

SURGERY

## One-Stage Gender-Confirmation Surgery as a Viable Surgical Procedure for Female-to-Male Transsexuals



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### ABSTRACT

**Background:** Female-to-male gender-confirmation surgery (GCS) includes removal of breasts and female genitalia and complete genital and urethral reconstruction. With a multidisciplinary approach, these procedures can be performed in one stage, avoiding multistage operations.

**Aim:** To present our results of one-stage sex-reassignment surgery in female-to-male transsexuals and to emphasize the advantages of single-stage over multistage surgery.

**Methods:** During a period of 9 years (2007–2016), 473 patients (mean age = 31.5 years) underwent metoidioplasty. Of these, 137 (29%) underwent simultaneous hysterectomy, and 79 (16.7%) underwent one-stage GCS consisting of chest masculinization, total transvaginal hysterectomy with bilateral adnexectomy, vaginectomy, metoidioplasty, urethral lengthening, scrotoplasty, and implantation of bilateral testicular prostheses. All surgeries were performed simultaneously by teams of experienced gynecologic and gender surgeons.

**Outcomes:** Primary outcome measurements were surgical time, length of hospital stay, and complication and reoperation rates compared with other published data and in relation to the number of stages needed to complete GCS.

**Results:** Mean follow-up was 44 months (range = 10–92). Mean surgery time was 270 minutes (range = 215–325). Postoperative hospital stay was 3 to 6 days (mean = 4). Complications occurred in 20 patients (25.3%). Six patients (7.6%) had complications related to mastectomy, and one patient underwent revision surgery because of a breast hematoma. Two patients underwent conversion of transvaginal hysterectomy to an abdominal approach, and subcutaneous perineal cyst, as a consequence of colpocleisis, occurred in nine patients. There were eight complications (10%) from urethroplasty, including four fistulas, three strictures, and one diverticulum. Testicular implant rejection occurred in two patients and testicular implant displacement occurred in one patient.

**Clinical Implications:** Female-to-male transsexuals can undergo complete GCS, including mastectomy, hysterectomy, oophorectomy, vaginectomy, and metoidioplasty with urethral reconstruction as a one-stage procedure without increased surgical risks and complication rates.

**Strengths and Limitations:** To our knowledge, this is the largest cohort on this topic so far, with good surgical outcomes. Limitations include lack of selection or exclusion criteria and lack of other studies with a simple approach. For this reason, the technique should be studied further and compared with other techniques for female-to-male surgery before it can be recommended as an alternative procedure.

**Conclusions:** Through a multidisciplinary approach of experienced teams, one-stage GCS presents a safe, viable, and time- and cost-saving procedure. Complication rates do not differ from reported rates in multistage surgeries.

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**Key Words:** Female-to-Male; Gender-Confirmation Surgery; Vaginal Hysterectomy; Mastectomy; Metoidioplasty; One Stage; Transsexuals

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### INTRODUCTION

Female-to-male (FtM) gender-reassignment surgery is a complex and challenging procedure for the removal of all female attributes, achievement of a complete male appearance, and ultimately improved quality of life. It includes the removal of

female genitalia (hysterectomy, bilateral oophorectomy, and vaginectomy), chest masculinization (bilateral mastectomy), and genital reconstructive surgery (metoidioplasty or phalloplasty, urethral lengthening, scrotoplasty, testicle prosthesis implantation, and mons-plasty). Most patients choose to undergo removal of the breasts and female genitalia and then genital reconstruction for the final phase of their transition as a one-stage or a staged procedure.<sup>1</sup>

However, these procedures can be carried out simultaneously in one stage without additional surgical risks. A simultaneous multidisciplinary approach enabled us to accomplish FtM reassignment in a single surgery, thus offering a time- and cost-saving option to these patients.

## AIMS

We present our results of one-stage FtM gender-reassignment surgery and outline its advantages compared with previously reported multistage surgeries.

## METHODS

From January 2007 through March 2016, 473 female transsexuals 18 to 56 years old (mean age = 31.5) underwent metoidioplasty. Of these, 79 patients (16.7%) with a mean age of 25.5 years (range = 18–43) underwent bilateral mastectomy, vaginectomy, hysterectomy, and oophorectomy performed at the same stage with metoidioplasty. The single-stage procedure was based on the simultaneous work of a team of experienced gynecologists and a team of gender surgeons. All patients were required to fulfill the criteria of the World Professional Association for Transgender Health (WPATH) Standards of Care before surgery.<sup>2</sup> Patients had been receiving hormonal treatment for a mean period of 3 years (range = 18 months–23 years). The clitoris had been additionally enlarged using dihydrotestosterone as a topical gel and a vacuum device during the 6-month period leading up to surgery (Figure 1A).

## Operative Technique

The one-stage surgery includes bilateral mastectomy, transvaginal hysterectomy with bilateral oophorectomy, vaginectomy and metoidioplasty with urethral lengthening, and testicular prosthesis implantation. The approach begins with mastectomy and hysterectomy simultaneously and is followed by metoidioplasty.

The appropriate mastectomy technique is preoperatively planned for each patient. The main criteria for technique selection are breast size, degree of excessive skin, quality of the skin, and the position of the areola.<sup>3,4</sup> The transareolar approach is preferred, including reduction of the nipple-areola complex. However, for large breasts and poor skin elasticity, radical mastectomy is performed, with free grafting of the nipple-areola complex. A circumferential elastic bandage is placed around the chest wall postoperatively for 8 to 10 weeks.

Gynecologic assessment is routinely performed in each case before surgery. The uterus and ovaries are removed using a

minimally invasive transvaginal approach, leaving the abdominal wall scar free to avoid compromising possible abdominal phalloplasty in the future. Vaginectomy is performed by total removal of the vaginal mucosa (colpocleisis), with preservation of the part of anterior vaginal wall near the urethra, which will be used for urethral lengthening.

Reconstruction of the genitalia (metoidioplasty) includes complete straightening and lengthening of the clitoris by division of both clitoral ligaments and the short urethral plate, urethroplasty by combining the buccal mucosa graft and genital flaps, and scrotoplasty with insertion of testicular implants. Reconstruction of the neophallus starts with the incision beneath the glans, at the border between the inner and outer layers of the clitoral prepuce, and continues around the urethral plate and native urethral orifice. After complete degloving, all clitoral ligaments are divided to advance the clitoris. Ventrally, the short urethral plate is dissected from the clitoral bodies without injury to the spongiosa tissue around the urethral plate to prevent extreme bleeding. Dissection includes the bulbar part of the plate around the native orifice to enable good mobility for urethral lengthening. Because the urethral plate is always short, causing the ventral clitoral curvature, it is divided at the level of the glanular corona. In this way, complete straightening and lengthening of the clitoris are achieved. The bulbar part of the neourethra is created by joining the flap harvested from anterior vaginal wall and the proximal part of divided urethral plate. Additional urethral lengthening is achieved by combining a buccal mucosa graft harvested from the inner cheek and vascularized genital skin flaps. The length of the graft depends on the distance from the tip of the glans to the native urethral orifice and in our cases ranged from 4.5 to 7 cm. The graft is fixed and quilted to the corporeal bodies starting from the advanced urethral meatus to the tip of the glans. Further urethral reconstruction is achieved using a labia minora flap or a dorsal clitoral skin flap. The inner part of the labia minora is dissected without detachment from the outer labial surface to create a well-vascularized flap that is joined with the buccal mucosa graft over a 12- to 14-Fr stent to create a neourethra without tension (Figure 1B, C). In this way, the outer surface of the labia minora covers all suture lines forming the ventral penile skin. The glans is opened by two parallel incisions and the two glans wings are dissected extensively to enable glans closure without tension. The penile shaft is created using all available and vascularized clitoral and labia minora skin (Figure 1D). The labia majora are joined at the midline to create the scrotum and penoscrotal angle. Silicone testicular implants are inserted through two incisions placed at the top of the scrotum (Figure 1E). Suprapubic urine drainage is placed in all cases for 3 weeks. The urethral stent is removed after 10 days. Postoperative use of a vacuum pump is necessary to prevent retraction of the neophallus, starting 3 weeks after surgery.

## MAIN OUTCOME MEASURES

Primary outcome measurements were surgical time, length of hospital stay, and complication and reoperation rates compared

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