REVIEW

Current management of male-to-female gender identity disorder in the UK

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Gender identity disorder (GID), or transsexualism as it is more commonly known, is a highly complex clinical entity. Although the exact aetiology of GID is unknown, several environmental, genetic and anatomical theories have been described. The diagnosis of GID can be a difficult process but is established currently using standards of care as defined by the Harry Benjamin International Gender Dysphoria Association. Patients go through extensive psychiatric assessment, including the Real Life Experience, which entails living in the desired gender role 24 h a day for a minimum period of 12 months. The majority of GID patients will eventually go on to have gender realignment surgery, which includes feminising genitoplasty. The clinical features, diagnostic approach and management of male-to-female GID in the UK are reviewed, including the behavioural, psychological and surgical aspects.

Some people defy the existing social and sexual norms of society by choosing to undergo gender realignment. They opt to change themselves as much as is physically and psychologically possible to the opposite of their birth sex.[1] The term ''transsexual'' is used to describe such people. It first appeared in scientific literature in the work of Hirschfeld.[2] This terminology has fallen out of fashion as it implies a sexual disorder rather than an identity disorder.[3] ''Gender identity disorder'' (GID) more accurately describes these people (table 1). GID specifically excludes people with conditions such as intersex states or hermaphroditism.[4]

GID is distinguished from transvestitism where intense relief (often sexual), is obtained by dressing in clothes of the opposite gender. Transvestitism is much more common in males. Most importantly, however, transvestites do not wish to undergo gender realignment.[5]

AETIOLOGY

The worldwide incidence of GID ranges from 1:12 000 to 1:20 000.[6] This equates to between 5000 to 6000 transsexual adults in the British population.[7] Most studies report that three times more men than women seek gender realignment.[8] Possible reasons include the greater vulnerability of boys during the development of gender identity, and the greater ease with which biological women can express their masculinity, without necessarily undergoing realignment surgery.[9]

The cause of GID itself has been the subject of considerable debate and research ever since it was brought to the attention of physicians by Harry Benjamin in the 1950s. The exact aetiology remains unclear. The earliest psychodynamic literature considered that GID was due to a growing boy's overly close relationship with his mother, compounded by an emotionally absent father.[1] Others considered that there was an extraordinary surge of female hormones in the fetal brain at a crucial time of development, resulting in a biologically normal male child but with a female identity.[10] A recent small Dutch study found an anatomical difference in the brains of male-to-female (MTF) GID sufferers.[11] The researchers identified a region of the hypothalamus, known as the bed nucleus of the stria terminalis (BSTc), as being responsible for sexual behaviour. This area is always larger in men than women. However, in their study of six MTF GID sufferers, a female-sized BSTc was present in all subjects. Additionally, the size of the BSTc was not influenced by taking sex hormones in adulthood. This implies that these individuals had a powerful biological force compelling them to be female, rather than just a psychological conviction. A further study on 42 MTFs in 2000 confirmed these findings.[12] It also found that the number of neurons in the limbic nucleus of a female-to-male (FTM) transsexual was in the male range, suggesting the possibility that some individuals born as women may have a neurohormonal drive to be males, which could explain their desire for gender realignment.

DIAGNOSIS

The diagnosis and management of GID sufferers has hitherto been dictated by the standards of care of the Harry Benjamin International Gender Dysphoria Association (HBIGDA). These standards of care are not entirely relevant to UK practice. The Royal College of Psychiatrists set up an intercollegiate group which involves users and carers to produce UK standards of care under the chairmanship of Dr Kevin Wylie in 2004. It is expected that, once agreed, these standards will be followed by all UK practitioners in the field.[7]

Many different professionals are involved in the diagnosis and management of GID. In the UK, the process is usually started by the general practitioner (GP), who needs to recognise the condition

Abbreviations: BSTc, bed nucleus of the stria terminalis; DHT, dihydrotestosterone; FTM, female-to-male; GID, gender identity disorder; GNRH, gonadotrophic releasing hormone; HBIGDA, Harry Benjamin International Gender Dysphoria Association; LH, luteinising hormone; MTF, male-to-female

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Table 1 *Diagnostic and statistical manual of mental disorders*, 4th ed (DSM-IV) criteria for diagnosis of gender identity disorder[4]

- A strong and persistent cross gender identification (not merely a desire for any perceived cultural advantages of being the other sex)
- A persistent discomfort with his or her sex or a sense of inappropriateness in the gender role of that sex
- The disturbance is not concurrent with a physical intersex condition
- The disturbance causes significant distress or impairment in social or occupational or other important areas of functioning

and refer to a specialist gender identity service. Such a service comprises a psychiatrist and psychologist, reconstructive surgeons, an endocrinologist, speech therapist, a specialist nurse practitioner and counsellors. Mental health professionals play a key role in the process, initially by making the diagnosis and then treating the GID appropriately, after firstly excluding comorbid psychiatric conditions. As up to one in 10 GID sufferers have problems with mental illness, genital mutilation or suicide attempts, mental health professionals need to maintain close contact with people with GID throughout the process.[5]

Ideally, the first referral from the general practitioner is to the psychiatrist. Initial assessment consists of a full psychiatric history with emphasis on psychosexual development, orientation, history and current functioning.[7] Childhood gender-type behaviours and a history of cross-gender dressing are elicited. Attempts to conform to cultural gender expectations are explored and the current marital or relationship status is noted. Pre-existing psychological disorder and substance abuse is also recorded.[7] Finally, the psychiatrist will explain the transition process, give advice on how to obtain additional peer group support, and also explain the role of voluntary organisations in this area. Patients are also asked to submit a more detailed ''story of life'' for the gender panel specialists to consider when making their decision.

REAL LIFE EXPERIENCE

Once accepted into the gender identity service, patients are asked to participate in the Real Life Experience which requires the transsexual individual to function full time in their desired gender role for a minimum period of 12 months. This is to assess how comfortable it is to live and survive in all aspects of daily life, socially and professionally, in their new role. Support from family, friends and employers is essential to succeed in this.[7] Counselling during this time enables people to ''pass'' comfortably in the chosen role without ''being read'', and avoids the adverse consequences that unfortunately have been faced by some GID sufferers. Once agreed by the gender identity panel, MTF GID sufferers are started on feminising hormonal therapy during the Real Life Experience.

SPEECH THERAPY

It is essential to start treating MTF patients with non-invasive procedures. Patients are usually referred to the speech therapist to help them raise their pitch and modulate their resonance so that they can sound more like females. This can be done either on a one-to-one basis or on a group basis. Advice is also offered on other matters such as how to establish verbal and non-verbal cues—for example, when answering the telephone. Surgery may be performed to alter the tension of the vocal chords and thereby affect pitch, and a laryngeal shave allows reduction of the size of the ''Adam's apple''.

HAIR REMOVAL

Almost all patients will need advice on the facial and pubic hair removal process, whether this consists of ablation, shaving, laser or electrolysis. This can be a costly process which is usually prolonged. Invariably, almost all patients need to fund this process themselves. Wigs for thinning hair or hair extensions may also have to be considered. Finasteride and minoxadil have some limited use in encouraging hair growth.[13]

Scrotal hair removal may reduce hair growth within a neovagina, as hair-bearing skin flaps (inverted scrotal and penile flaps) are used to create a skin-lined neovagina.

ENDOCRINOLOGICAL MANAGEMENT

It is important to note that none of the feminising hormones used by specialists has a product licence for use in MTF patients. It is therefore necessary to explain fully the advantages, side effects and follow-up that need to be in place. This consists of advice about a sensible diet, acceptable weight, reduction of alcohol, stopping smoking and the value of regular exercise. A signed consent form for the patient and their partner, where relevant, is obtained. The patient must have their blood pressure and baseline blood tests (full blood count, urea and electrolytes, liver function test, cholesterol, triglycerides, thyroid function tests) undertaken. If these are within normal limits then hormones can be started on the condition that blood pressure and blood tests must be done every 4–5 months, assuming all is well. A simple rule is ''no blood, no drugs'', as patients will need to continue on hormones for the rest of their lives to prevent conditions such as osteoporosis arising.

There is considerable variation in the extent to which the changes that hormones can produce are desired by individuals. Hormone therapy is therefore individualised and is based on the personal goals, the risk to benefit ratio, and the presence of other medical conditions.[14] An attempt to have a nationally accepted protocol of hormone prescription and supply will be contained in the UK standards of care mentioned earlier so that patients will not be disadvantaged if their care should be transferred to another specialist clinic. The feminisation effects that hormones can produce in MTF patients are shown in table 2.

Endocrinological feminisation is achieved by androgen suppression and induction of female physical characteristics. Androgen suppression can be achieved by[14]: (1) agents that suppress the production of gonadotrophic releasing hormone (GNRH); (2) suppression of luteinising hormone (LH) production; (3) inhibiting the production of testosterone or its metabolism to dihydrotestosterone (DHT); and (4) by blocking the binding of androgens to receptors in target tissues. Some commonly used products are listed in table 3.

Oestrogen is the principal agent used to induce feminising characteristics and works primarily by direct stimulation of receptors in target tissues. Although oestrogen also suppresses LH, the oestrogen dose required for effective LH suppression is

Table 2 Feminising effects of endocrine therapy for male-to-female patients[14 29–39]

- Redistribution of body fat
- Reduced muscle mass
- Softening of skin
- Reduced libido and difficulty reaching orgasm
- Reduction in spontaneous erections
- Up to 50% reduction in testicular volume → testicular atrophy
- Breast growth
- Reduction in growth of facial/body hair → hair becomes finer

Table 3 Commonly prescribed drugs used in hormone therapy for male-to-female transsexuals and their method of action[30]

- Cyproterone acetate → androgen receptor blocker
- Spironolactone → interferes with testosterone production
- Finasteride → prevents conversion of testosterone into active metabolite, DHT
- LHRH analogues → continuously stimulate pituitary gland, causing surge of LH followed by surge of testosterone, which ultimately leads to continuous testosterone inhibition by negative feedback
- Oestrogen → induces female characteristics

DHT, dihydrotestosterone; LH, luteinising hormone; LHRH, luteinising hormone releasing hormone.

unacceptably high.[15] Typical doses of oestrogens are two to three times higher than the recommended dose.[16] One study demonstrated a 20-fold increase in venous thrombosis for MTF patients on feminising hormones,[17] while another study highlighted the increase in prolactin concentrations in MTF patients[17 18] and the associated risk of prolactinomas.[8 19 20] Cigarette smoking and oestrogen therapy in combination substantially increase thrombosis risk, so this is highlighted to the patient and smoking cessation is strongly emphasised. The risks of venous thrombosis may be balanced notably by the type of endocrine agent chosen—for example, transdermal versus oral—and encouragement to follow the lifestyle advice outlined earlier. Oestrogens are discontinued 6 weeks before genital surgery to minimise the thrombosis risk but restarted, usually in a lower dose, 4 weeks after gender realignment surgery.[14]

GENDER REALIGNMENT SURGERY

MTF gender realignment techniques are well-defined and usually provide good cosmetic and functional results. Several procedures are available to transform the male external genitalia to female genitalia, the goals of which are[14]:

- the removal of the male external genitalia
- the creation of a functional vagina
- the creation of a cosmetic vulva
- shortening of the urethra
- elimination of erectile corporal tissue
- creation of a functional clitoris.

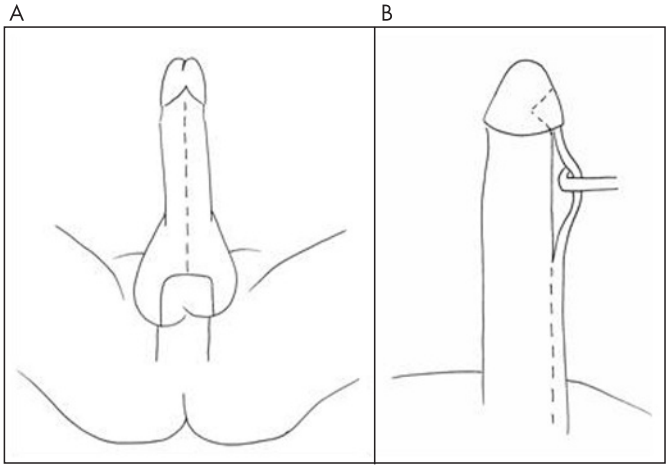

Figure 1 (A) Position of peno-scrotal skin flaps. (B) Harvesting the dorsal neurovascular bundle to form the neoclitoris.

Full feminising vaginoplasty includes bilateral orchidectomy and penectomy, with the creation of a vagina, sensate neoclitoris and labia majora. This is usually performed in a single procedure, although some surgeons prefer to undertake labiaplasty and clitoroplasty after healing of the vaginoplasty.[14]

Different surgical techniques are available for vaginoplasty and these can be classified into five categories: (1) pedicled intestinal transplants; (2) free penile skin grafts; (3) peno-scrotal skin flaps; (4) non-genital skin flaps; and (5) non-genital skin grafts.[21] The most popular method in the UK entails using penoscrotal skin flaps (fig 1A). In this procedure the mobilised skin of the penis and v-flap of the scrotum are sutured together to create a skin tube, which is inverted into a pre-formed space within the perineum/pelvis, thereby creating the neovagina. The advantage of this process is that, as the flaps have their own blood circulation, there is less tendency for the neovagina to shrink or necrose, compared with free skin grafts.[21] The depth of the neovagina, however, can be restricted by the length of the penile skin available in about 10% of patients. Hair growth from the scrotal flap may also be a concern in a further 10%.

Several methods exist to form a sensate neoclitoris. The most common method utilises a wedge of the dorsal glans penis, innervated on its mobilised neurovascular bundle (fig 1B). The sculpted glans is sutured about 1 cm above the external urethral orifice. This is aesthetically acceptable, and serves as a focus for erotic stimulation.[22–24]

As with any surgical procedure, problems can arise (table 4). Injury to the arteries or nerves within the neurovascular bundle can occur, resulting in impaired blood supply or a reduced sensation clitoris.[21] The preparation of the vaginal cavity between the urethra, bladder and the rectum is a critically important step and injury to all of these structures can occur, albeit rarely.[21] To avoid possible vaginal shrinkage patients are encouraged to undertake regular vaginal dilatation. Secondary procedures are available at a later date if necessary to further improve the cosmetic results.[25]

Postoperative management

Postoperatively, patients need to remain in bed for 4 days with a vaginal gauze pack firmly in place, to keep the neovagina open. On pack removal, the patient is allowed to mobilise. The urethral catheter is removed and the patient is taught how to adequately clean and dilate the neovagina. Vaginal dilatation consists of inserting a special dilator for 15 min three times daily, gradually increasing the size of the dilator used. When the patient is comfortable with this she is discharged, usually on the seventh or eighth postoperative day. Vaginal dilatation is continued at home, with reducing frequency over a 6 month period.[3]

Table 4 Complications after MTF feminising genitoplasty[27]

Early complications (n = 222)	**%**
Postoperative infection (requiring antibiotics)	6.8
Postoperative bleeding	3.2
Vaginal prolapse	1.8
Deep vein thrombosis	0.9
Non-fatal pulmonary embolism	0.4
Rectal injury	0.4
Vaginal hairball formation	0.4
Late complications	**%**
Urethral stenosis (requiring secondary corrective procedure) (n = 197)	18.3
Vaginal prolapse (n = 70)	6

Postoperative follow up

The vast majority of patients report important benefits from feminising genitoplasty at a low risk of complications.[21 26] Current retrospective follow up studies suggest that about 80% of patients undergoing the procedure are pleased with the functioning and cosmetic appearance of their genitalia.[27] One of the most comprehensive meta-reviews analysed 74 follow-up studies and eight reviews of outcome studies published between 1961 and 1991 (MTF and FTM GID sufferers). The authors concluded that in this 30 year period, only 1–1.5% of MTFs experienced persistent regret following gender realignment surgery.[14] Young age, supportive family and adequate social support are positively correlated with long term satisfaction.[5] Another study found that personal and social instability before surgery, coupled with poor body image and age >30 years, produced patient dissatisfaction postoperatively.[28]

OTHER SURGICAL TREATMENT OPTIONS

There are a variety of measures MTF transsexual people can employ to maximise their female appearance and comfort in the female role. These include:

- Facial feminising surgery—for example, brow elevation, rhinoplasty, ear pinning, cheek augmentation, chin/jaw reduction, reduction laryngochondroplasty
- Breast augmentation
- Hair transplantation
- Voice chord and laryngeal surgery.

CONCLUSION

It is clear that gender identity disorder is a complex disorder. Although the aetiology is unclear, it is a well-recognised clinical entity with a clear management process, as currently identified by HBIGDA. The UK standards of care will establish agreed criteria for the diagnosis, management and care of people with GID. These are not expected to differ too significantly from the HBIGDA but will, for the first time, establish the principles of shared and agreed care in this complex field within the UK. Good clinical management of GID demands a multidisciplinary approach. The diagnosis may take several months to establish. There are hormonal, psychological, behavioural and surgical components to the management process. The goal is to produce an outward appearance consistent with the patient's gender identity that will allow normal social functioning, and bring a sense of self-acceptance. Hormonal and surgical treatments carry very real risks. It is therefore imperative that the patient is managed in a supra-regional centre by a multiprofessional team familiar with this complex disorder. The positive outcome reports, however, clearly demonstrate that successful surgical outcome and user satisfaction is achievable in carefully selected patients. Gender realignment surgery is therefore here to stay.

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MULTIPLE CHOICE QUESTIONS (TRUE (T)/FALSE (F); ANSWERS AFTER THE REFERENCES)

Which of the following statements are true?

(A) GID is more common in females than males

(B) As many as 1 in 10 GID sufferers have concurrent psychiatric illness

(C) There can be a 20-fold increase in the risk of venous thrombosis in MTF GID sufferers, due to oestrogen therapy

(D) Currently, the most common surgical method for vaginoplasty in the UK involves the use of peno-scrotal skin flaps

(E) 50% of patients are satisfied with the cosmetic and functional outcomes of gender realignment surgery

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ANSWERS

(A) F; (B) T; (C) T; (D) T; (E) F