ORIGINAL ARTICLE

Indication and outcome of relaparotomy after caesarean section

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Abstract

The objective was to determine the indicatons, management and the outcome among the patient who underwent relaparotomy after caesarean section and to suggest the way to improve the quality of care. This was a retrospective descriptive study done in a tertiary level referral and teaching hospital, Khulna, Bangladesh, out of 55 cases requiring relaparotomy after caesarean section. Over a period of 15 months from 1st January 2011 to 31st march 2012, 1180 caesarean deliveries were done, out of total 3270 deliveries. During this period, relaparotomy was done in 55 cases. Among these, 10 cases followed caesarean delivery at this institute itself, while 45 cases have had caesarean delivery at peripheral hospitals. Postpartum haemorrhage in 31 cases (56.36%) and rectus sheath haematoma in 8 cases (14.55%) were the leading cause of relaparotomy. Among the 55 cases, 39 had emergency caesarean delivery while 16 had elective operation. Procedures undertaken at laparotomy were hysterectomy in 21 cases (38.18%), resuturing of uterine wound with uterine brace suture in 13 cases(23.63%), bilateral uterine arteries and ovarian vessels ligation in 7 cases (12.73%), drainage of haematoma in 8 cases (14.55%), and repair of anterior abdominal wall & peritoneal toileting in 5 cases (9.09%). A third laparotomy was done in 3 cases of which 2 cases were due to secondary PPH, a negative relaparotomy was done in one case. There were 7 maternal deaths following relaparotomy caused by hemorrhagic shock, septicaemia & renal failure and was 12.73%. Caesarean section is a life saving operation. However maternal mortality and near miss fatality after relaparotomy following caesarean section are common. So, relaparotomy should be considered as a procedure after a near miss fatality of mother.

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Introduction:

Caesarean section is considered to be a safe operation to circumvent maternal and foetal complication.1 It is the most common obstetric operation carried out in daily obstetric practice.2 In many countries there has been a dramatic rise in the caesarean section rate over the past 50 years.3 In Europe it raised seven and half fold from 3.3% in 1967 to 25% in 1995.4 With the improvement of operation technologies, anesthesia coverage and blood transfusion facilities, safety of caesarean section have increased considerably. Foetal monitoring and modern obstetrics surgery with its aseptic technique, the possibility of blood transfusion and use of antibiotics may explain the increase of caesarean section. Inspite of improved peri-perative conditions, the maternal mortality and morbidity are still a major concern for many obstetricians.4 Complication rate associated with caesarean section is known to be several folds than that of vaginal deliveries.5 This may depend on variation of quality of surgery, institutional facilities & also the underlying pathology for indication of operation.

In some cases, relaparotomy may be considered as a near miss maternal mortality situation.6 Most of the time, it is performed when the condition of the patient is too critical to withstand the risk of anaesthesia and repeat surgery. So it is very difficult to take decision and requires a good clinical judgment. On one hand, it is the last resort to save a mother's life: and on other hand, the mother's reproductive capability is sacrificed in most of the cases.7,8 Postpartum haemorrhages following caesarean section, intraperitoneal haemorrhage, septicaemia, burst abdomen, rectus sheath haematoma have been encountered as common indications of relaparotomy following caesarean section. There is very little wide scale study on relaparotomy after caesarean section. So, our study may help to find out the maternal morbidity & mortality associated with relaparotomy after caesarean section. The aim of this study was to determine the indications, management and the outcome among the patients who underwent relaparotomy after caesarean section and to suggest the way to improve the quality of care. The incidence, risk factors, operative findings, the measure taken during relaparotomy and the precautions that have taken to prevent maternal deaths were also evaluated.

Material and methods

This was a retrospective descriptive study done in the obstetric and gynaecology department of Khulna medical college hospital over a period of 15 months from Ist January, 2011 to 31st March, 2012. During this period, 1180 caesarean deliveries were done in this institute out of total 3270 deliveries. Relaparotomy was done in 55 cases. Khulna medical college hospital is a tertiary level teaching hospital. So the referrals were received from private hospitals & clinics in the

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city, from sadar hospitals, upazilla hospitals & private clinics nearby outside the city.

Among these 55 cases, in 10 cases: primary operation was done in this institute while 45 cases had primary operation at other hospitals and clinics out side this institute. In this study, all relaparotomies were done when conservative management failed. In case of primary PPH, we initially tried to control haemorrhage by giving oxytocics such as oxytocin, methergin and prostaglandin injection and blood transfusion. In case of secondary PPH, we also gave antibiotics.

The hospital being a training institute, residential medical officers and the post graduate trainees usually perform caesarean section under guidance of senior surgeons like asst. professors and consultants. Relaparotomy following caesarean section was done by consultants & professors. All relaparotomy which needed during puerperium were selected and analyzed. A data collection sheet was designed encompassing all relevant clinical information which included age, parity, indications of primary operation, indications of relaparotomy, interval between primary operation and relaparotomy, total unit of blood transfusion, duration of hospital stay and final out come following operation. The data of the patients were taken from the history sheets, Operation Theater and departmental record keeping books. Collected data was checked and verified. Finally data were entered into the computer for statistical analysis by using SPSS.

Result:

From January 2011 to March 2012, a total of 4986 patients were admitted in labour ward of Khulna Medical College Hospital, Khulna. There were a total 1180 caesarean deliveries out of 3270 total deliveries for the period under the study and the caesarean section rate was 36.09%. A total 55 patients underwent relaparotomy following caesarean section, of which 10 had caesarean section at this institute and 45 were referred from the peripheral hospital. The incidences of relaparotomy following instituitional caesarean section was thus 0.85%. A total of 5 cases under went laparotomy following 2090 vaginal deliveries and incidence was 0.24% The ages of the patients ranged from 15 yrs to 35 yrs with mean of 25 yrs. The parities ranged from 1 to 5 with mode of 3. The amount of blood transfusion ranged from 3 to 7 units with an average of 5 units. All the patient were house wife and none of them were working lady. Only 14 patients had regular antenatal care. Seven patients had one caesarean delivery before (post caesarean pregnancy) while two had 2 previous caesarean delivery (repeat caesarean pregnancy) in the past. Sixteen patients had primary elective caesarean section and 39 cases under went caesarean section on emergency basis.

Table I
Indication of Relaparotomy

Variables	Number of cases (n=55)	Percentage
Postpartum haemorrhage		
- Atonic uterus	16	29.09
- Placenta praevia	4	7.27
- Secondary PPH	11	20
Rectus Sheath Haematoma	8	14.55
Intraperitional haemorrhage	7	12.73
Burst abdomen	4	7.27
Others	5	9.09

Table I showed the commonest indications for repeat surgery following caesarean section. It was postpartum haemorrhage (PPH) in 31 cases (56.36%) of which primary PPH cases were 20 (36.36%) and secondary PPH cases were 11 (20%) followed by rectus sheath haematoma in 8 cases (14.55%). Rectus sheath haematoma was included in this study as we inspected the peritoneal cavities in these cases in addition to removal of haematoma.

Table II
Indication of caesarean section among women who underwent laparotomy

Indication of caesarean delivery	Frequency	Percentage
Prolong labour & foetal distress	22	40
Post caesarean pregnancy	4	7.27
Repeat caesarean pregnancy	2	3.64
Placenta praevia	5	9.09
Post caesarean placenta praevia	3	5.45
Obstructed labour	5	9.09
Hypertensive disorder	6	10.91
Unknown	8	14.55

Table: II showed the indication of caesarean section among the women who further underwent laparotomy. The commonest indication of primary caesarean section was prolonged labour & foetal distress in 22 cases (40%) followed by APH due to placenta praevia, post caesarean placenta praevia, repeat caesarean pregnancy in 10 (5+3+2) cases (18.18%). The term "post caesarean section pregnancy" was used to describe the cases with one caesarean delivery in the past, while "repeat caesarean section"

cases had a history of two or more caesarean delivery in the past. These terminology was used to distinguish in the number of caesarean section among the women who has had before.

Table III
Procedure performed during laparotomy

Procedure	Number of cases (n=55)	percentage
Hysterectomy	21	38.18
Conservative Surgery	34	61.82
_ Resuturing uterine wound & Uterine Brace suture	13	23.63
- Ligation of bilateral uterine artery & ovarian vessles	7	12.73
- Exploration of subrectus Haematoma, Ligation of vessels	8	14.55
- Repair of anterior abdominal wall & peritoneal toileting	5	9.09
- Negative laparotomy	1	1.82

Table: III summarised the procedures undertaken during laparotomy. Hysterectomy or subtotal hysterectomy was done in 21 cases (38.18%) and conservative surgery was done in 34 (61.82%) cases. Conservative surgery included resuturing the uterine wound with uterine brace suture in 13 cases (23.63%), bilateral ligation of uterine artery and ovarian vessels in 7 cases (12.73%), removal of subrectus haematoma and ligation of vessels in 8 cases (14.55%) and repair of anterior abdominal wall with peritoneal toileting in 5 cases (9.09%).

Table: IV showed the time interval from caesarean section to relaparotomy. Most of the laparotomy was done within 7th POD, 18 (32.73%) cases within 24 hours and 20 (36.36) cases within 7th POD. In majority of primary PPH: 15 cases, relaparotomy was done within 24 hours and in 4 cases of secondary PPH, relaparotomy was done within 8th to 15th POD.

Table IV
Time interval from caesarean section to relaparotomy and their indication

Time interval from c/s to relaparotomy	Indication of relaparotomy	Number (n=55)	
Within 24 hours	Primary PPH :	15	18
	Internal haemorrhage:	3	
Within 7th POD	Primary PPH :	5	20
	Secondary PPH :	5	
	Subrectus haematoma:	6	
	Internal hamorrhage:	4	
Within 8th to 15th POD	Secondary PPH :	4	14
	Burst abdomen :	4	
	Subrectus haematoma:	2	
	Others :	4	
Within 16th to 42nd POD	Secondary PPH :	2	3
	Other :	1	

Table: V showed the cause of maternal death after laparotomy. A total of seven mothers (12.73%) died after laparotomy.

Table V
Maternal mortality after relaparotomy

Cause of death (n=7)	Indication of c/s	Indication of laparotomy	Time interval from CS to lap
Hamorrhagic shock : 4	Prolong labour: 3 Post CS : 1	Intraperioneal bleeding	20 hrs 40 hrs
DIC & Renal failure : 1	Severe Preeclampsia	Anuria & shock	40 hrs
Hemorrhagic shock : 1	Prolong labour	Seconday PPH	5 days
Septicemia : 1	Prolong labour	Pelvic ascess	10 days

A third laparotomy was done in 3 cases: 2 cases of secondary PPH and one case of rectus sheath haematoma. In case of secondary PPH where conservative surgery failed to stop the bleeding, third laparotomy with hysterectomy was performed to save the life of the patients.In case of rectus sheath haematoma, there was recurrent bleeding from the under surface of rectus sheath, although no haemostatic defect was detected. A negative laparotomy was done with suspicion of internal haemorrhage due to unexplained immediate post operative shock who needed intensive care unit support. Only 3 cases developed severe wound infection in the post operative period following relaparotomy.

Discussion:

In Bangladesh, 85% delivery takes place at home and only 15% in health facility. Incidence of caesarean section in Bangladesh is 8%. Though caesarean section is a life saving technique for both mother and infant but it is a major abdominal operation that cause medical risk to a mother's health including infection (40%-80%), haemorrhage and injury to other organs.9 Haemorrhage is a leading cause of maternal death, comprises about 35%.10 Obstetricians have to deal post caesarean complication associated with maternal morbidities & mortalities in daily obstetrics practice.

There are a very few large scale case series in the world literature regarding repeat laparotomy following caesarean section.6 There is rising trends of caesarean section especially in referral hospital. There is one such series from a teaching hospital in Ghana

with a caesarean section rate of 17%, showed a relaparotomy rate of 0.7% out of total of 36,100 deliveries.11 Another study from India showed a relaparotomy rate of 0.33% out of 12,967 caesarean deliveries and caesarean rate was 34.8% out of 37,196 deliveries.6 In our hospital, caesarean delivery rate was 36.09% during the study period and relaparotomy rate following caesarean section was detected 0.85%. So the incidence of caesarean section and relaparotomy were more or less similar to compare with those studies. But one of the limitations of the study was that 45 of 55 cases, caesarean section was done at peripheral hospitals. The incidence of laparotomy following vaginal delivery in our hospital were 0.24% which was also compatible with Indian study (0.14%).6

The Indian study showed that the commonest indication of primary caesarean section was prolonged and obstructed labour and commonest reason for relaparotomy was PPH.6 Our study also revealed that the commonest indication of primary caesarean section was prolonged labour with foetal distress & obstructed labour and it was about 49.09% which was also comparable to Indian study. PPH (56.36%) was the commonest reason for relaparotomy in our study similar to the result of Indian study (42.42%) and Dhaka Medical study (51.85%) and Ghana study (61%).6,9,11 An important finding was that among PPH cases, primary PPH demanding relaparotomy was (36.36%) more than secondary PPH cases (20%). This result was compatible with the result of study in Ghana where primary PPH accounts for 47%.11 This findings demand special attention to manage primary PPH as well as secondary PPH effectively and properly.

Rectus sheath haematoma and intraperitoneal haemorrhage were another common indication of relaparotomy (27.28%) in our study. This finding was more or less comparable to the finding of Indian study where both indications were 34.85%.6 Rectus sheath haematoma was seen in cases where caesarean section was done by transverse incision. So, securing the bleeding point on undersurface of rectus sheath and rectus muscle before closing the rectus sheath can reduce the incidence of subrectus haematoma. In case of intraperitoneal hemorrhage; there was bleeding along the incision line especially at the corner due to loose knot and also loose suture. So, special attention should be paid about haemostasis during closing the uterine incision and haemostasis to be checked before parietal peritoneum closure during caesarean section.

In case of placenta praevia, both in primary caesarean section and repeat caesarean section, haemostasis from placental bed should be done before suturing the uterine incision line. Where haemostasis is doubtful, one must examine the vagina before closing the peritoneal cavity to ensure the absence of vagnal bleeding.6 Prophylactive ballon catheter of uterine cavity may be practiced to reduce the risk of PPH.12 The morbidity & mortality related to placenta praevia (increata & percreata) is still a night mare of the obstetrician in this century.13

Caesarean section done in second stage of labour with an impacted head could be technically difficult and was associated with increase trauma to the lower segment of uterus and lateral extension of tear to involve uterine vessels, cervix, vagina and bladder & increase haemorrhage and infection.l4 Care must be taken to prevent extension of incision. In case of deeply engaged foetal head, pushing the foetal head up transvaginally could be useful.15 In this study, repair of bladder injury was done in one case along with total hysterectomy with history of previous two caesarean section & prolonged labour. So, all extension and laceration should be looked for in every difficult case and carefully repaired before suturing the caesarean section incision.16

In our study, it was evident that relaparotomy was done for PPH in 31 cases. Conservative surgery in form of bilateral ligation of uterine arteries & ovarian vessels, resuturing of uterine wound & uterine brace sutures were successful in 11 cases out of 31 cases. Rest of 20 cases needed hysterectomy either total or subtotal which was 38.18%. Instead of hysterectomy, selective angiographic remobilization with gel foam pledgets may have place in these cases.17 However this facility was not available in our set up. So, hysterectomy incidence was more in our study compare to Indian study (10.61%).6 Interesting finding was that all secondary PPH needed hysterectomy. Indian study showed that 11 cases needed third relaparotomy following conservative surgery in second laparotomy. So, we did hysterectomy to avoid 3rd relaparotomy except in 2 cases, which ultimately needed 3rd laparotomy.

Maternal mortality was quite high in patients who required relaparotomy following caesarean section: 9.1% in African study11 and 12.1% in Indian study.6 In our study, it was 12.73% which was compatible with those study. Only two cases needed intensive care unit support and recovered from near- miss fatality. However to reduce maternal morbidity and mortality, analysis of cases following caesarean section where relaparotomy to be needed must be supervised by experienced surgeon rather than by trainees.

Conclusion:

Caesarean section is a life saving and most common obstetrics operation. However, maternal mortality and near-miss fatality after relaparotomy following caesarean section are common. Relaparotomy should be considered as a procedure in case of near-miss

fatality of mother. To make it safe every effort must be adopted.

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