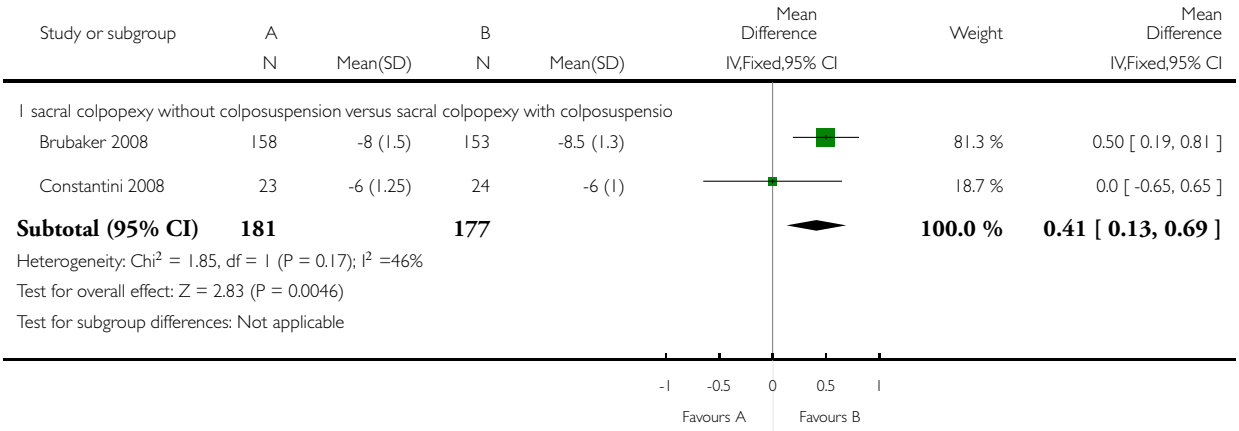


Analysis 1.7. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 7 Number of women with de novo (new) urgency, detrusor overactivity or overactive bladder.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 7 Vault distance from hymen (cm) POPQ point C after surgery

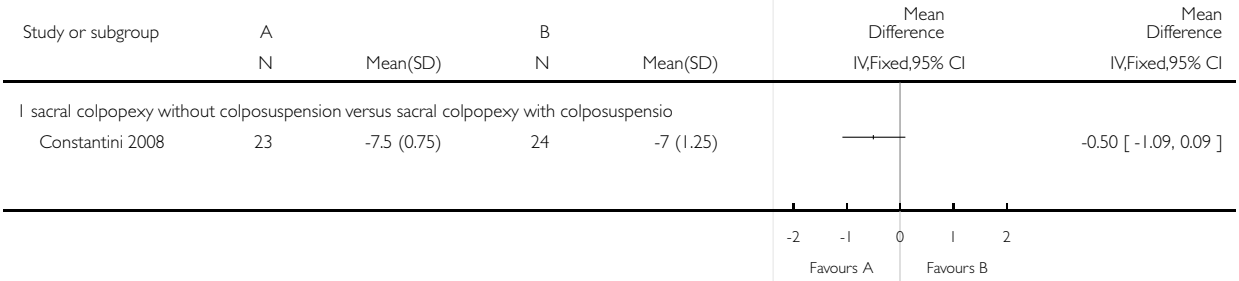


Analysis 1.8. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 8 Number of women with persistent voiding dysfunction.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 8 Total vaginal length (cm) after surgery

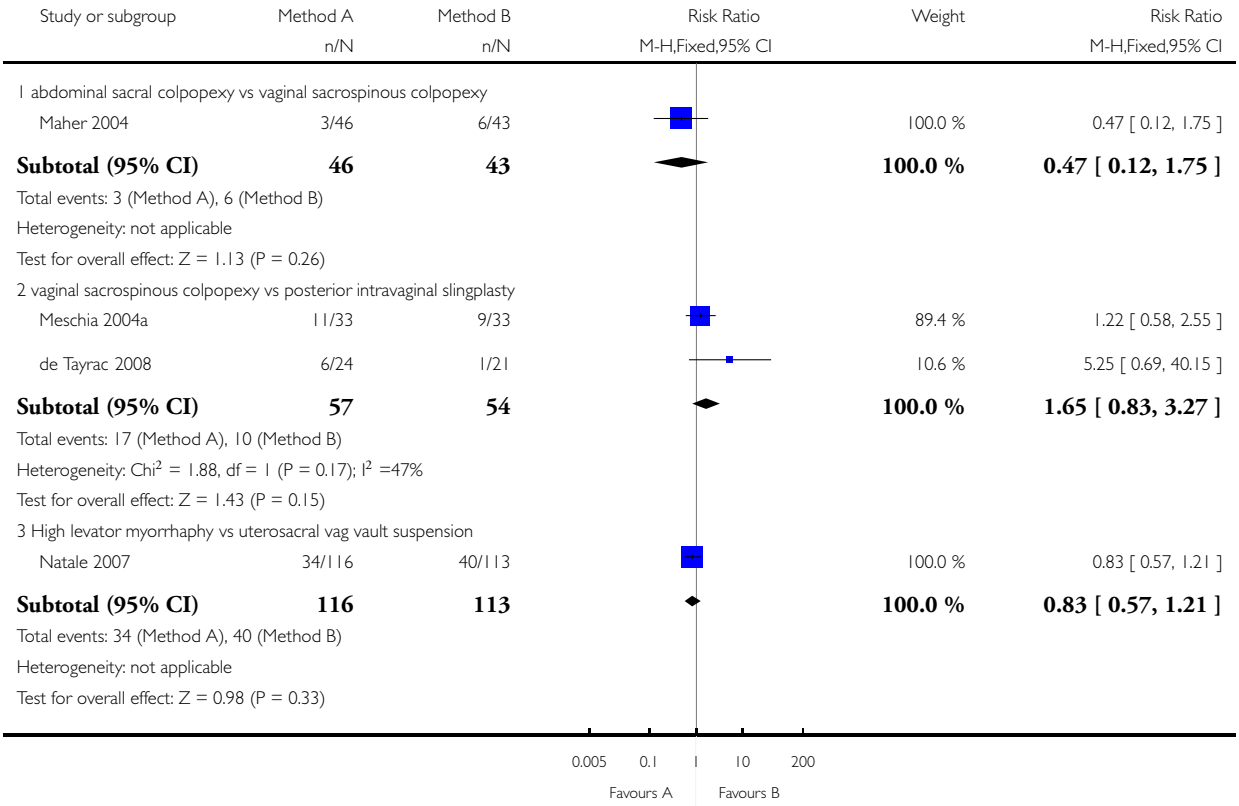


Analysis 1.9. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 9 Number of women with new voiding dysfunction.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 9 Number of women with recurrent cystocele (objective)

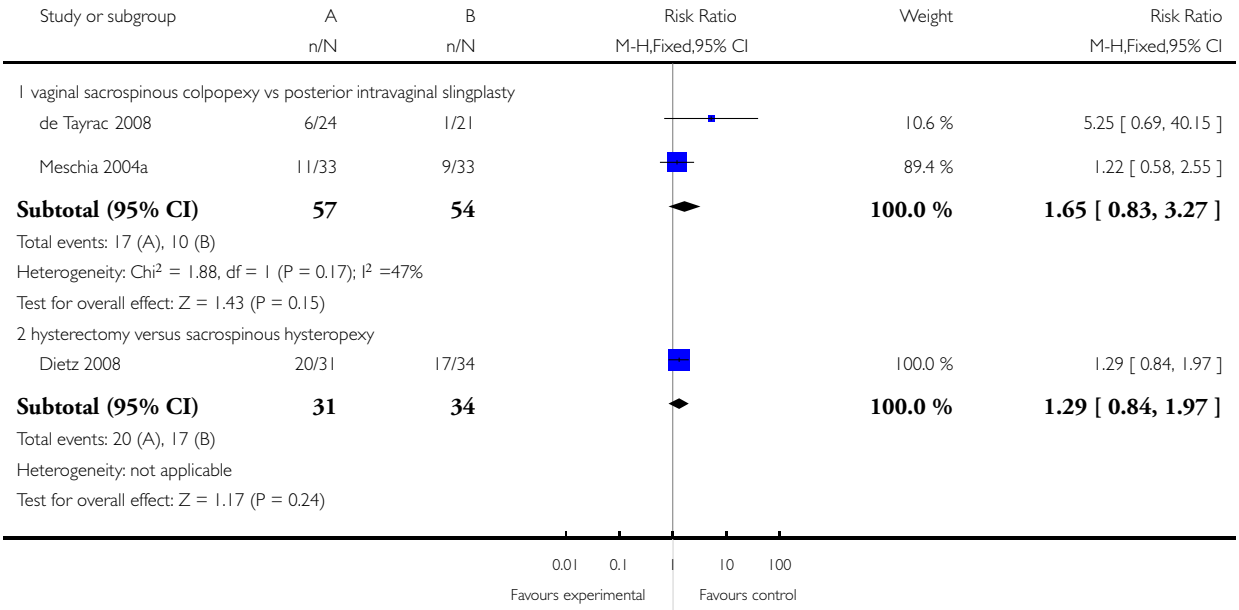


Analysis 1.10. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 10 Number of women with constipation.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 10 Objective anterior compartment prolapse after surgery



Analysis 1.11. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 11 Number of women with faecal incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 11 Anterior vaginal wall distance from hymen (cm) POPQ point Ba after surgery

Study or subgroup	A N	Mean(SD)	B N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 sacral colpopexy without colposuspension versus sacral colpopexy with colposuspensio							
Brubaker 2008	132	-1.8 (1.1)	117	-2.2 (0.9)		57.0 %	0.40 [0.15, 0.65]
Constantini 2008	23	-2.5 (0.5)	24	-3 (0.5)		43.0 %	0.50 [0.21, 0.79]
Subtotal (95% CI)	**155**		**141**			**100.0 %**	**0.44 [0.26, 0.63]**

Heterogeneity: $Chi^2 = 0.27$, df = 1 (P = 0.60); $I^2 = 0.0\%$

Test for overall effect: Z = 4.63 (P < 0.00001)

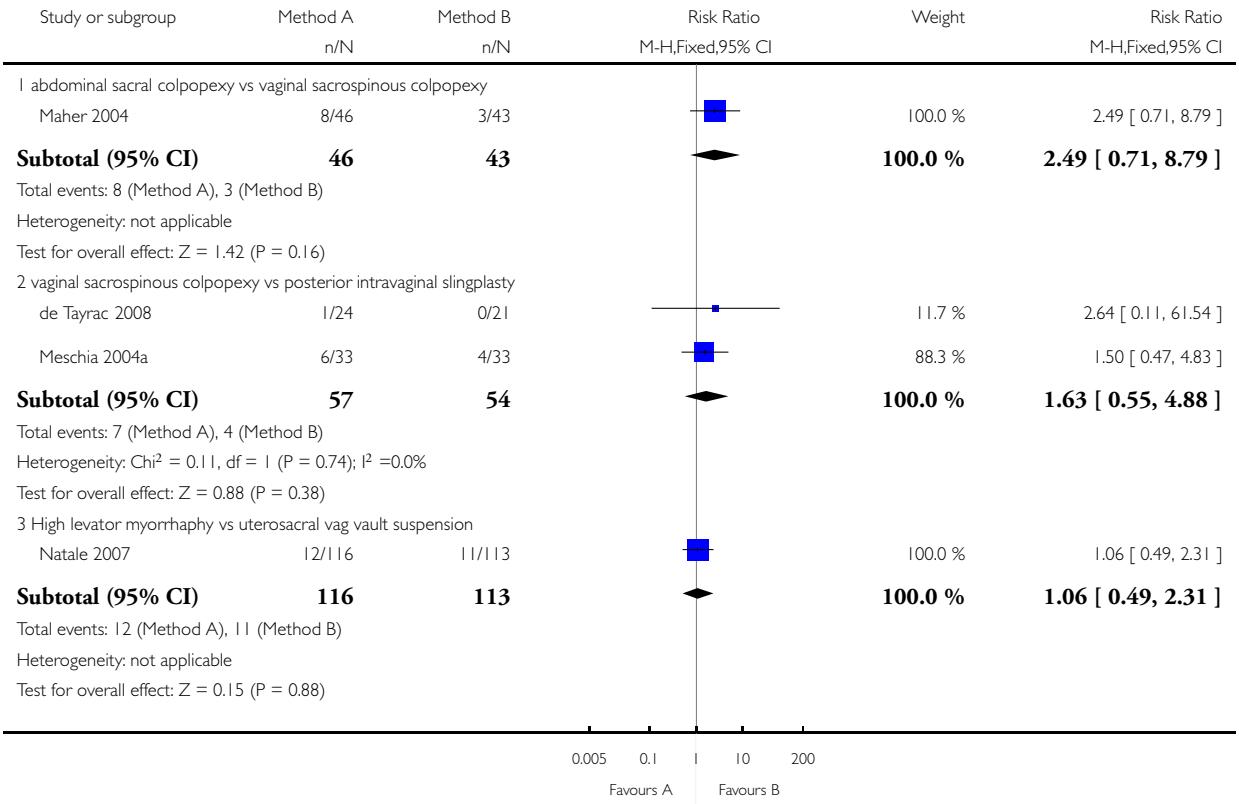
Test for subgroup differences: Not applicable

Analysis 1.12. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 12 Number of women with obstructed defecation.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 12 Number of women with recurrent rectocele (objective)

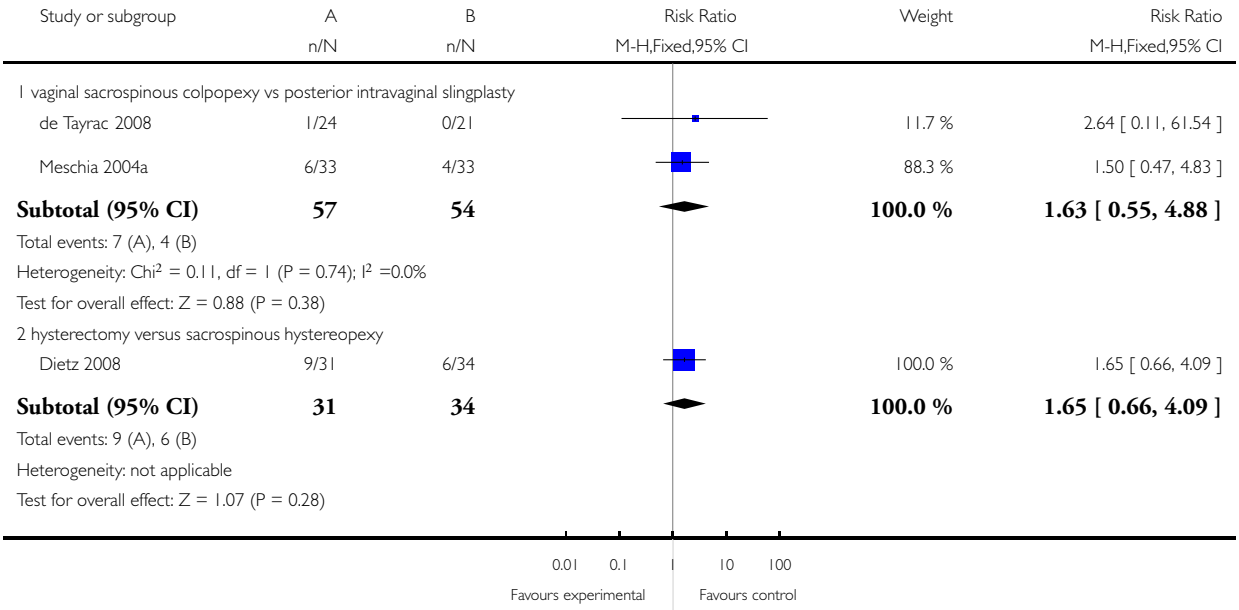


Analysis 1.13. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 13 Postoperative dyspareunia.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 13 Objective posterior compartment prolapse after surgery

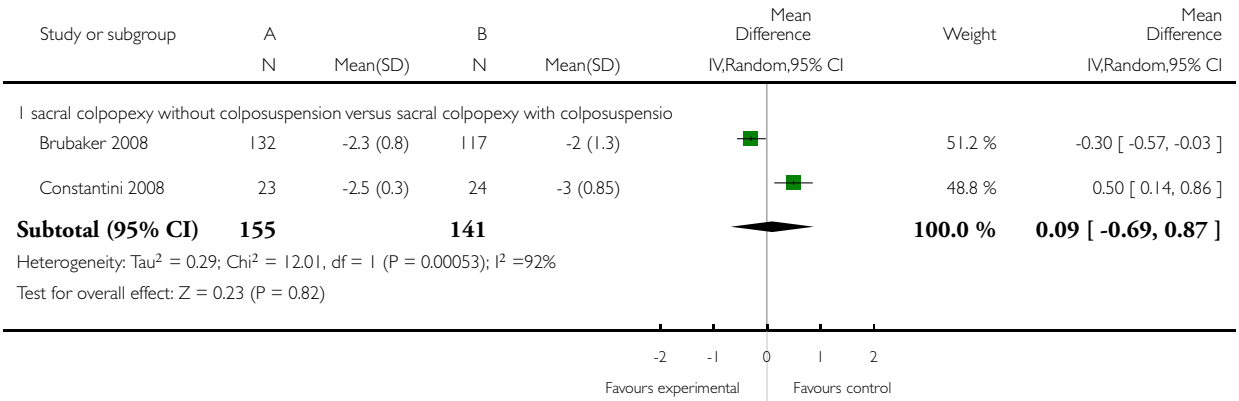


Analysis 1.14. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 14 Women with de novo (new) postoperative dyspareunia.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 14 Posterior vaginal wall distance from hymen (cm) POPQ point Bp after surgery

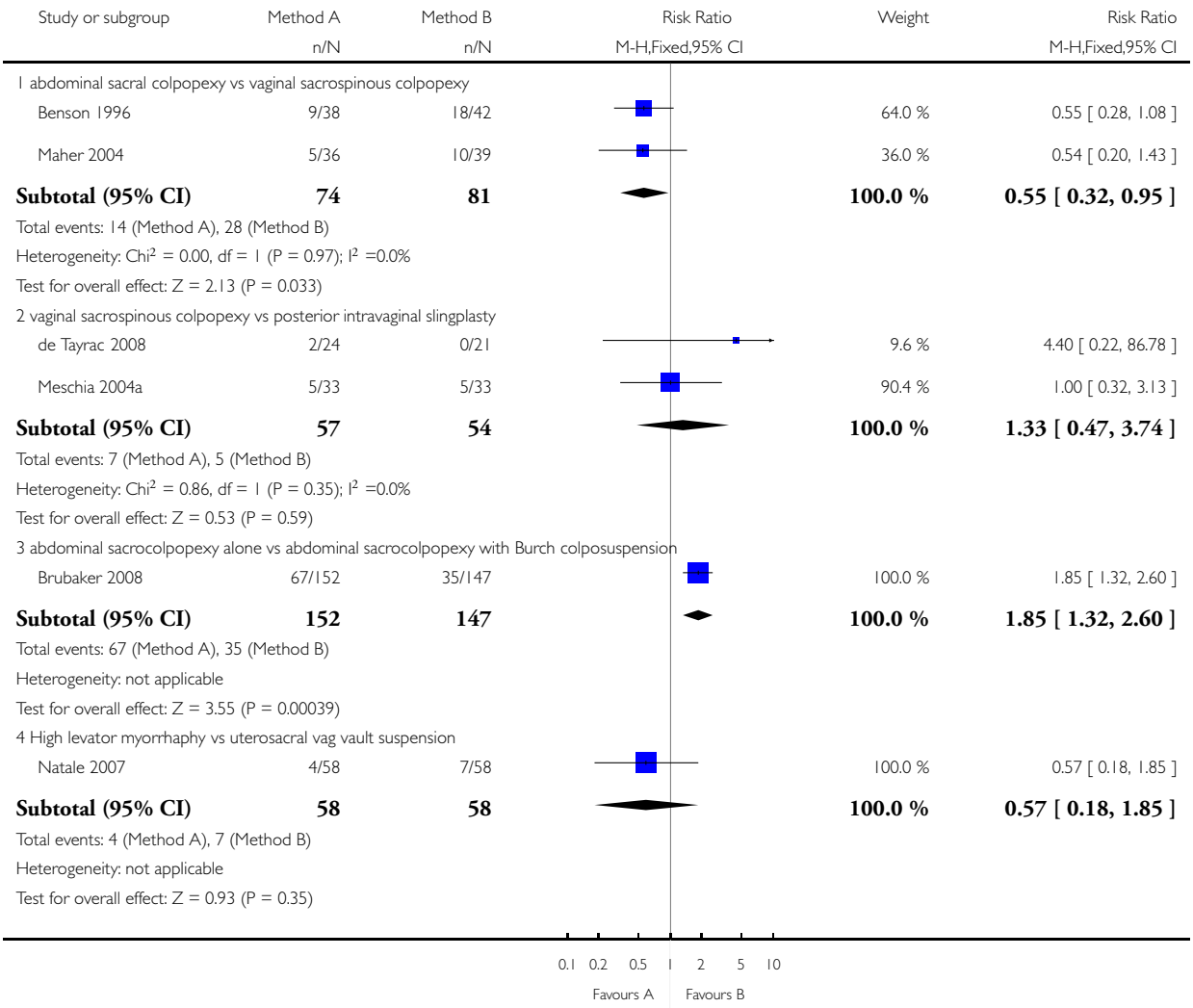


Analysis 1.15. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 15 Blood loss (ml).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 15 Number of women with post-operative stress urinary incontinence



Analysis 1.16. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 16 Postoperative decrease in Hb (gm/dl).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 16 Number of women with de novo stress incontinence

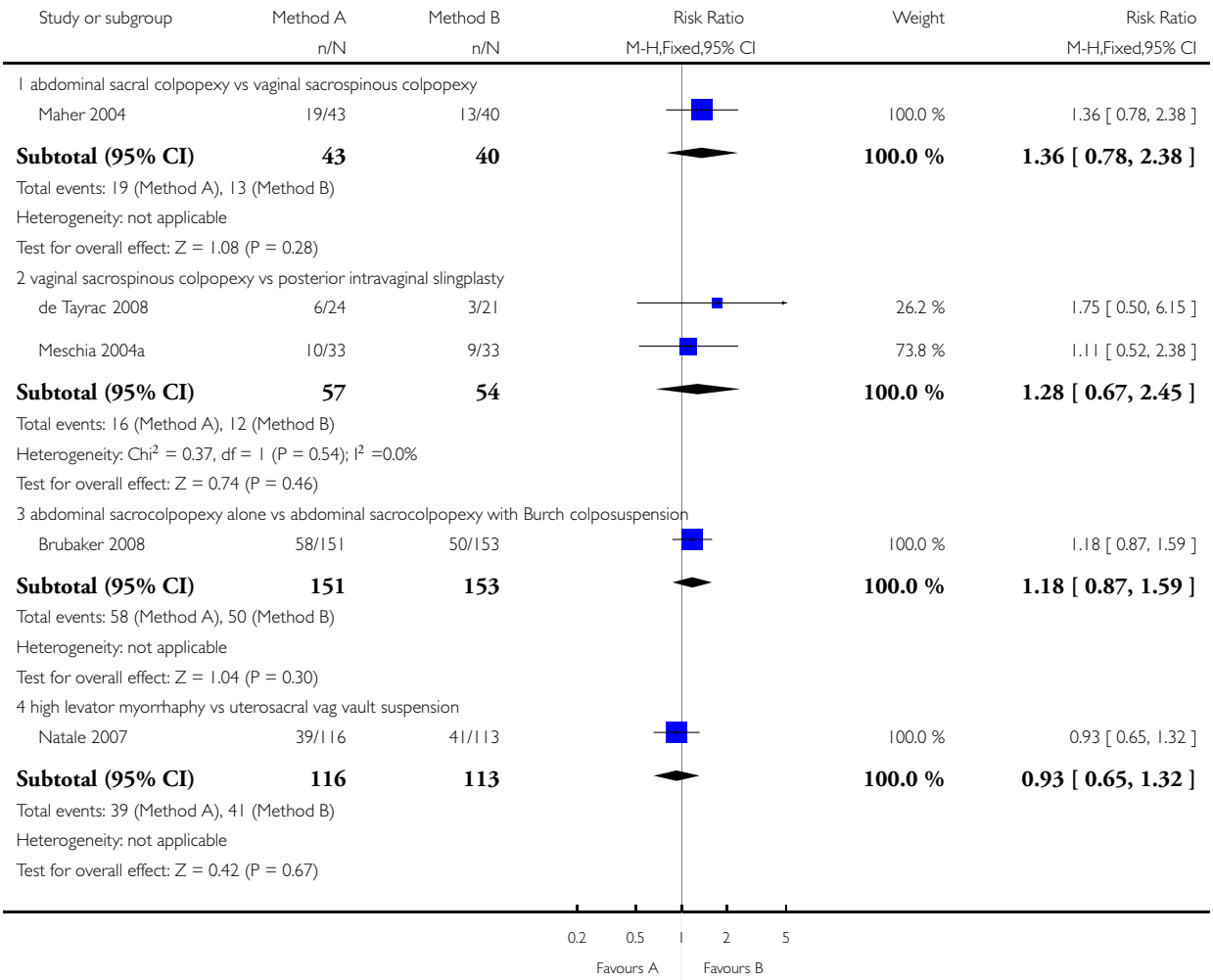
Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty				
de Tayrac 2008	1/24	0/21		2.64 [0.11, 61.54]
2 high levator myorrhaphy vs uterosacral vag vault suspension				
Natale 2007	24/58	8/58		3.00 [1.47, 6.12]

Analysis 1.17. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 17 Operating time (minutes).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 17 Number of women with urgency, detrusor overactivity or overactive bladder

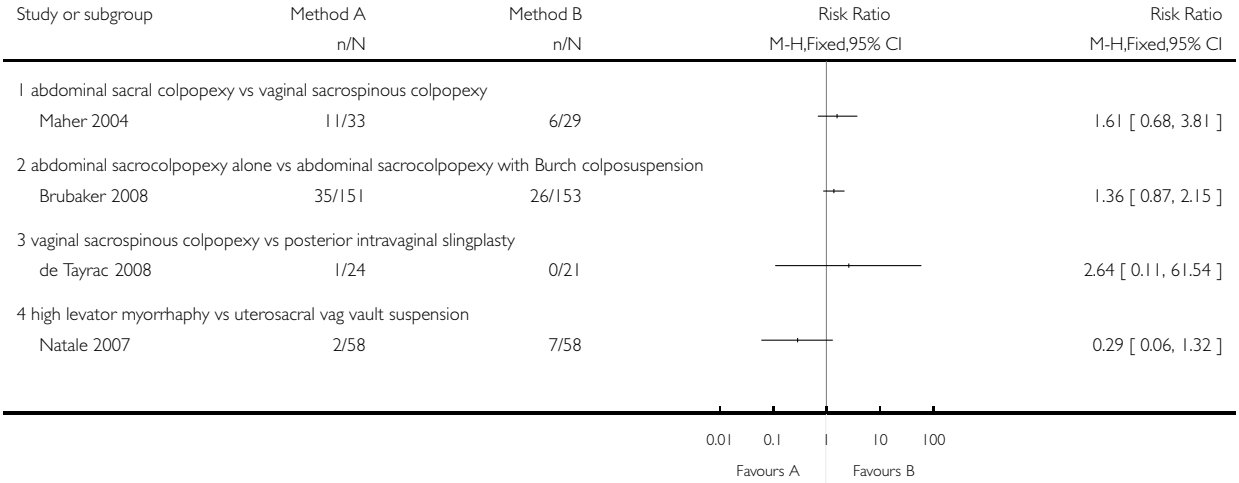


Analysis 1.18. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 18 Length of stay in hospital (days).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 18 Number of women with de novo (new) urgency, detrusor overactivity or overactive bladder

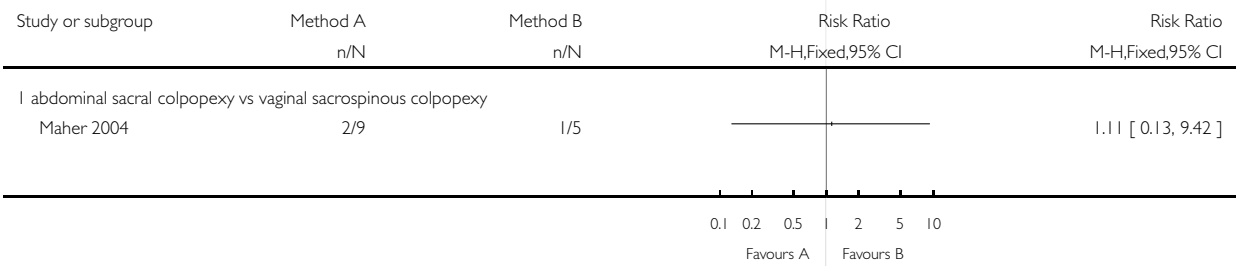


Analysis 1.19. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 19 Time to return to normal activity (days).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 19 Number of women with persistent voiding dysfunction

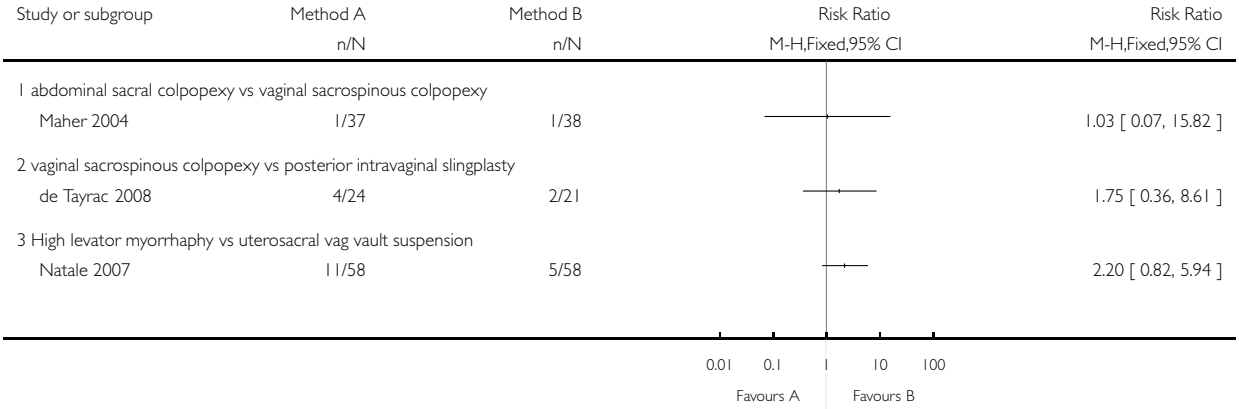


Analysis 1.20. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 20 Cost (US dollars).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 20 Number of women with new voiding dysfunction

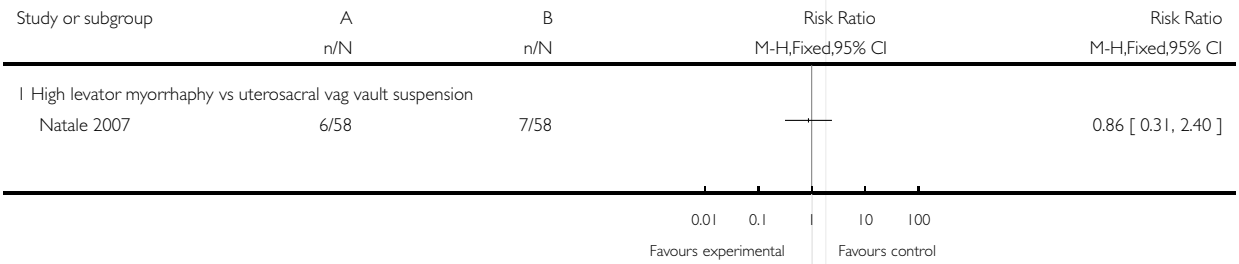


Analysis 1.21. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 21 Women having further prolapse surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 21 Number of women with de novo nocturia



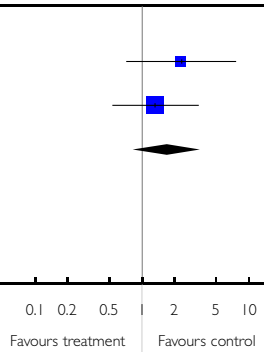
Analysis 1.22. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 22 Women having further continence surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 22 Postoperative voiding dysfunction symptoms

Study or subgroup	IVS n/N	sacrospinous n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty					
de Tayrac 2008	8/24	3/21		34.8 %	2.33 [0.71, 7.67]
Meschia 2004a	8/33	6/33		65.2 %	1.33 [0.52, 3.42]
Subtotal (95% CI)	**57**	**54**		**100.0 %**	**1.68 [0.81, 3.50]**
Total events: 16 (IVS), 9 (sacrospinous)					
Heterogeneity: Chi^2 = 0.52, df = 1 (P = 0.47); I^2 =0.0%					
Test for overall effect: Z = 1.39 (P = 0.16)					



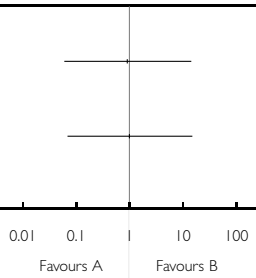
Analysis 1.23. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 23 Women having further prolapse or continence surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 23 Number of women with faecal incontinence

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy				
Maher 2004	1/46	1/43		0.93 [0.06, 14.48]
2 vaginal sacrospinous colpopexy vs posterior intravaginal slingplasty				
Meschia 2004a	1/33	1/33		1.00 [0.07, 15.33]

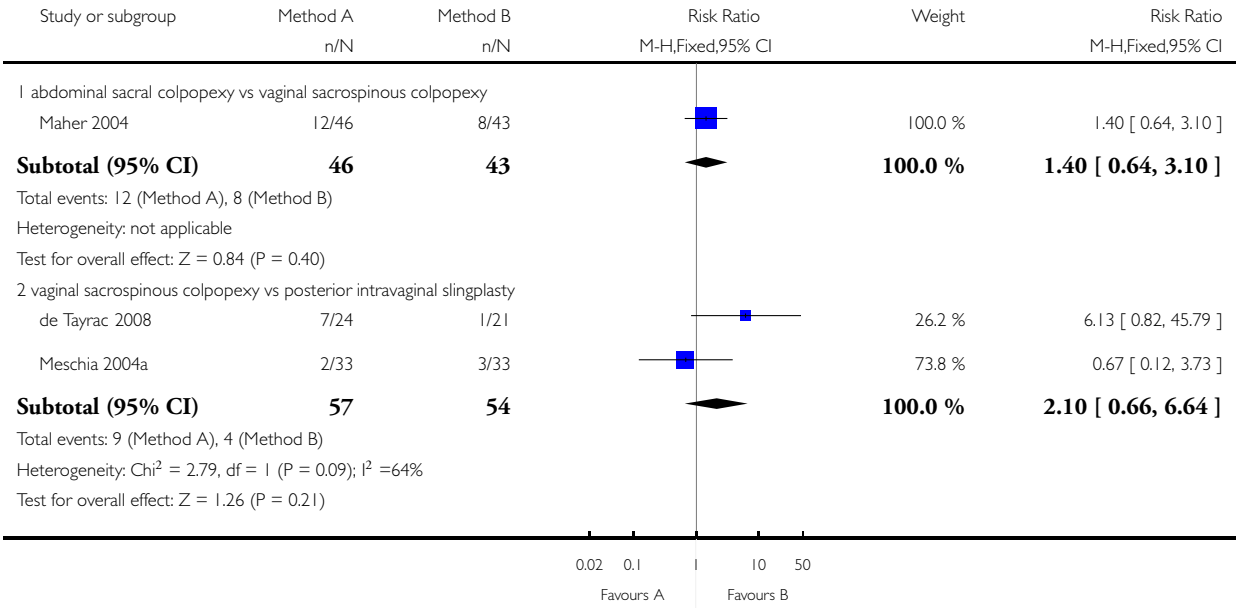


Analysis 1.24. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 24 Time to recurrence of prolapse (months).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 24 Number of women with constipation



Analysis 1.25. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 25 Adverse effects.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

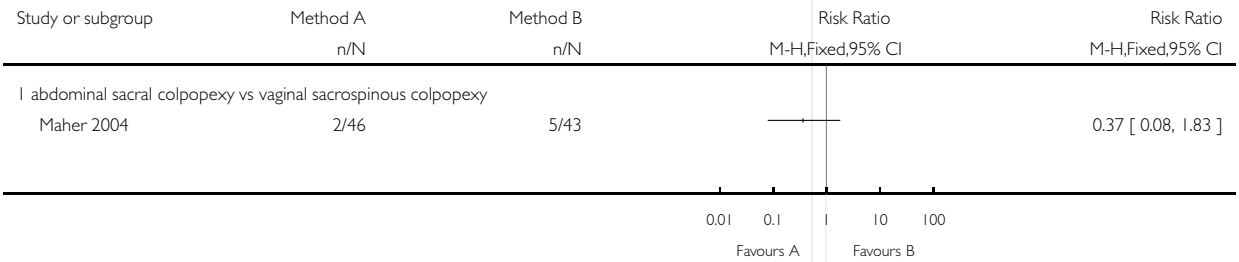
Outcome: 25 Number of women with de novo constipation

Analysis 1.26. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 26 Number of women with recurrent rectocele (objective).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 26 Number of women with obstructed defecation

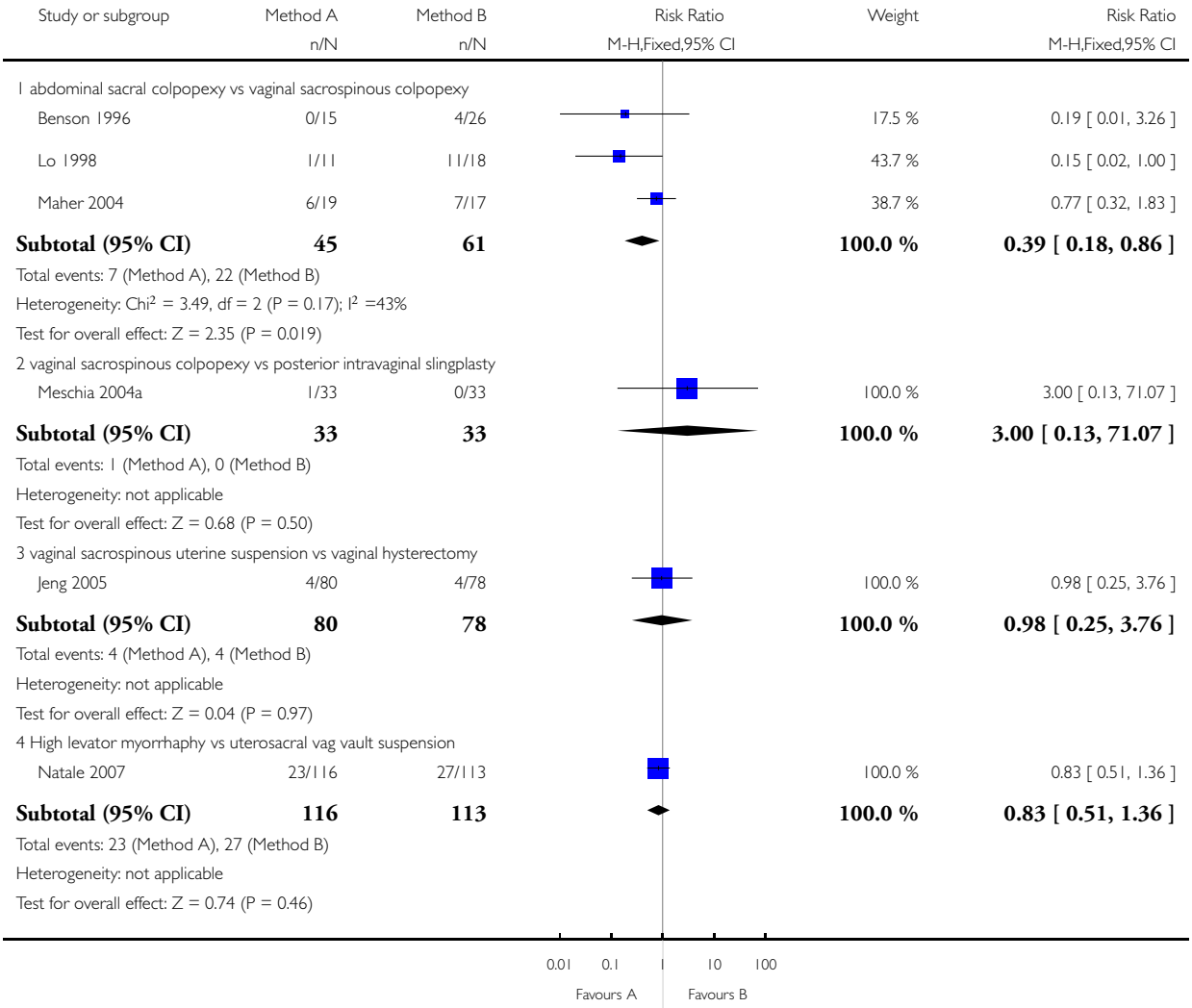


Analysis 1.27. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 27 Number of women with recurrent cystocele (objective).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 27 Postoperative dyspareunia



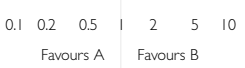
Analysis 1.28. Comparison 1 Surgery for upper vaginal (vault/uterine) prolapse, Outcome 28 Postoperative voiding dysfunction symptoms.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 1 Surgery for upper vaginal (vault or uterine) prolapse

Outcome: 28 Women with de novo (new) postoperative dyspareunia

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 abdominal sacral colpopexy vs vaginal sacrospinous colpopexy				
Maher 2004	2/19	3/17		0.60 [0.11, 3.15]
2 High levator myorrhaphy vs uterosacral vag vault suspension				
Natale 2007	5/58	5/58		1.00 [0.31, 3.27]



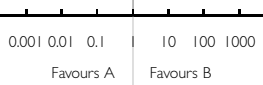
Analysis 2.1. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 1 Number of women with prolapse symptoms (subjective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 1 Number of women with prolapse symptoms (subjective failure)

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)				
Gandhi 2005	6/57	6/55		0.96 [0.33, 2.81]
2 traditional anterior colporraphy vs abdominal Burch colposuspension				
Colombo 2000	0/33	6/35		0.08 [0.00, 1.39]
3 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension				
Bump 1996	2/11	1/12		2.18 [0.23, 20.84]
4 polypropylene mesh (Prolene soft) vs Pelvicol				
Cervigni 2005	3/36	1/36		3.00 [0.33, 27.50]
5 anterior colporrhaphy vs armed transobturtor mesh				
Nieminen 2008	35/96	27/104		1.40 [0.92, 2.13]
6 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT				
Meschia 2004	8/25	4/25		2.00 [0.69, 5.80]
7 fascial plication vs fascial plication with Pelvicol inlay				
Meschia 2007	13/103	9/98		1.37 [0.62, 3.07]
8 armed polypropylene mesh (Gynemesh) vs Pelvicol				
Natale 2009	3/96	3/94		0.98 [0.20, 4.73]

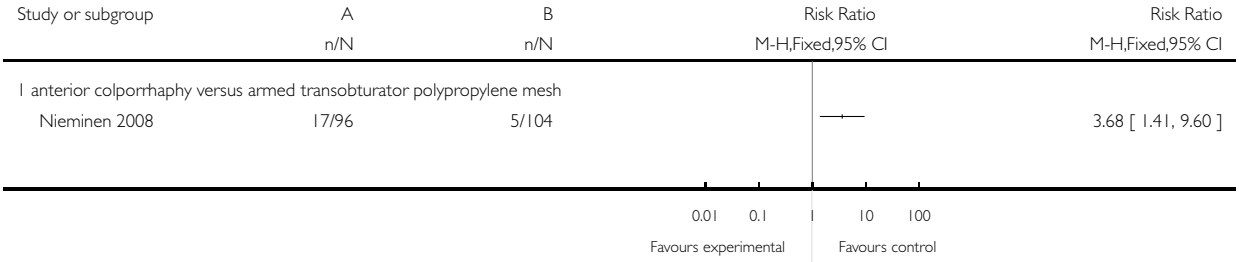


Analysis 2.2. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 2 Number of women with prolapse (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 2 Awareness of bulge

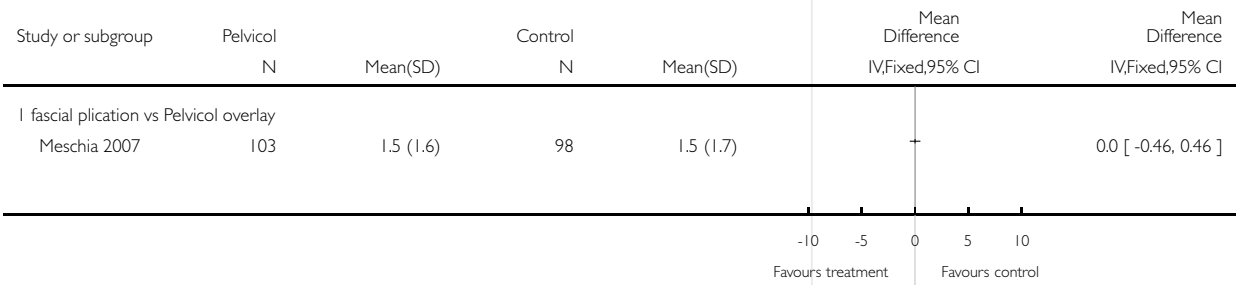


Analysis 2.3. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 3 Number of women with anterior prolapse / cystocele (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 3 Severity of prolapse symptoms (measured using visual analogue scale)



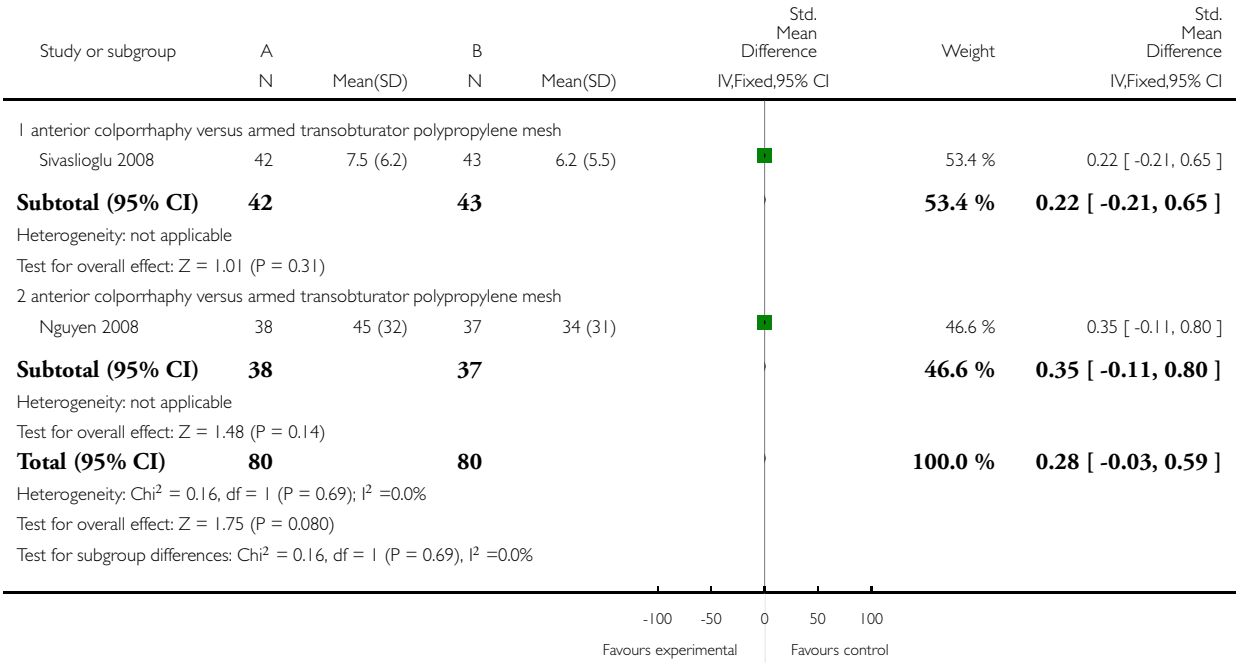
Analysis 2.4. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 4 Number of women with posterior prolapse / rectocele (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 4 Prolapse Quality of Life after surgery

Study or subgroup	A N	Mean(SD)	B N	Mean(SD)	Std. Mean Difference IV,Fixed,95% CI	Weight	Std. Mean Difference IV,Fixed,95% CI
1 anterior colporrhaphy versus armed transobturator polypropylene mesh							
Sivaslioglu 2008	42	7.5 (6.2)	43	6.2 (5.5)		53.4 %	0.22 [-0.21, 0.65]
Subtotal (95% CI)	**42**		**43**			**53.4 %**	**0.22 [-0.21, 0.65]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.01 (P = 0.31)							
2 anterior colporrhaphy versus armed transobturator polypropylene mesh							
Nguyen 2008	38	45 (32)	37	34 (31)		46.6 %	0.35 [-0.11, 0.80]
Subtotal (95% CI)	**38**		**37**			**46.6 %**	**0.35 [-0.11, 0.80]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.48 (P = 0.14)							
Total (95% CI)	**80**		**80**			**100.0 %**	**0.28 [-0.03, 0.59]**
Heterogeneity: Chi^2 = 0.16, df = 1 (P = 0.69); I^2 =0.0%							
Test for overall effect: Z = 1.75 (P = 0.080)							
Test for subgroup differences: Chi^2 = 0.16, df = 1 (P = 0.69), I^2 =0.0%							

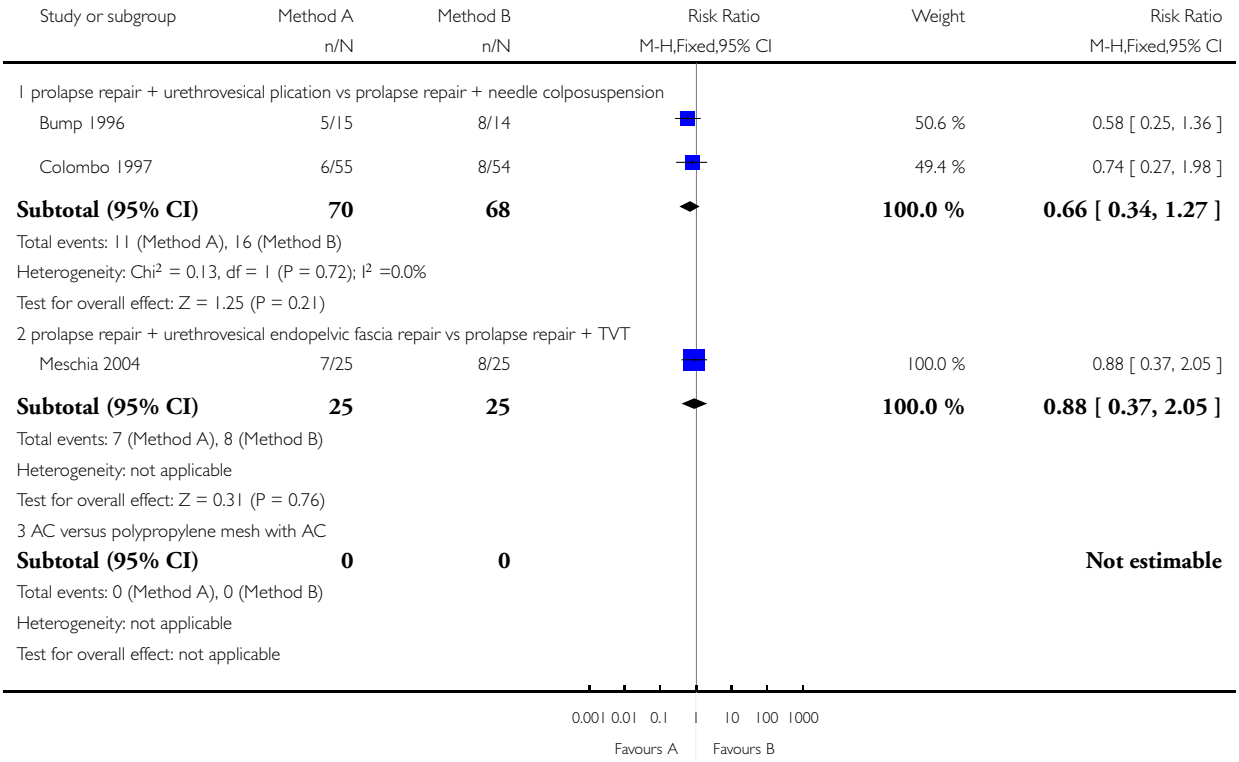


Analysis 2.5. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 5 Postoperative voiding dysfunction symptoms.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 5 Number of women with prolapse (objective failure)

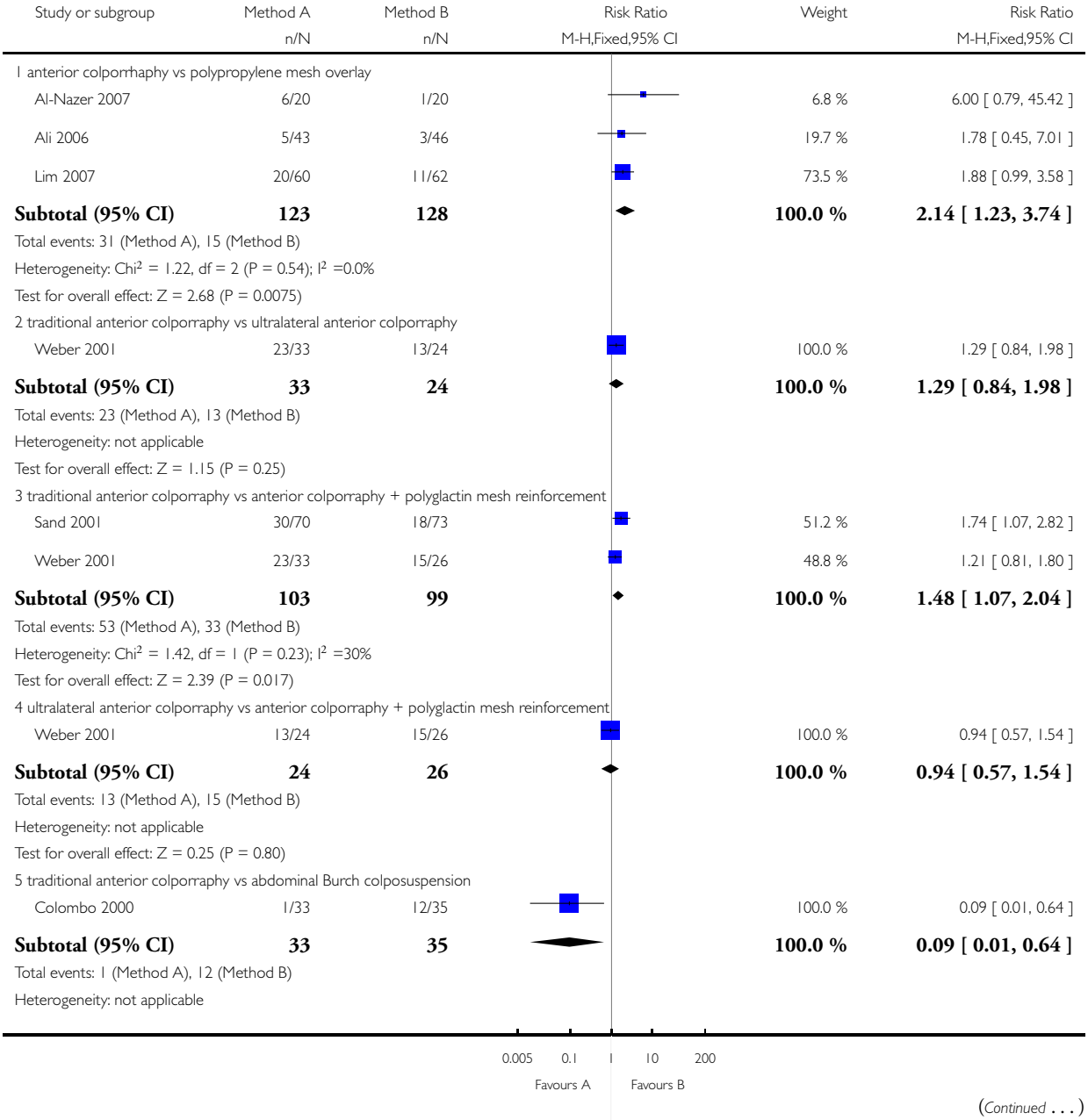


Analysis 2.6. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 6 Number of women with postoperative stress urinary incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 6 Number of women with anterior prolapse / cystocele (objective failure)



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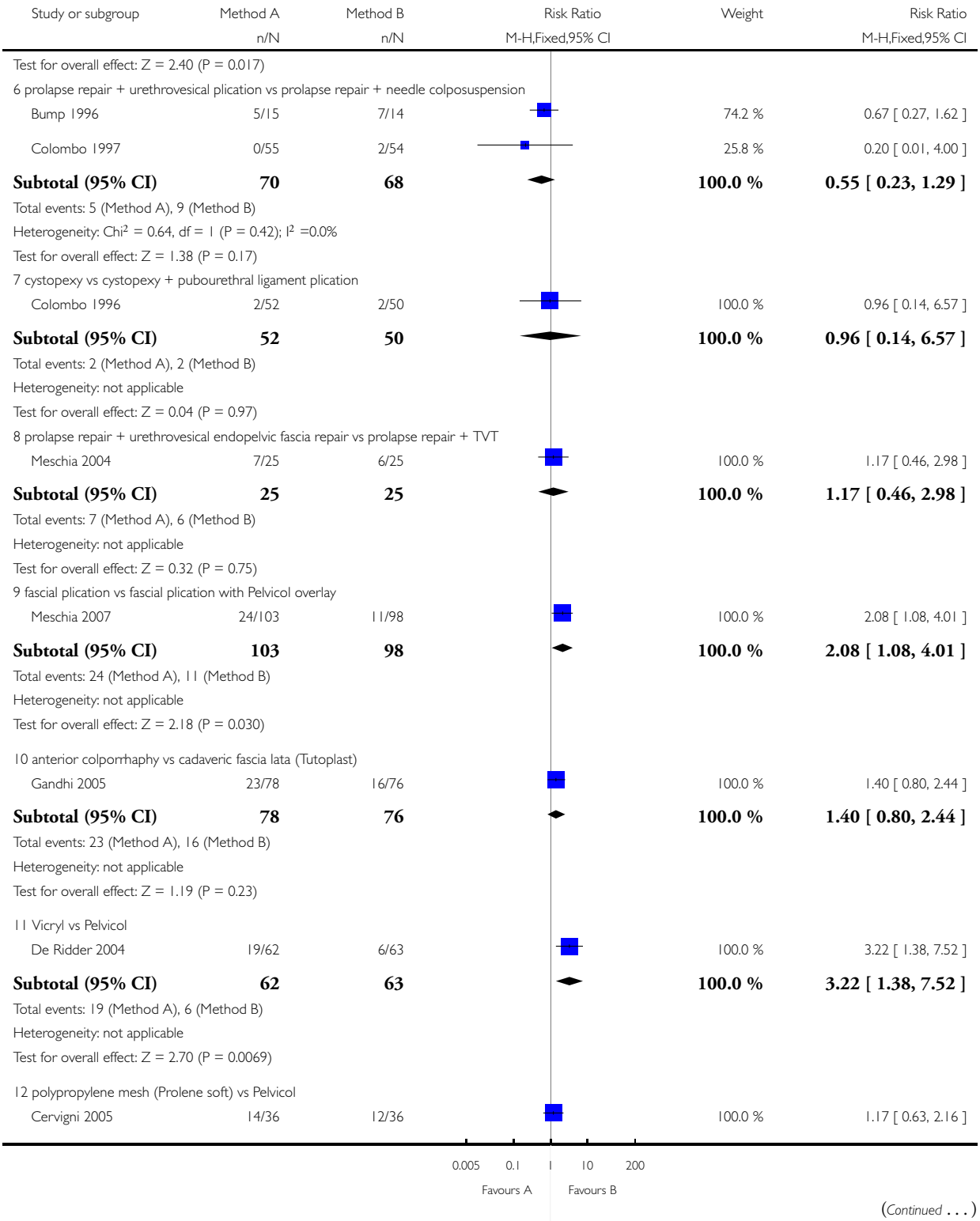

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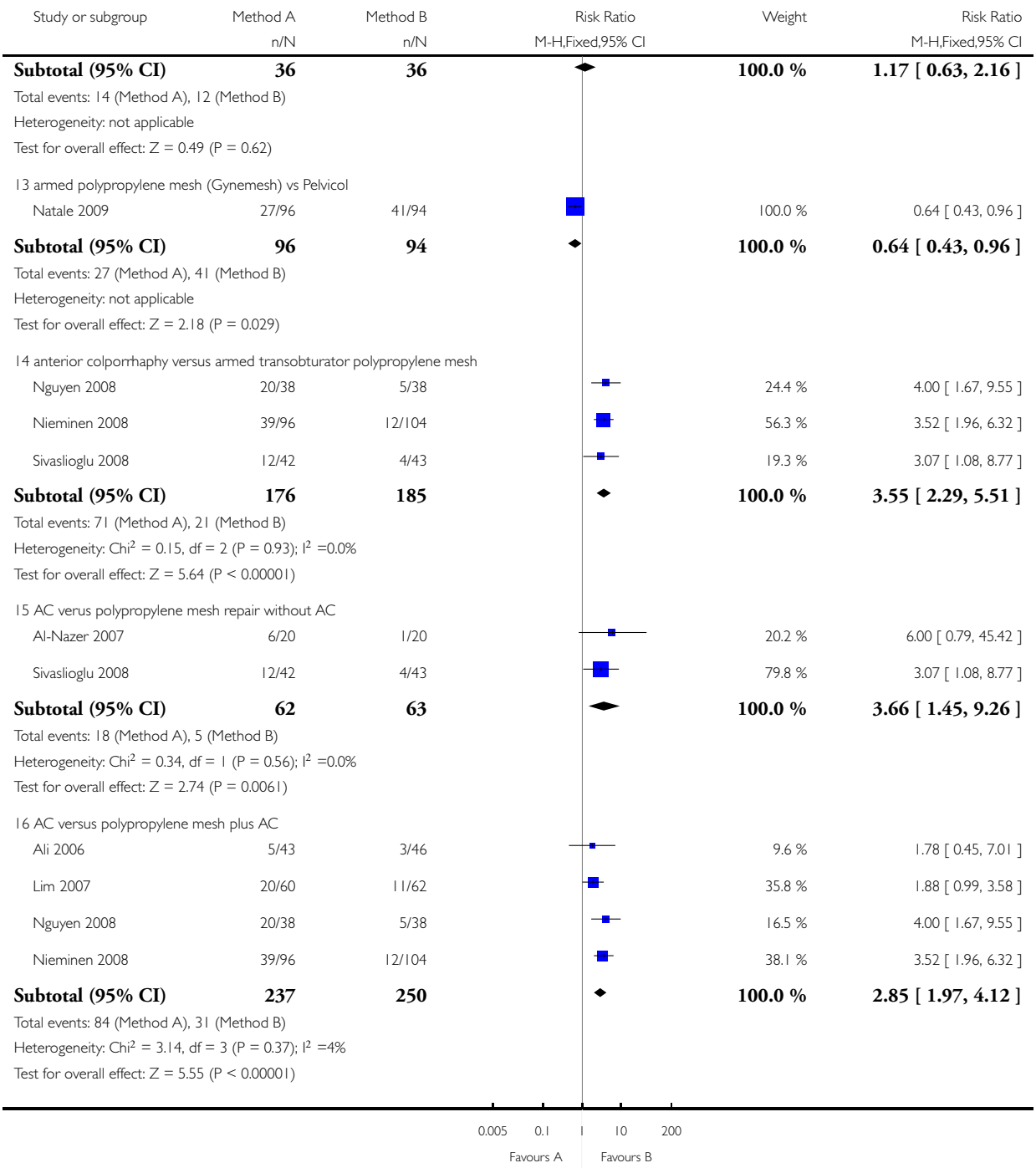


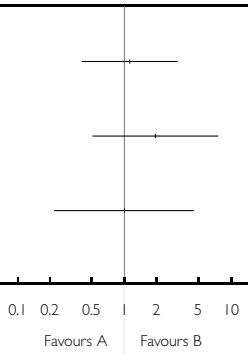
Analysis 2.7. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 7 Number of women with de novo (new) stress urinary incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 7 Number of women with posterior prolapse / rectocele (objective failure)

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement				
Sand 2001	7/67	6/65		1.13 [0.40, 3.19]
2 Gynemesh vs Pelvicol				
Natale 2009	6/96	3/94		1.96 [0.50, 7.60]
3 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT				
Meschia 2004	3/25	3/25		1.00 [0.22, 4.49]



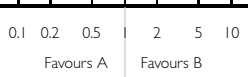
Analysis 2.8. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 8 Number of women with urgency, detrusor overactivity or overactive bladder.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 8 Number of women with postoperative stress urinary incontinence

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 fascial plication vs fascial plication with Pelvicol overlay				
Meschia 2007	14/103	10/98		1.33 [0.62, 2.86]
2 anterior colporrhaphy versus armed transobturator polypropylene mesh				
Nieminen 2008	9/96	23/104		0.42 [0.21, 0.87]
3 traditional anterior colporraphy vs abdominal Burch colposuspension				
Colombo 2000	16/33	5/35		3.39 [1.40, 8.22]
4 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension				
Colombo 1997	6/15	6/21		1.40 [0.56, 3.50]

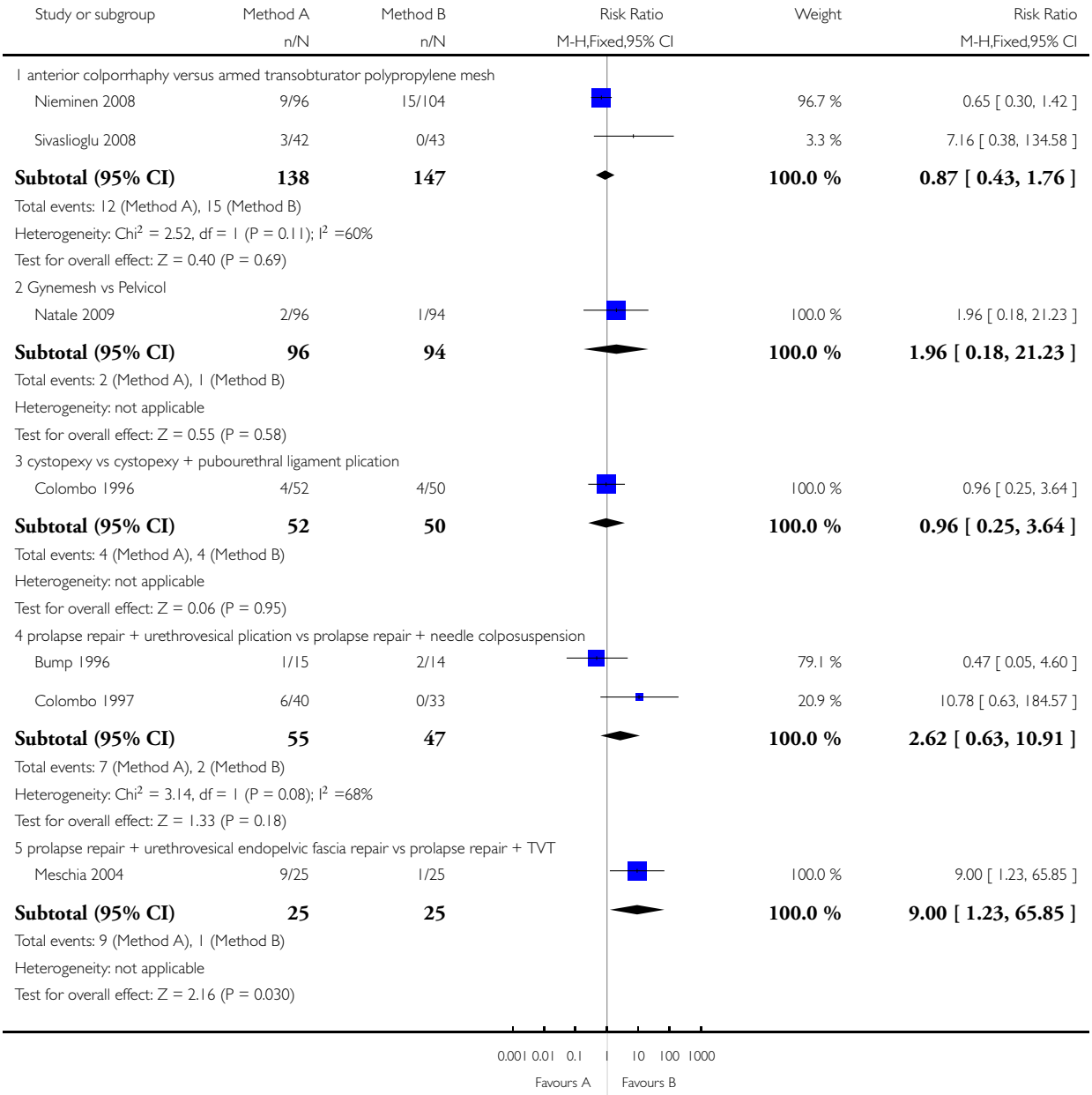


Analysis 2.9. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 9 Number of women with dyspareunia.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 9 Number of women with de novo (new) stress urinary incontinence

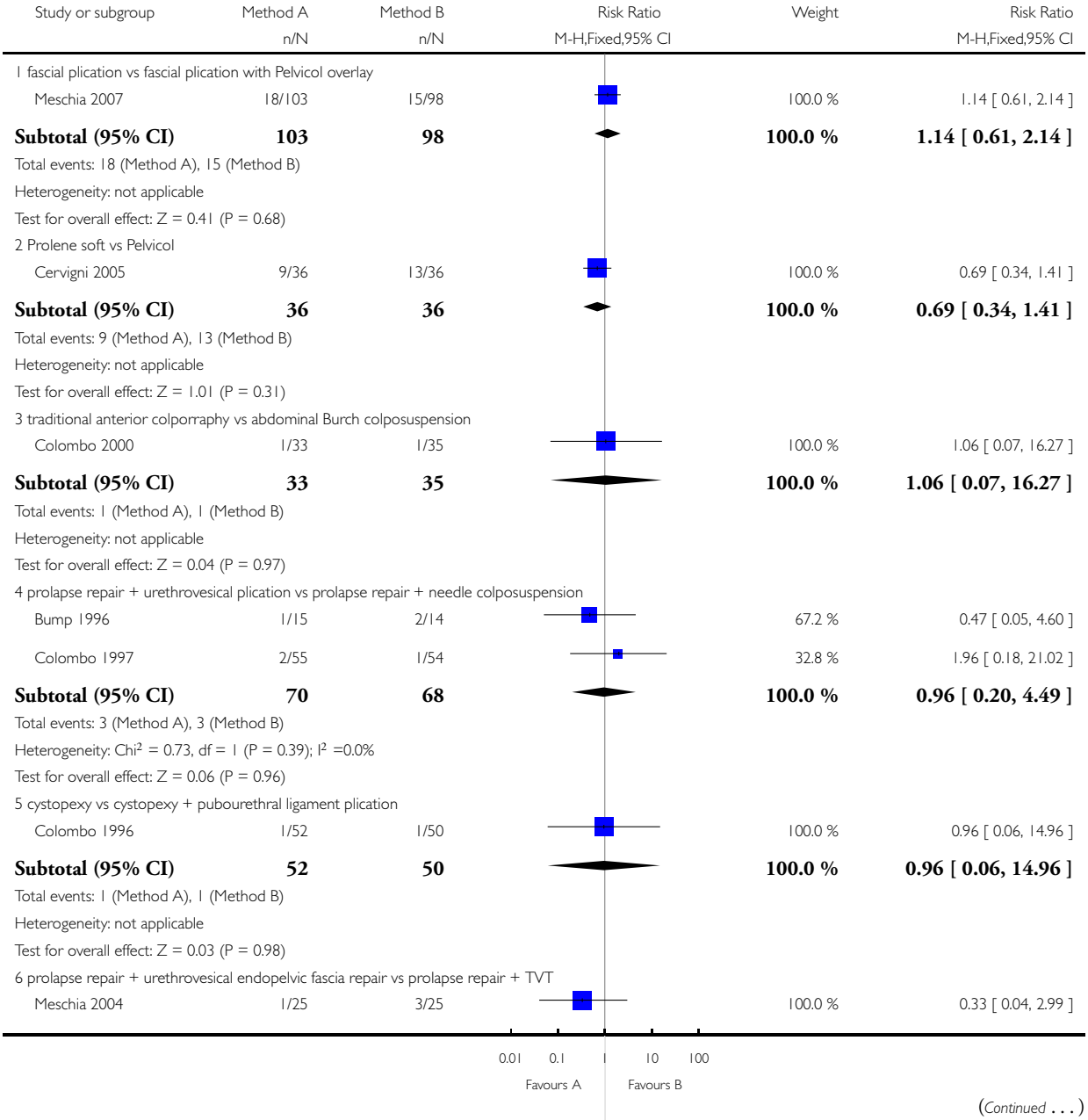


Analysis 2.10. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 10 Operating time (minutes).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 10 Number of women with urgency, detrusor overactivity or overactive bladder



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Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Subtotal (95% CI)	**25**	**25**		**100.0 %**	**0.33 [0.04, 2.99]**
Total events: 1 (Method A), 3 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.98 (P = 0.33)					
7 armed polypropylene mesh (Gynemesh) vs Pelvicol					
Natale 2009	12/96	21/94		100.0 %	0.56 [0.29, 1.07]
Subtotal (95% CI)	**96**	**94**		**100.0 %**	**0.56 [0.29, 1.07]**
Total events: 12 (Method A), 21 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.75 (P = 0.080)					

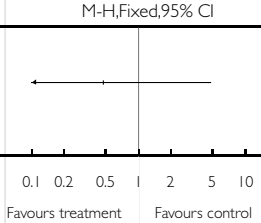
Analysis 2.11. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 11 Blood loss (ml).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 11 De novo overactive bladder symptoms

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Prolene soft vs Pelvicol				
Cervigni 2005	1/19	2/18		0.47 [0.05, 4.78]



Analysis 2.12. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 12 Haemoglobin change.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 12 Postoperative voiding dysfunction symptoms

Study or subgroup	treatment n/N	control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 fascial plication vs fascial plication with Pelvicol overlay				
Meschia 2007	16/103	15/98		1.01 [0.53, 1.94]
2 prolene soft vs Pelvicol				
Cervigni 2005	9/36	5/36		1.80 [0.67, 4.85]
3 anterior colporrhaphy vs cadaveric fascia lata (Tutoplast)				
Gandhi 2005	28/76	21/72		1.26 [0.79, 2.01]

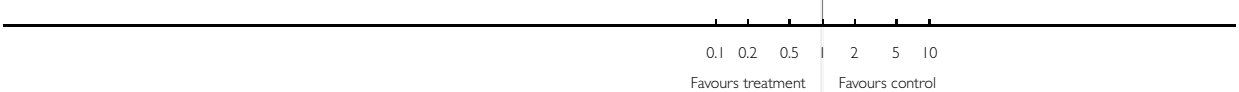
Analysis 2.13. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 13 Time to return to spontaneous voiding (days).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 13 Urodynamic voiding dysfunction

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Prolene soft vs pelvicol				
Cervigni 2005	3/36	3/36		1.00 [0.22, 4.63]

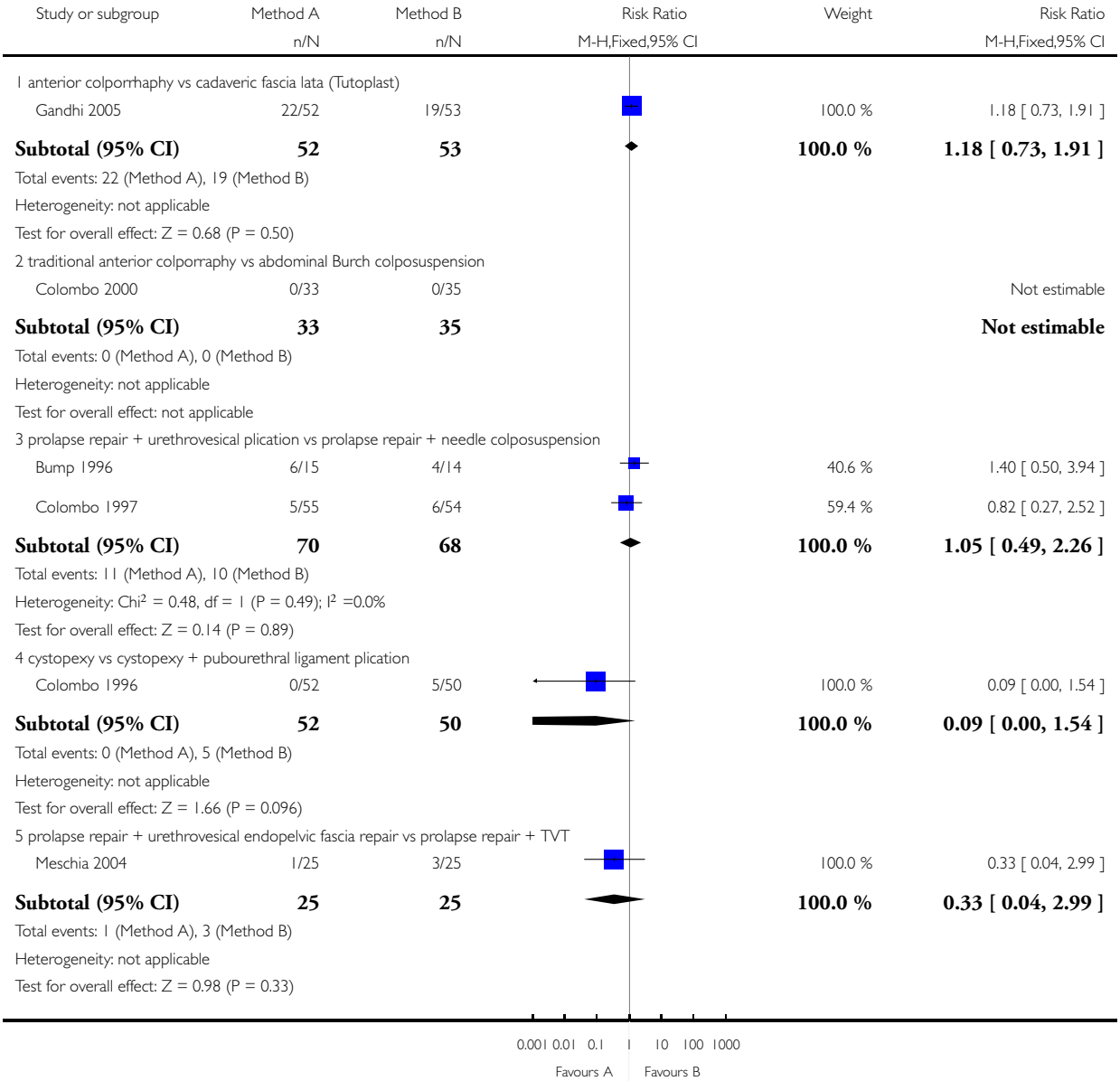


Analysis 2.14. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 14 Number of women with postoperative complications.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 14 Persistent voiding dysfunction



Analysis 2.15. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 15 Length of stay in hospital (days).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 15 Time to return to spontaneous voiding (days)

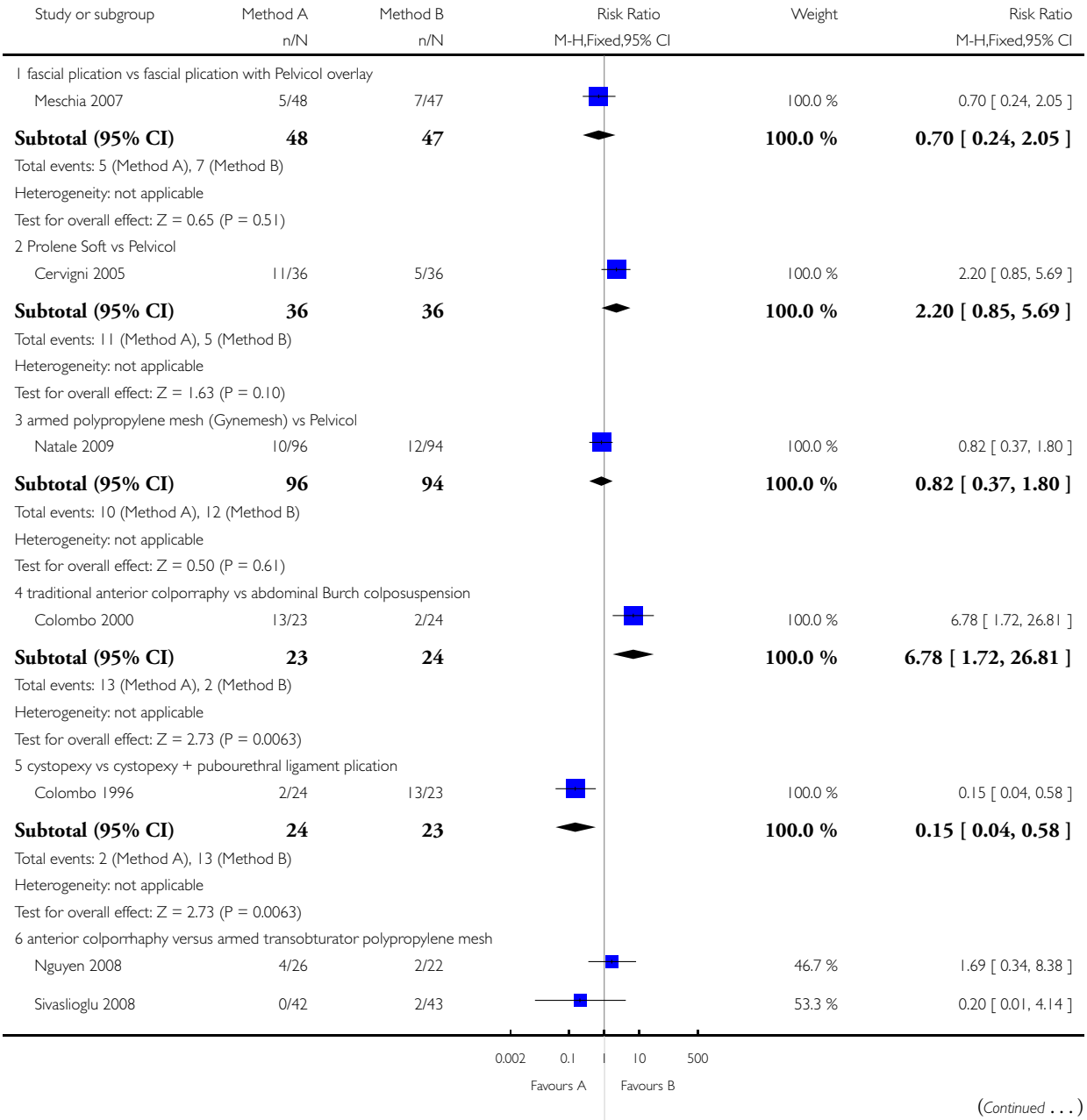
Study or subgroup	Method A N	Mean(SD)	Method B N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 fascial plication vs fascial plication with Pelvicol overlay						
Meschia 2007	103	3.5 (3)	98	3 (3.2)		0.50 [-0.36, 1.36]
2 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT						
Meschia 2004	25	3.8 (2)	25	4.4 (1.7)		-0.60 [-1.63, 0.43]

Analysis 2.18. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 18 Number of women having further prolapse surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 18 Number of women with dyspareunia



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Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Subtotal (95% CI)	**68**	**65**		**100.0 %**	**0.90 [0.25, 3.23]**
Total events: 4 (Method A), 4 (Method B)					
Heterogeneity: Chi^2 = 1.53, df = 1 (P = 0.22); I^2 =35%					
Test for overall effect: Z = 0.16 (P = 0.87)					

Analysis 2.19. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 19 Number of women having further surgery for incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 19 Blood loss (ml)

Study or subgroup	Method A N	Mean(SD)	Method B N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 fascial plication vs fascial plication with Pelvicol overlay						
Meschia 2007	103	167 (96)	98	151 (112)		16.00 [-12.90, 44.90]
2 anterior colporrhaphy versus armed transobturator polypropylene mesh						
Nieminen 2008	96	114 (109)	104	190 (23)		-76.00 [-98.25, -53.75]
3 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT						
Meschia 2004	25	177 (102)	25	188 (77)		-11.00 [-61.10, 39.10]

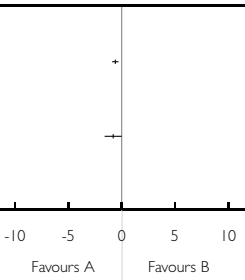
Analysis 2.20. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 20 Persistent voiding dysfunction.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 20 Haemoglobin change

Study or subgroup	Method A N	Mean(SD)	Method B N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 anterior colporrhaphy versus armed transobturator polypropylene mesh						
Nguyen 2008	38	1.8 (0.375)	37	2.4 (0.75)		-0.60 [-0.87, -0.33]
2 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT						
Meschia 2004	25	1 (1.2)	25	1.8 (1.6)		-0.80 [-1.58, -0.02]



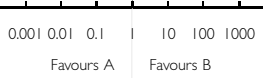
Analysis 2.21. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 21 Number of women with worse bowel function / constipation.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 21 Number of women with postoperative complications

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 fascial plication vs fascial plication with Pelvicol overlay				
Meschia 2007	0/103	4/98		0.11 [0.01, 1.94]
2 traditional anterior colporraphy vs ultralateral anterior colporraphy				
Weber 2001	1/35	1/39		1.11 [0.07, 17.15]
3 traditional anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement				
Sand 2001	0/70	0/73		Not estimable
Weber 2001	1/35	1/35		1.00 [0.07, 15.36]
4 ultralateral anterior colporraphy vs anterior colporraphy + polyglactin mesh reinforcement				
Weber 2001	1/39	1/35		0.90 [0.06, 13.82]
5 traditional anterior colporraphy vs abdominal Burch colposuspension				
Colombo 2000	0/33	1/35		0.35 [0.01, 8.37]
6 prolapse repair + urethrovesical plication vs prolapse repair + needle colposuspension				
Colombo 1997	0/55	2/54		0.20 [0.01, 4.00]
7 cystopexy vs cystopexy + pubourethral ligament plication				
Colombo 1996	0/52	1/50		0.32 [0.01, 7.69]
8 prolapse repair + urethrovesical endopelvic fascia repair vs prolapse repair + TVT				
Meschia 2004	0/25	2/25		0.20 [0.01, 3.97]
9 Prolene soft vs Pelvicol				
Cervigni 2005	15/36	4/36		3.75 [1.38, 10.21]

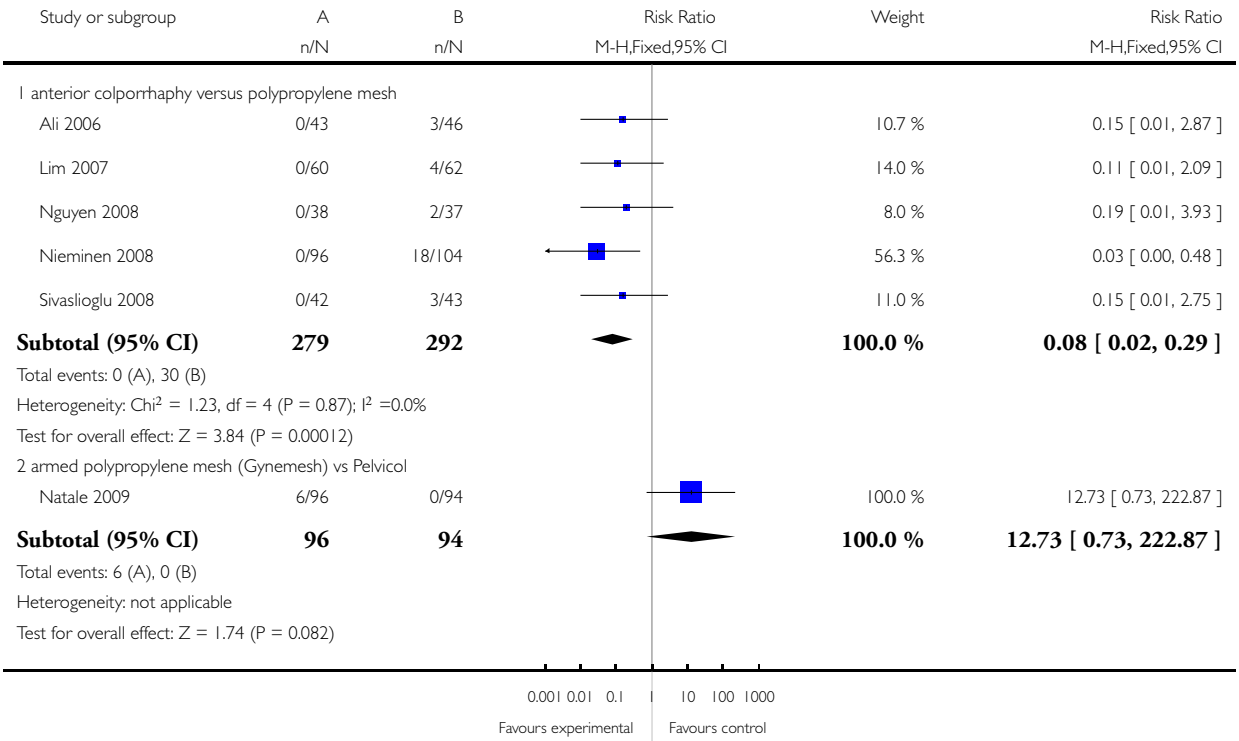


Analysis 2.22. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 22 Urodynamic voiding dysfunction.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 22 Mesh erosion

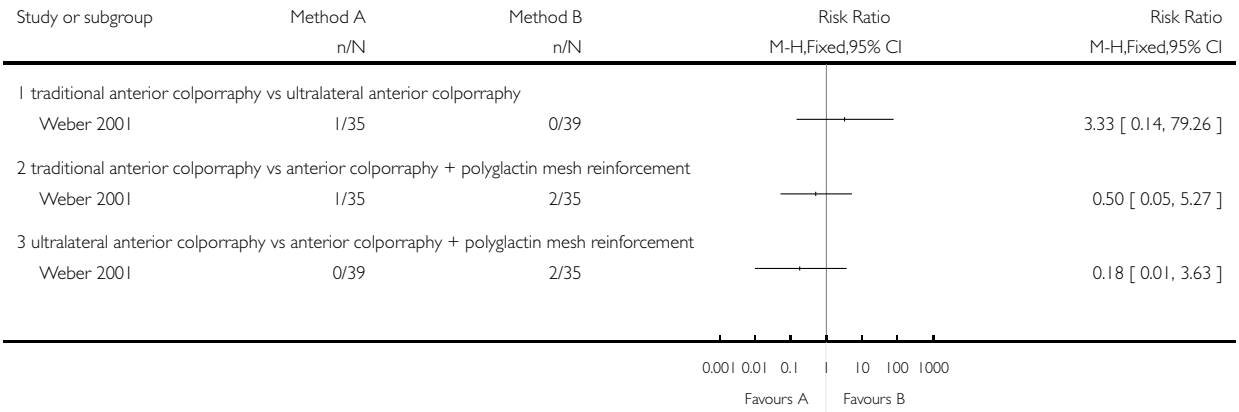


Analysis 2.23. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 23 Death.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 23 Death

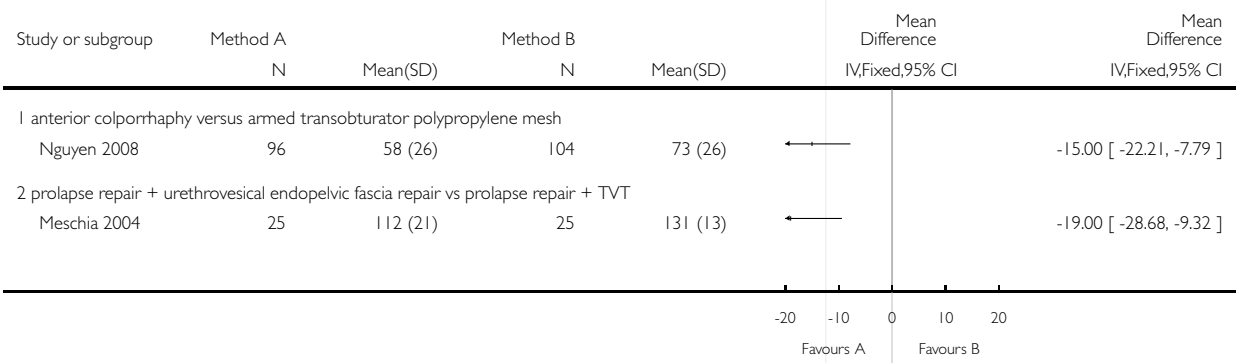


Analysis 2.24. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 24 De novo overactive bladder symptoms.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 24 Operating time (minutes)

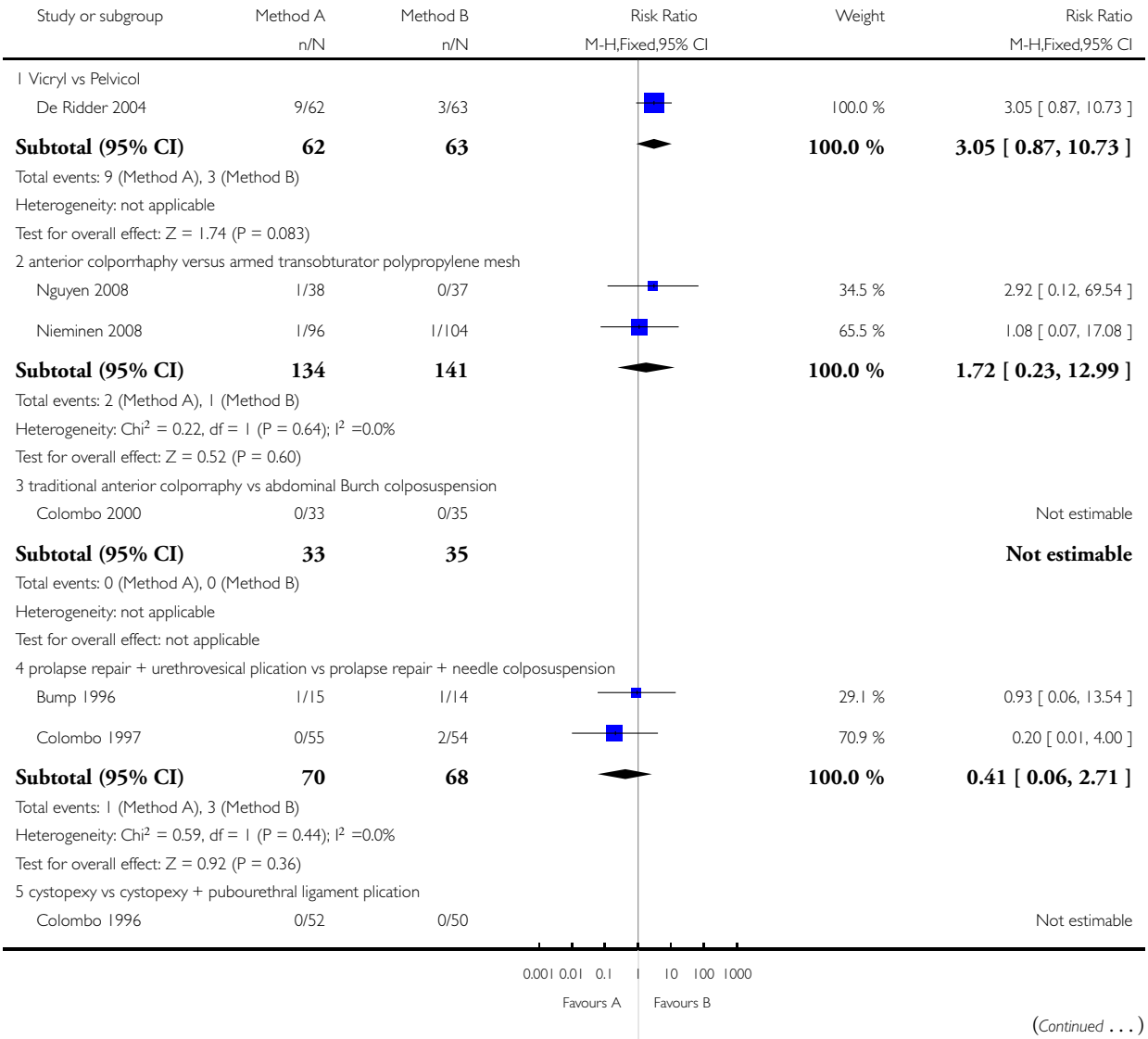


Analysis 2.26. Comparison 2 One method of anterior prolapse repair versus another surgical method, Outcome 26 VAS for severity of prolapse symptoms (repair for anterior vaginal prolapse).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 2 One method of anterior prolapse repair versus another surgical method

Outcome: 26 Number of women having further prolapse surgery



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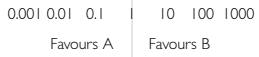
Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Subtotal (95% CI)	**52**	**50**			**Not estimable**
Total events: 0 (Method A), 0 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					



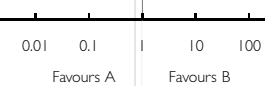
Analysis 3.1. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 1 Number of women with prolapse symptoms (subjective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 1 Number of women with prolapse symptoms (subjective failure)

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 posterior vaginal colporrhaphy vs transanal repair					
Kahn 1999	3/24	10/33		67.8 %	0.41 [0.13, 1.34]
Nieminen 2004	1/15	4/15		32.2 %	0.25 [0.03, 1.98]
Subtotal (95% CI)	**39**	**48**		**100.0 %**	**0.36 [0.13, 1.00]**
Total events: 4 (Method A), 14 (Method B)					
Heterogeneity: Chi^2 = 0.17, df = 1 (P = 0.68); I^2 =0.0%					
Test for overall effect: Z = 1.96 (P = 0.050)					
2 posterior vaginal colporrhaphy vs site specific repair					
Paraiso 2006	5/31	4/29		100.0 %	1.17 [0.35, 3.93]
Subtotal (95% CI)	**31**	**29**		**100.0 %**	**1.17 [0.35, 3.93]**
Total events: 5 (Method A), 4 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.25 (P = 0.80)					
3 posterior vaginal colporrhaphy vs site specific repair with porcine small intestine graft inlay					
Paraiso 2006	5/31	6/28		100.0 %	0.75 [0.26, 2.20]
Subtotal (95% CI)	**31**	**28**		**100.0 %**	**0.75 [0.26, 2.20]**



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Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Total events: 5 (Method A), 6 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.52 (P = 0.60)					

Analysis 3.2. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 2 Number of women with prolapse (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 2 Number of women with prolapse (objective failure)

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 posterior vaginal colporrhaphy vs transanal repair (rectocele)					
Kahn 1999	1/24	1/33		12.3 %	1.38 [0.09, 20.90]
Nieminen 2004	1/15	6/15		87.7 %	0.17 [0.02, 1.22]
Subtotal (95% CI)	**39**	**48**		**100.0 %**	**0.32 [0.07, 1.34]**
Total events: 2 (Method A), 7 (Method B)					
Heterogeneity: Chi^2 = 1.52, df = 1 (P = 0.22); I^2 =34%					
Test for overall effect: Z = 1.56 (P = 0.12)					
2 posterior vaginal colporrhaphy vs transanal repair (enterocele)					
Kahn 1999	2/24	9/33		62.7 %	0.31 [0.07, 1.29]
Nieminen 2004	0/15	4/15		37.3 %	0.11 [0.01, 1.90]
Subtotal (95% CI)	**39**	**48**		**100.0 %**	**0.23 [0.07, 0.83]**
Total events: 2 (Method A), 13 (Method B)					
Heterogeneity: Chi^2 = 0.40, df = 1 (P = 0.53); I^2 =0.0%					
Test for overall effect: Z = 2.26 (P = 0.024)					
3 posterior vaginal colporrhaphy vs transanal repair (rectocele or enterocele))					
Kahn 1999	3/24	10/33		45.7 %	0.41 [0.13, 1.34]
Nieminen 2004	1/15	10/15		54.3 %	0.10 [0.01, 0.69]

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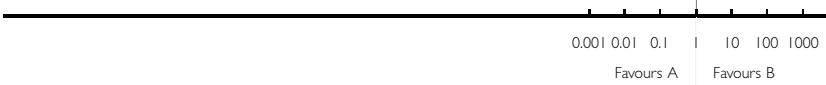
Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Subtotal (95% CI)	**39**	**48**		**100.0 %**	**0.24 [0.09, 0.64]**
Total events: 4 (Method A), 20 (Method B)					
Heterogeneity: Chi^2 = 1.59, df = 1 (P = 0.21); I^2 =37%					
Test for overall effect: Z = 2.86 (P = 0.0043)					
4 posterior vaginal colporraphy vs posterior colporraphy with mesh reinforcement for rectocele					
Sand 2001	7/67	6/65		100.0 %	1.13 [0.40, 3.19]
Subtotal (95% CI)	**67**	**65**		**100.0 %**	**1.13 [0.40, 3.19]**
Total events: 7 (Method A), 6 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.23 (P = 0.81)					
5 posterior vaginal colporrhaphy vs site specific repair					
Paraiso 2006	4/28	6/27		100.0 %	0.64 [0.20, 2.03]
Subtotal (95% CI)	**28**	**27**		**100.0 %**	**0.64 [0.20, 2.03]**
Total events: 4 (Method A), 6 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.75 (P = 0.45)					
6 posterior vaginal colporrhaphy vs site specific repair with porcine small intestine graft inlay					
Paraiso 2006	4/28	12/26		100.0 %	0.31 [0.11, 0.84]
Subtotal (95% CI)	**28**	**26**		**100.0 %**	**0.31 [0.11, 0.84]**
Total events: 4 (Method A), 12 (Method B)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.30 (P = 0.021)					



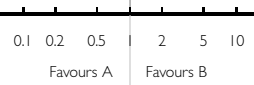
Analysis 3.3. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 3 Change in hamatocrit.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 3 Number of women with faecal incontinence after operation

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 posterior vaginal colporrhaphy vs transanal repair				
Nieminen 2004	0/15	0/15		Not estimable



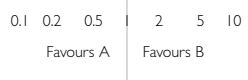
Analysis 3.4. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 4 Number of women with faecal incontinence after operation.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 4 Number of women with anal incontinence to flatus after operation

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 posterior vaginal colporrhaphy vs transanal repair				
Nieminen 2004	4/15	3/15		1.33 [0.36, 4.97]

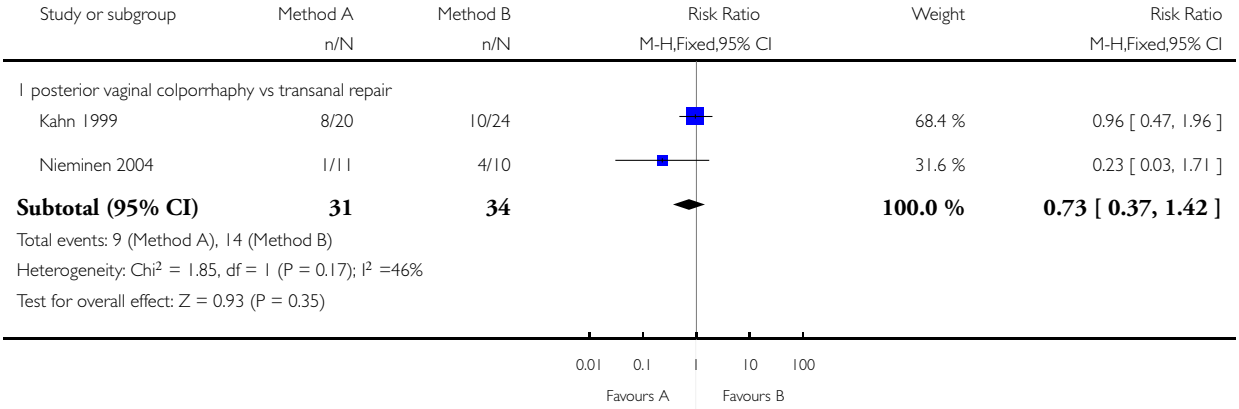


Analysis 3.5. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 5 Number of women with anal incontinence to flatus after operation.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 5 Number of women with obstructed defecation / constipation after surgery

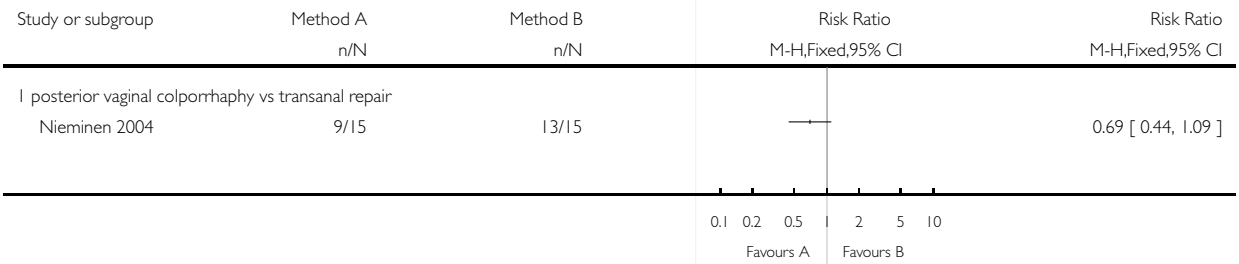


Analysis 3.6. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 6 Number of women with obstructed defecation / constipation after surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 6 Number of women with sexual function not improved after operation

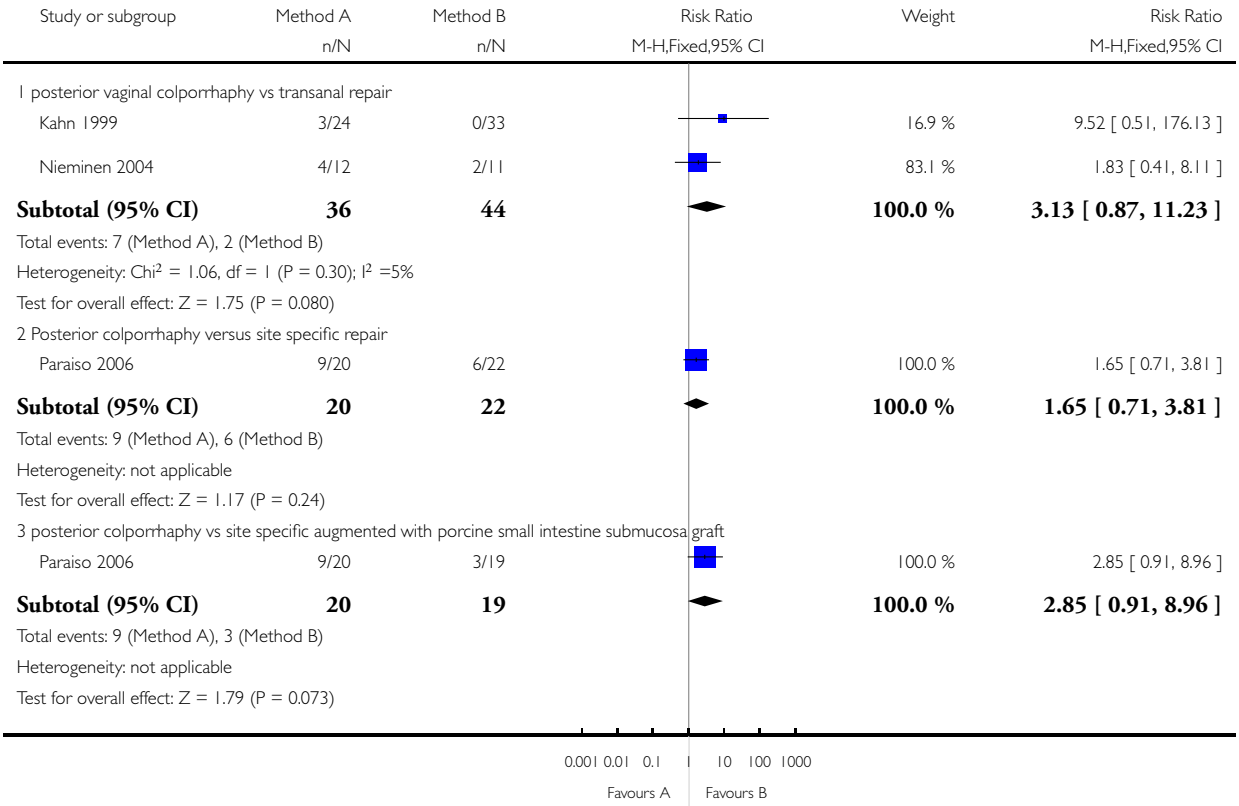


Analysis 3.7. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 7 Number of women with sexual function not improved after operation.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 7 Number of women with dyspareunia



Analysis 3.8. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 8 Number of women with dyspareunia.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 8 Blood loss (ml)

Study or subgroup	Method A N	Mean(SD)	Method B N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 posterior vaginal colporrhaphy vs transanal repair							
Kahn 1999	24	153 (164)	33	40 (5)		36.6 %	113.00 [47.37, 178.63]
Nieminen 2004	15	120 (90)	15	60 (40)		63.4 %	60.00 [10.16, 109.84]
Subtotal (95% CI)	**39**		**48**		♦	**100.0 %**	**79.38 [39.69, 119.08]**

Heterogeneity: Chi² = 1.59, df = 1 (P = 0.21); I² =37%

Test for overall effect: Z = 3.92 (P = 0.000089)

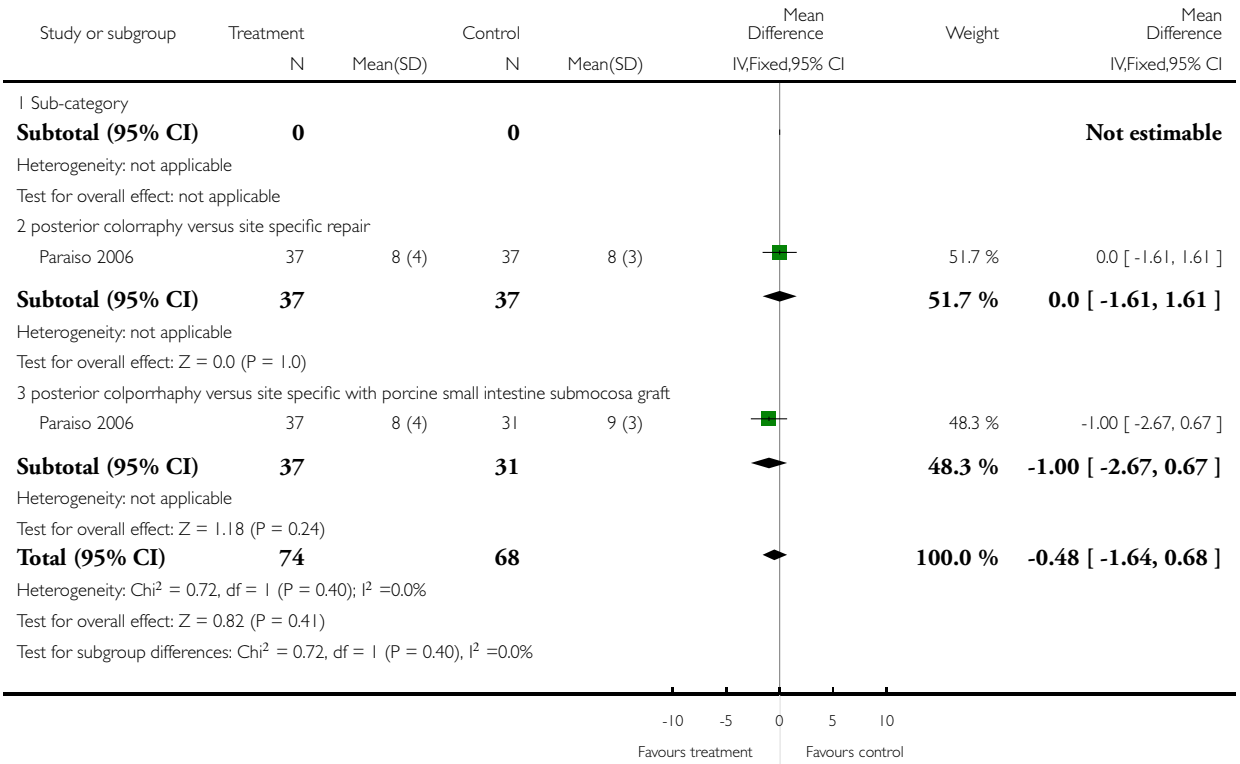
Test for subgroup differences: Not applicable

Analysis 3.9. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 9 Blood loss (ml).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 9 Change in hamatocrit

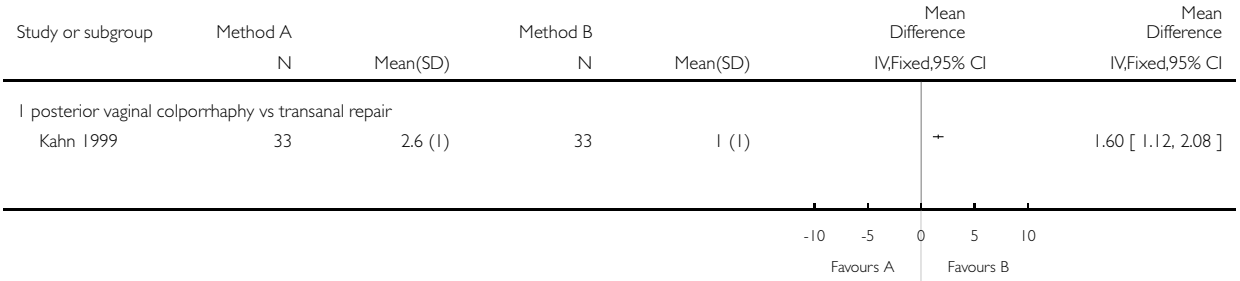


Analysis 3.10. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 10 Difference in haemoglobin.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 10 Difference in haemoglobin

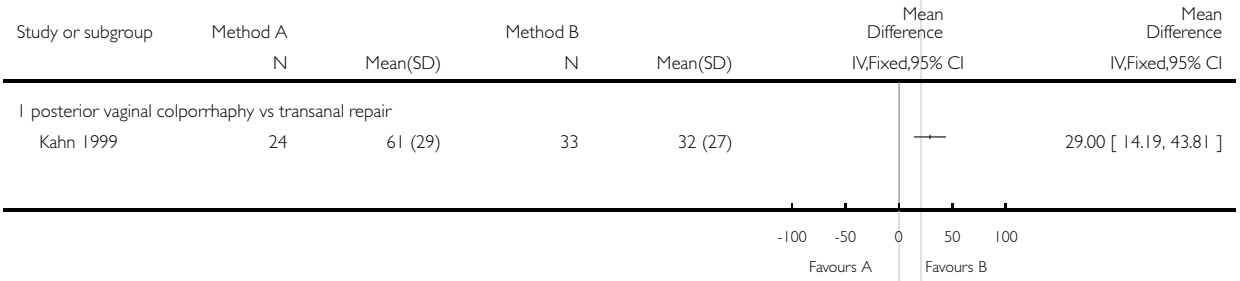


Analysis 3.11. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 11 Operating time (minutes).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 11 Postoperative narcotic (morphine) use

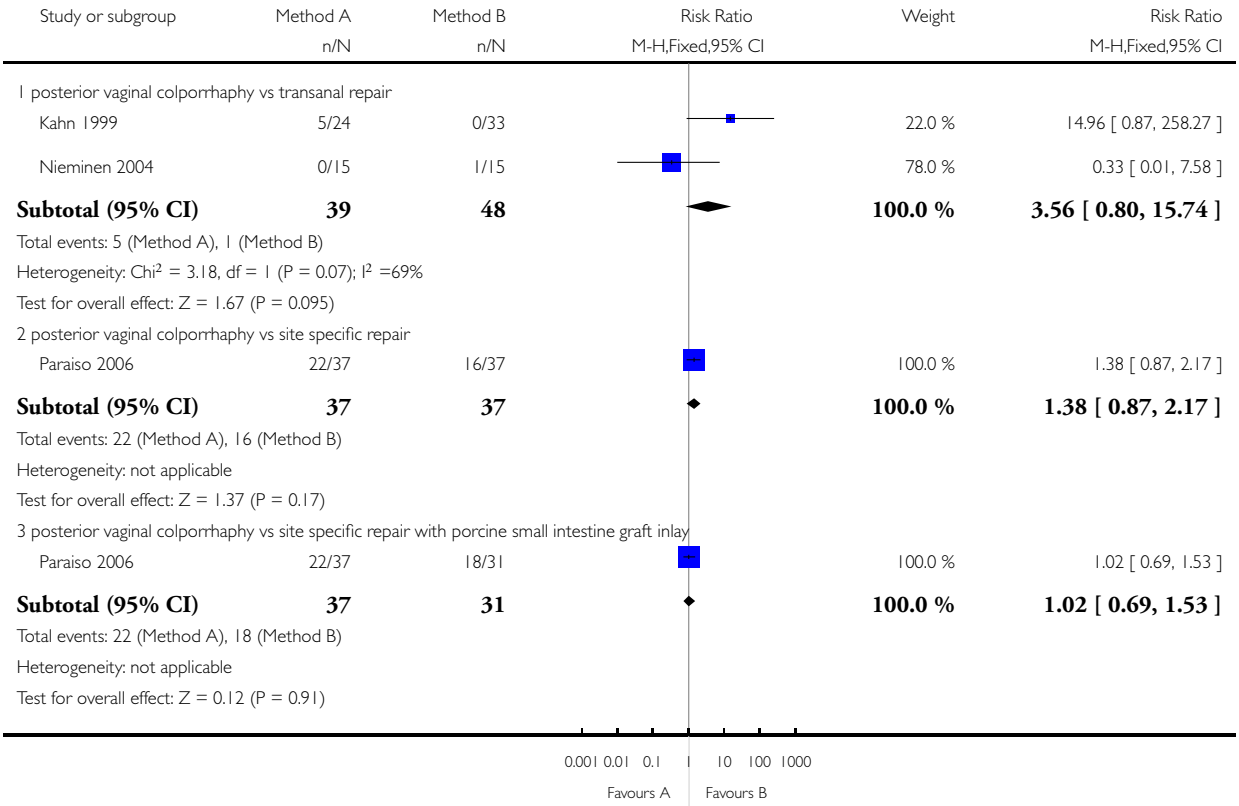


Analysis 3.12. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 12 Postoperative narcotic (morphine) use.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 12 Number of women with postoperative complications

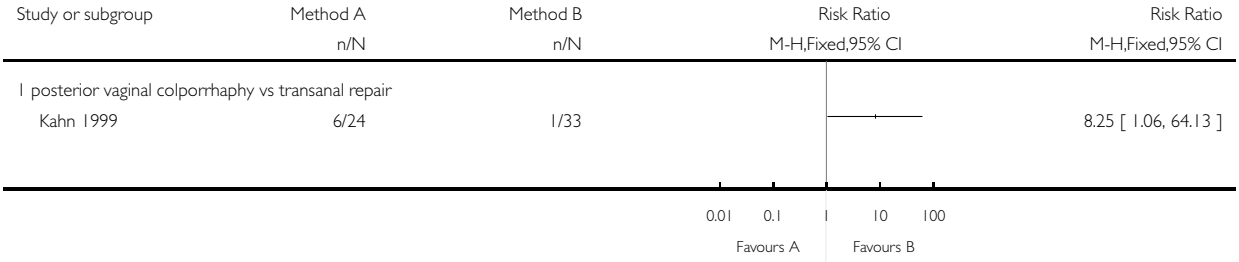


Analysis 3.13. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 13 Number of women with postoperative complications.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 13 Persistent postoperative pain

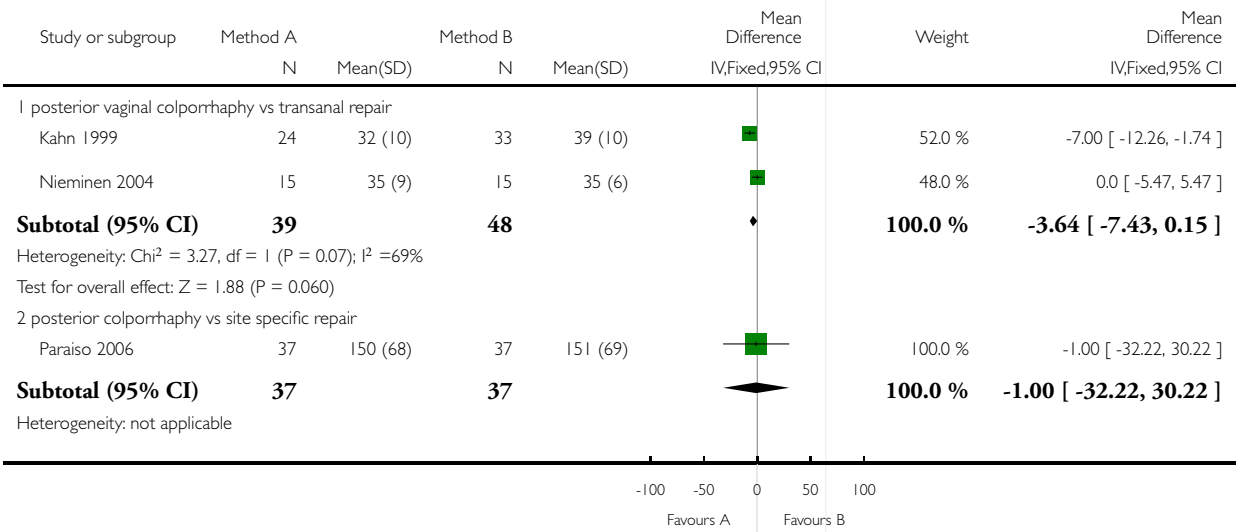


Analysis 3.14. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 14 Persistent postoperative pain.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 14 Operating time (minutes)



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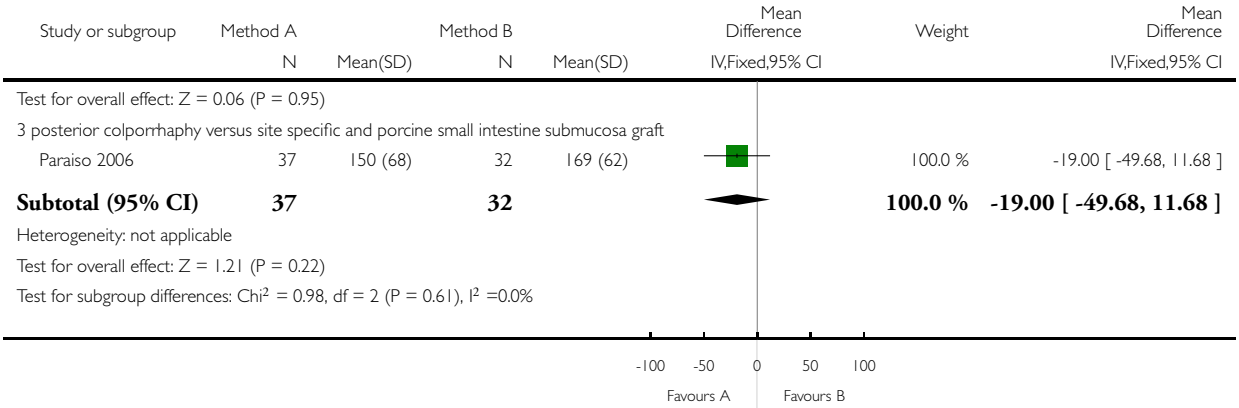
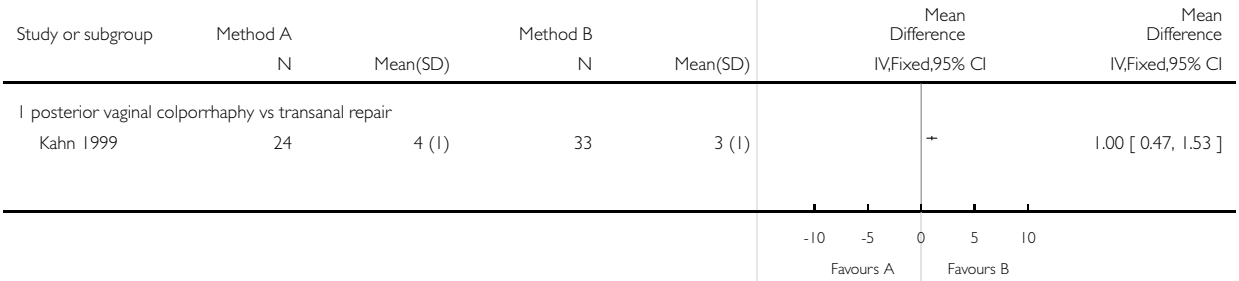


Analysis 3.15. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 15 Length of stay in hospital (days).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 15 Length of stay in hospital (days)

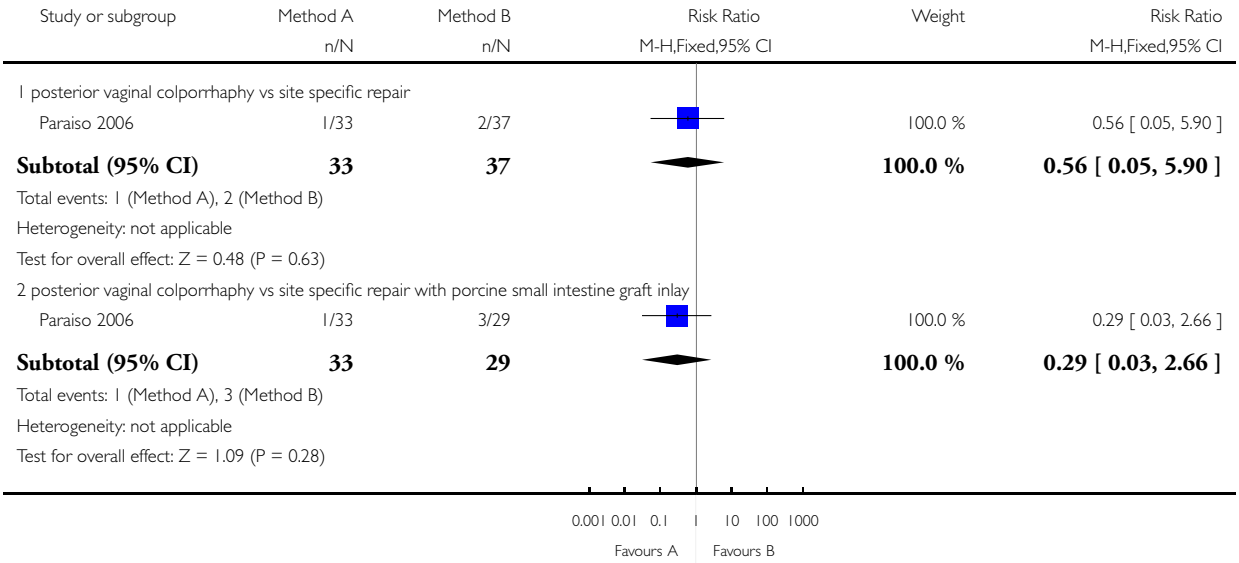


Analysis 3.16. Comparison 3 One method of posterior prolapse repair versus another surgical method, Outcome 16 Number of women having further prolapse surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 3 One method of posterior prolapse repair versus another surgical method

Outcome: 16 Number of women having further prolapse surgery

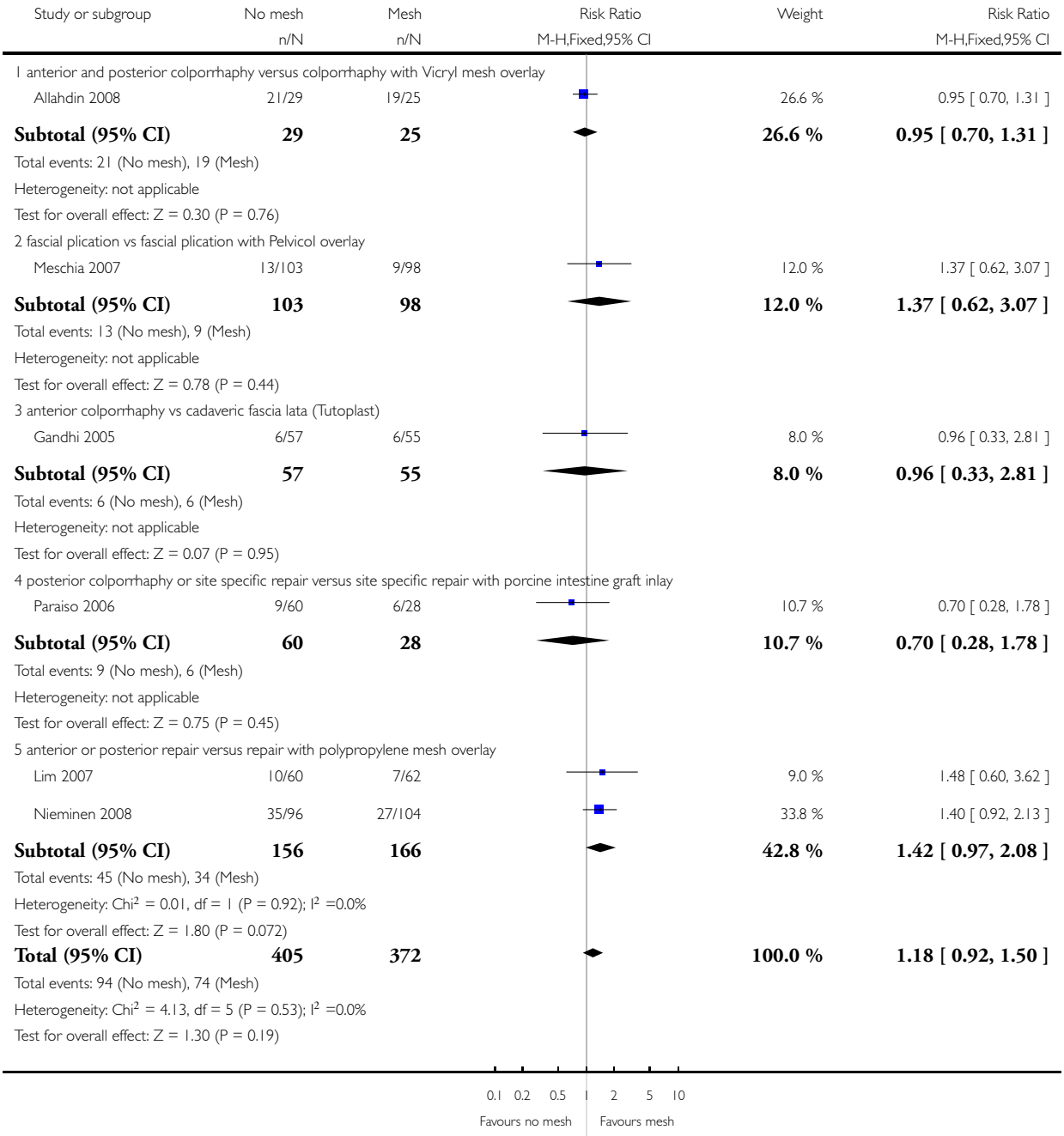


Analysis 7.1. Comparison 7 Prolapse repair and new urinary symptoms, Outcome 1 Number of women with de novo (new) stress urinary incontinence (subjective diagnosis).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 7 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 1 Number of women with prolapse symptoms (subjective failure)



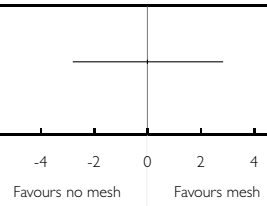
Analysis 7.2. Comparison 7 Prolapse repair and new urinary symptoms, Outcome 2 Number of women with de novo (new) stress urinary incontinence (objective diagnosis).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 7 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 2 Prolapse symptom score at 1 to 5 years

Study or subgroup	No mesh N	Mean(SD)	Mesh N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 anterior and posterior colporrhaphy versus colporrhaphy with Vicryl mesh overlay						
Allahdin 2008	29	4.3 (6.3)	25	4.3 (4.2)		0.0 [-2.82, 2.82]

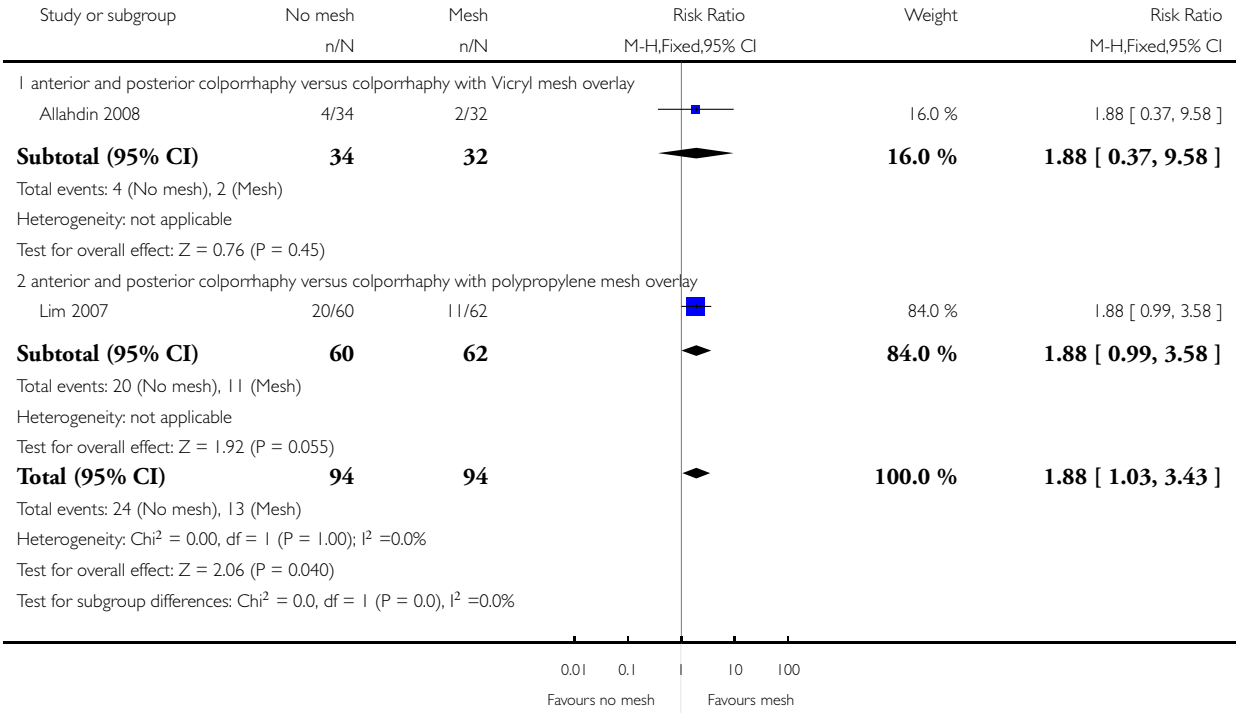


Analysis 7.4. Comparison 7 Prolapse repair and new urinary symptoms, Outcome 4 Number of women with de novo (new) urgency, detrusor overactivity or overactive bladder.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 7 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 4 Objective failure all sites

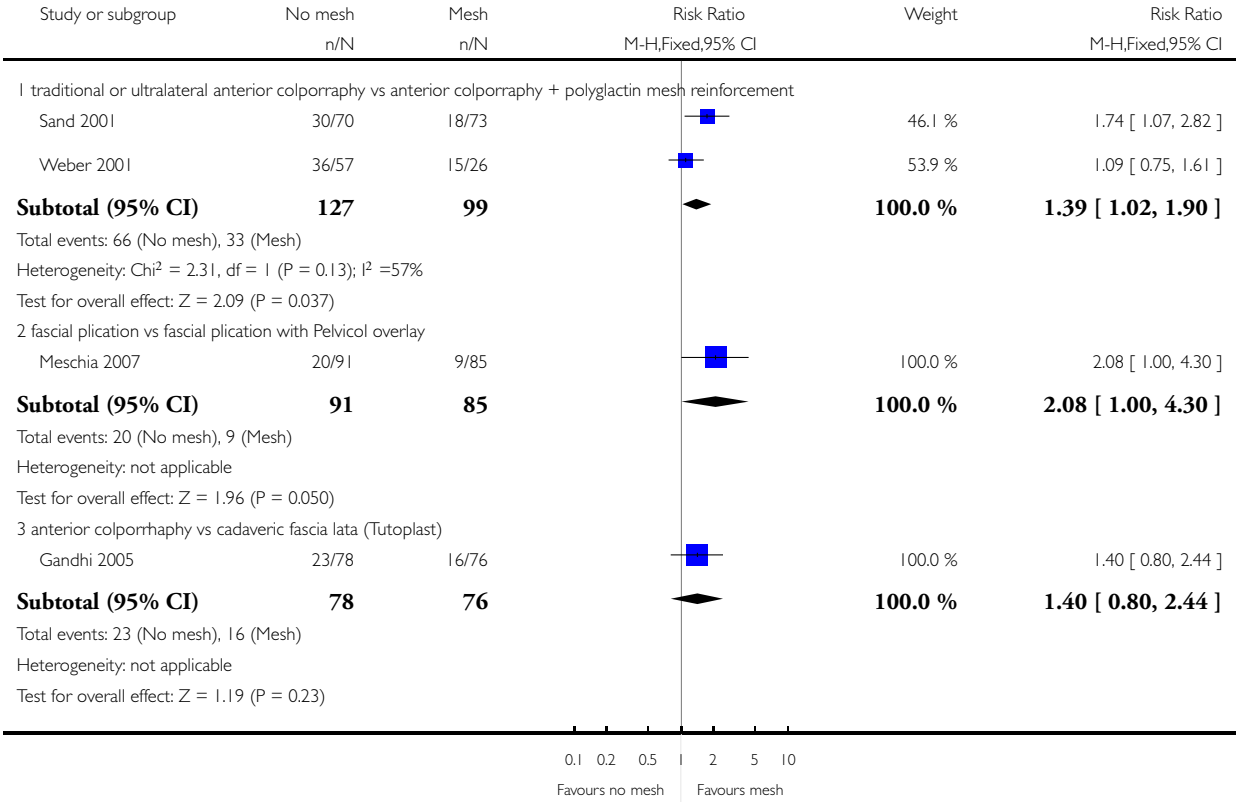


Analysis 7.5. Comparison 7 Prolapse repair and new urinary symptoms, Outcome 5 Long term new voiding dysfunction.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 7 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 5 Number of women with anterior prolapse / cystocele (objective failure)

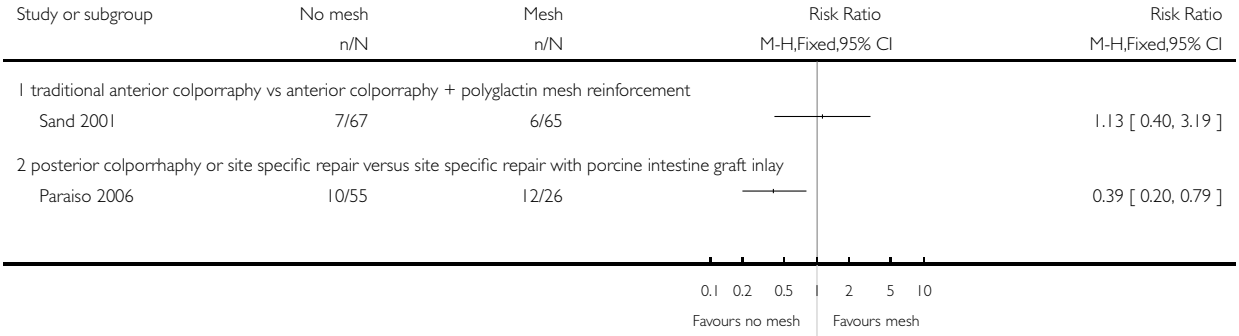


Analysis 7.6. Comparison 7 Prolapse repair and new urinary symptoms, Outcome 6 Number of women having further surgery for incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 7 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 6 Number of women with posterior prolapse / rectocele (objective failure)

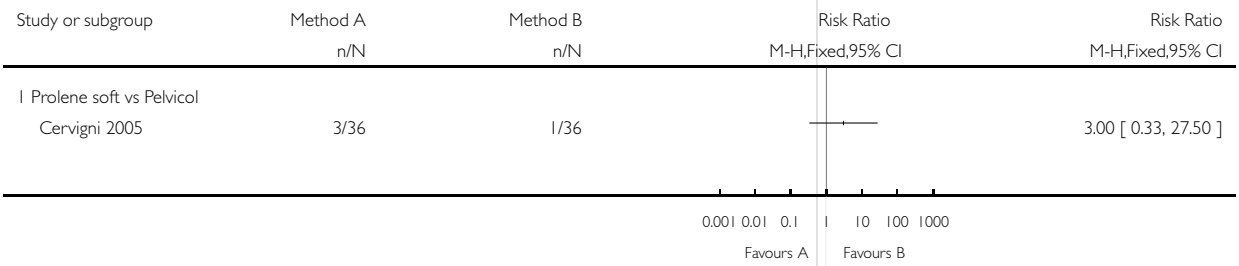


Analysis 8.1. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 1 Number of women with prolapse symptoms (subjective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 1 Number of women with prolapse symptoms (subjective failure)



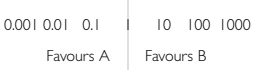
Analysis 8.2. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 2 Number of women with anterior prolapse / cystocele (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 2 Number of women with anterior prolapse / cystocele (objective failure)

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Vicryl vs Pelvicol				
De Ridder 2004	19/62	6/63		3.22 [1.38, 7.52]
2 Monofilament Polypropylene Mesh versus Porcine Dermis Graft				
Natale 2009	27/96	41/94		0.64 [0.43, 0.96]



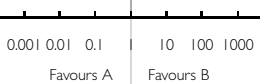
Analysis 8.3. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 3 Number of women with posterior prolapse / rectocele (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 3 Number of women having further prolapse surgery

Study or subgroup	Method A n/N	Method B n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Vicryl vs Pelvicol				
De Ridder 2004	9/62	3/63		3.05 [0.87, 10.73]
2 Monofilament Polypropylene Mesh versus Porcine Dermis Graft				
Natale 2009	0/96	0/94		Not estimable

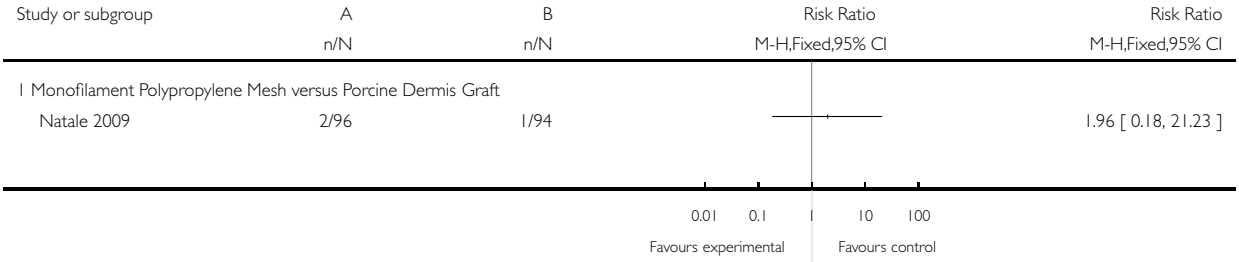


Analysis 8.4. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 4 Number of women with postoperative complications.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 4 Stress urinary incontinence de novo

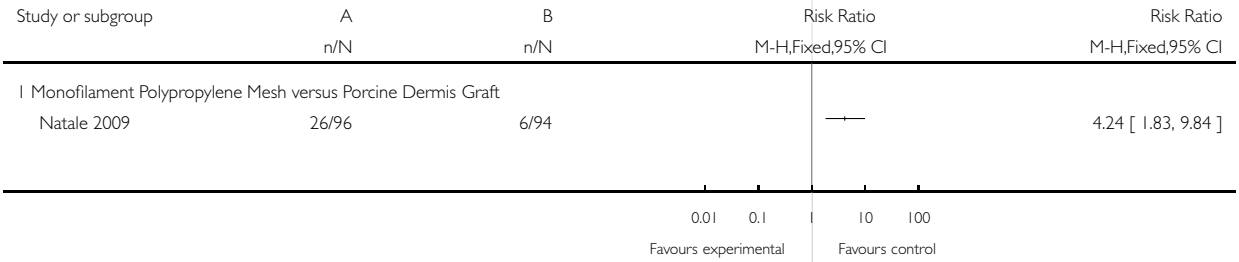


Analysis 8.5. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 5 Vaginal mesh erosion.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 5 Increased daytime urinary frequency post-op

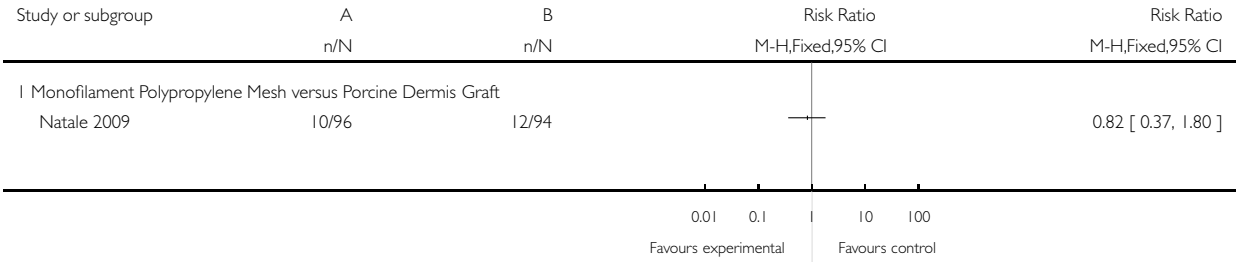


Analysis 8.6. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 6 Death.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 6 Dyspareunia post-op

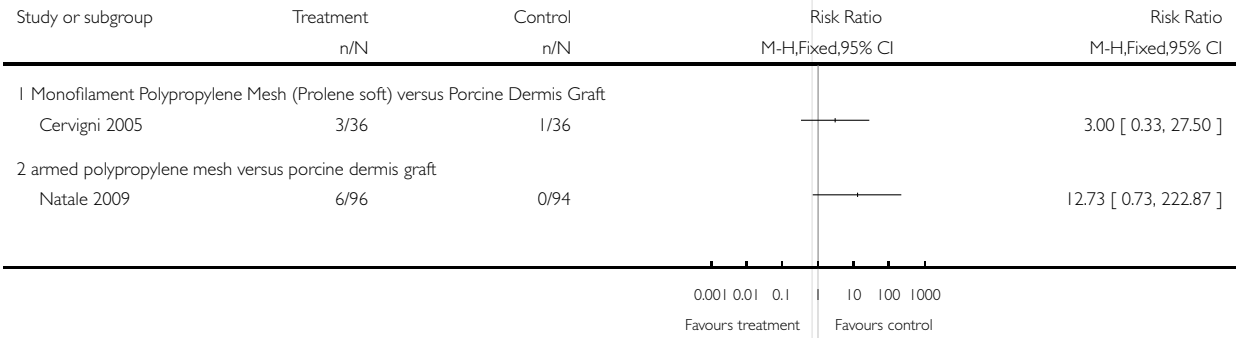


Analysis 8.7. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 7 VAS for severity of prolapse symptoms (repair for anterior vaginal prolapse).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 7 Vaginal mesh erosion

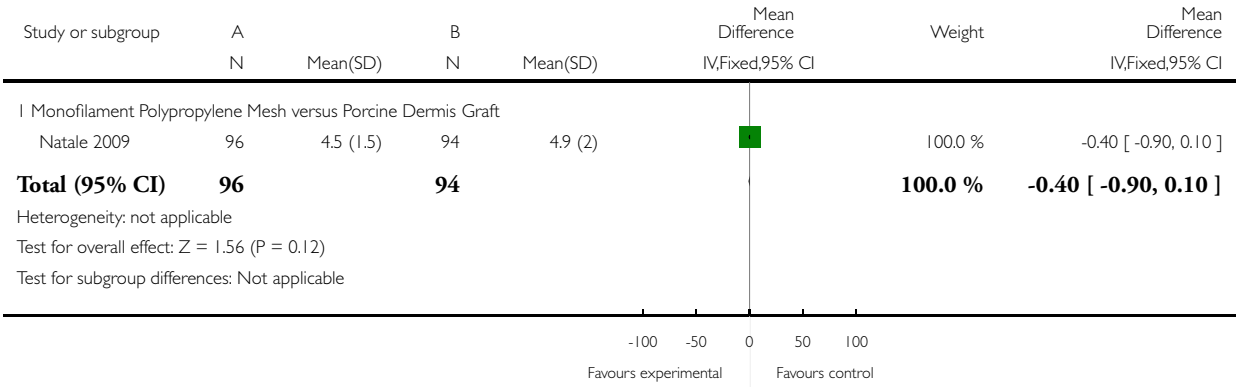


Analysis 8.8. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 8 Postoperative voiding dysfunction symptoms.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 One type of mesh or graft versus another type of mesh or graft

Outcome: 8 Hospital stay (days)

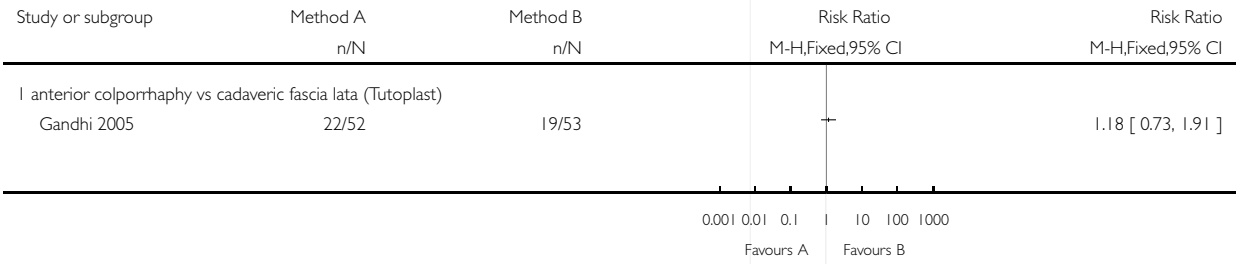


Analysis 8.9. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 9 Persistent voiding dysfunction.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 9 Persistent voiding dysfunction

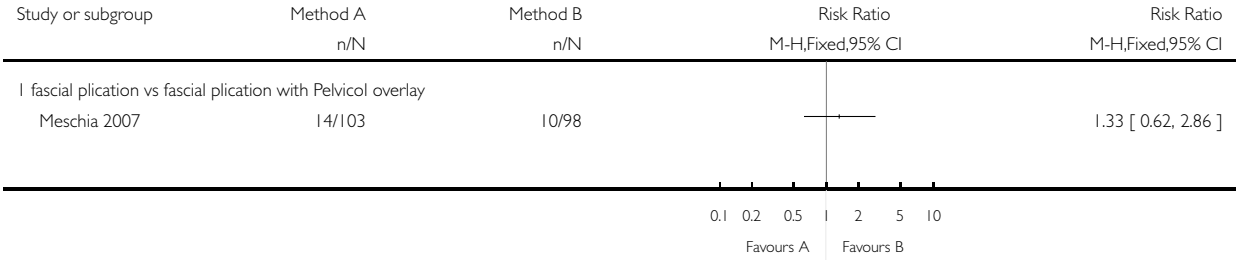


Analysis 8.10. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 10 Number of women with postoperative stress incontinence.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 10 Number of women with postoperative stress incontinence

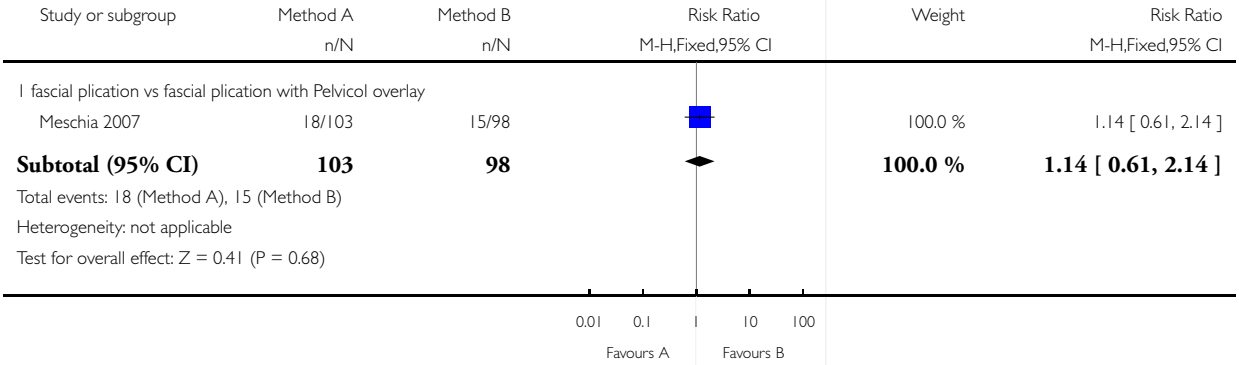


Analysis 8.11. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 11 Number of women with urgency, detrusor overactivity or overactive bladder.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 11 Number of women with urgency, detrusor overactivity or overactive bladder

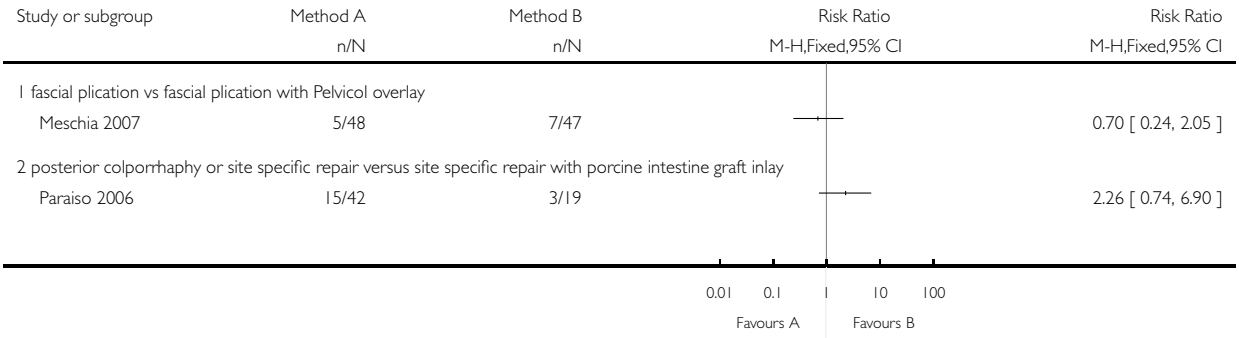


Analysis 8.12. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 12 Number of women with dyspareunia.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 12 Number of women with dyspareunia

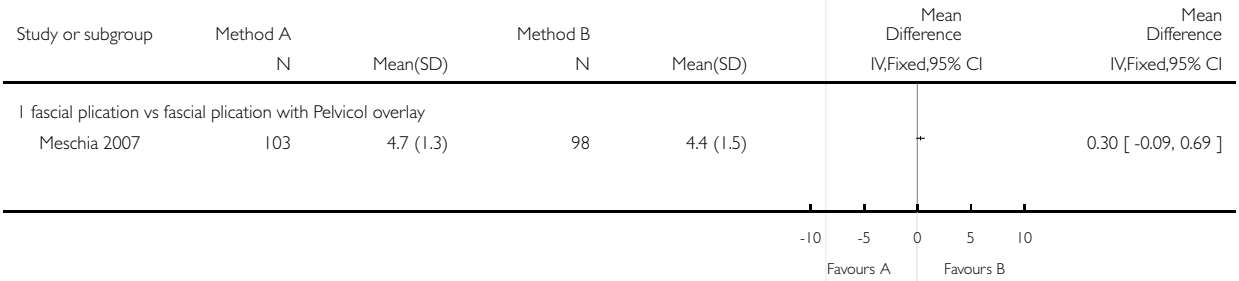


Analysis 8.13. Comparison 8 Use of native (no mesh) tissue versus mesh or grafts, Outcome 13 Length of stay in hospital (days).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 8 Use of native (no mesh) tissue versus mesh or grafts

Outcome: 13 Length of stay in hospital (days)

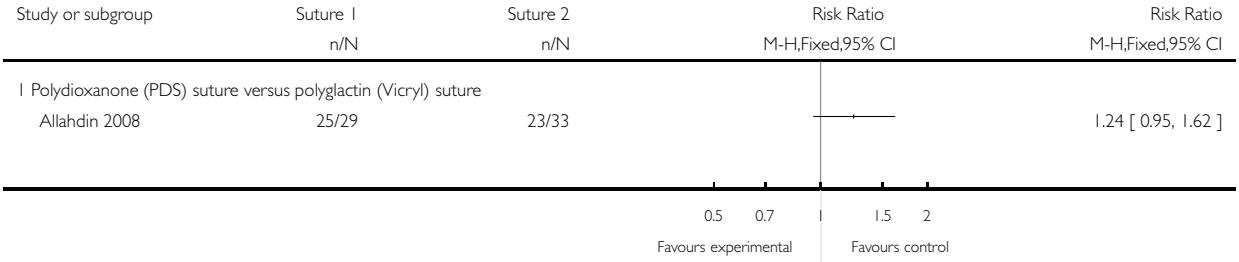


Analysis 9.1. Comparison 9 One type of mesh / graft versus another type of mesh / graft, Outcome 1 Number of women with prolapse symptoms (subjective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 9 One suture type versus another type of suture

Outcome: 1 Number of women with prolapse symptoms up to 1 year (subjective failure)

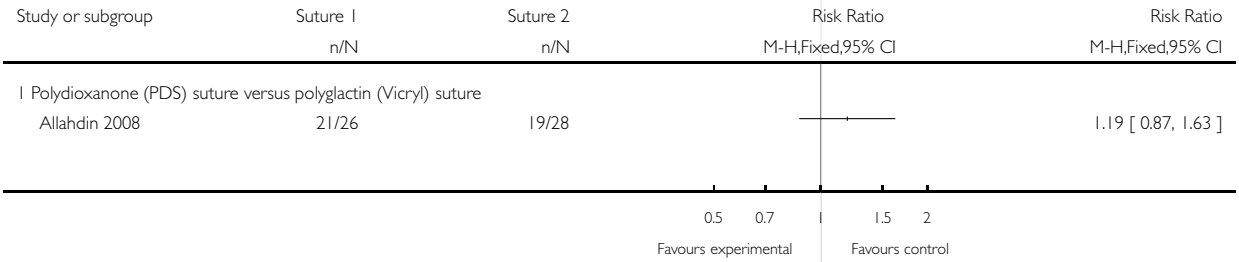


Analysis 9.2. Comparison 9 One type of mesh / graft versus another type of mesh / graft, Outcome 2 Number of women with anterior prolapse / cystocele (objective failure).

Review: Surgical management of pelvic organ prolapse in women

Comparison: 9 One suture type versus another type of suture

Outcome: 2 Number of women with prolapse symptoms at 1 to 5 years (subjective failure)



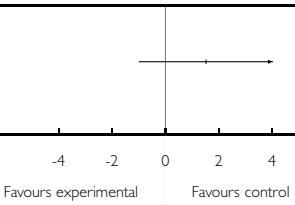
Analysis 9.3. Comparison 9 One type of mesh / graft versus another type of mesh / graft, Outcome 3 Number of women having further prolapse surgery.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 9 One suture type versus another type of suture

Outcome: 3 Prolapse symptom score up to 1 year

Study or subgroup	Suture 1		Suture 2		Mean Difference	Mean Difference
	N	Mean(SD)	N	Mean(SD)	IV,Fixed,95% CI	IV,Fixed,95% CI
1 Polydioxanone (PDS) suture versus polyglactin (Vicryl) suture						
Allahdin 2008	29	5.1 (5.1)	33	3.6 (5)		1.50 [-1.02, 4.02]



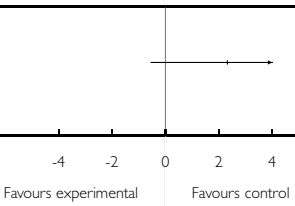
Analysis 9.4. Comparison 9 One type of mesh / graft versus another type of mesh / graft, Outcome 4 Vaginal mesh erosion.

Review: Surgical management of pelvic organ prolapse in women

Comparison: 9 One suture type versus another type of suture

Outcome: 4 Prolapse symptom score at 1 to 5 years

Study or subgroup	Suture 1		Suture 2		Mean Difference	Mean Difference
	N	Mean(SD)	N	Mean(SD)	IV,Fixed,95% CI	IV,Fixed,95% CI
1 Polydioxanone (PDS) suture versus polyglactin (Vicryl) suture						
Allahdin 2008	26	5.5 (6.3)	28	3.2 (4.2)		2.30 [-0.58, 5.18]



WHAT'S NEW

Last assessed as up-to-date: 16 April 2007.

Date	Event	Description
10 October 2008	Amended	Converted to new review format.

HISTORY

Protocol first published: Issue 1, 2003

Review first published: Issue 4, 2004

Date	Event	Description
17 April 2007	New citation required and conclusions have changed	Substantive Update Issue 3 2007. 22 RCTs (8 new included trials). The findings are still insufficient to provide robust evidence to support current and new practice (such as whether to perform a concurrent continence operation, or to use mesh or grafts)

CONTRIBUTIONS OF AUTHORS

All reviewers contributed to writing the protocol. Two reviewers (C Maher, K Baessler) assessed the relevance and eligibility of studies for inclusion in the review. They then assessed the quality of included studies. Three reviewers (C Maher, K Baessler, C Glazener) independently extracted data from trial reports. Three reviewers (C Maher, K Baessler, C Glazener) interpreted the results and contributed to the writing of the draft version of the review. Two reviewers (E Adams, S Hagen) commented on the draft version of the review.

DECLARATIONS OF INTEREST

The lead review author, Christopher Maher, is an author of one of the included trials (Maher 2004). Another review author, CG, is an author of an ongoing trial (Allahdin 2007).

INDEX TERMS

Medical Subject Headings (MeSH)

Gynecologic Surgical Procedures [methods]; Prolapse; Randomized Controlled Trials as Topic; Rectal Prolapse [*surgery]; Surgical Mesh; Suture Techniques; Urinary Bladder Diseases [*surgery]; Urinary Incontinence [surgery]; Uterine Prolapse [*surgery]

MeSH check words

Female; Humans