SIGMOID VAGINOPLASTY: LONG-TERM RESULTS
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ABSTRACT

Objectives. To evaluate the long-term results of sigmoid vaginoplasty for Mayer-Rokitansky-Kuster-Hauser syndrome. The social and psychological acceptance of the procedure is also discussed in terms of a developing country scenario.

Methods. A total of 14 patients with Mayer-Rokitansky-Kuster-Hauser syndrome were treated at our institute from January 1995 to December 2004. Sigmoid vaginoplasty was performed in all patients. The procedure was performed using a combined abdominoperineal approach. Dissection was done between the urethra and rectum to create a bed for the neovaginal colon conduit. A 10-cm segment of sigmoid colon was raised on its vascular pedicle, delivered through the abdominoperineal tunnel, and fixed to the vaginal pit incision. The patient records were reviewed for surgical technique and postoperative complications. Patients underwent a personal interview to assess the postoperative results, social acceptance of the procedure, and sexual satisfaction.

Results. The mean patient age at surgery was 16.8 years. The patients who underwent sigmoid vaginoplasty had good cosmetic results without the need for routine dilation or the problem of excessive mucus production. The postoperative morbidity was minimal. During a mean follow-up of 4.1 years, no stenosis or colitis was encountered. The subjective satisfaction rate with the surgical outcomes in all the patients was 8.01 on a scale of 0 to 10 (0, very disappointed to 10, satisfied).

Conclusions. Sigmoid vaginoplasty is an effective treatment for patients with vaginal atresia. Timed vaginal reconstruction in these patients allows for a better quality of life and social acceptance. It also enables the patient to lead a near-normal sexual life, with high satisfaction rates. UROLOGY 67: 1212–1215, 2006. © 2006 Elsevier Inc.

The main indication for reconstruction of an artificial vagina is treatment of Mayer-Rokitansky-Kuster-Hauser syndrome (a müllerian duct defect, associated with vaginal agenesis, that occurs in 1/4000 to 5000 births¹). These patients often present in adolescence with the complaint of a failure to menstruate. The other rare indication for formation of a neovagina is the case of vaginal loss as a result of gynecologic cancer or postpartum necrosis and for genital reassignment in the case of genetic sexual ambiguity.

Many methods of vaginal construction have been described to date. Patients with a rudimentary vagina have undergone serial dilation.² Labial flaps with dilation,³ full-thickness and partial-thickness skin grafts,⁴ peritoneum,⁵ bladder-mucosa,⁶ amnion,⁷ and oxidized regenerated cellulose fabric⁸ have been used to construct the neovagina. These modalities require long-term dilation and stenting to prevent canal closure.

The use of isolated bowel segments has been shown to provide excellent results, circumventing the need for regular dilatation.⁹ We evaluated the long-term results of sigmoid vaginoplasty performed in patients with Mayer-Rokitansky-Kuster-Hauser syndrome, with emphasis on the sexual and social outcomes of these patients in a developing country scenario.

MATERIAL AND METHODS

From January 1995 to December 2004, 14 patients with Mayer-Rokitansky-Kuster-Hauser syndrome were treated by sigmoid vaginoplasty at Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India.
The patient records were reviewed for surgical technique, complications, cosmetic results, functional results, and psychosocial acceptance of the procedure. Patients were recalled for physical examination, and they underwent personal interviews to assess their current status. A single surgeon, with a special interest in reconstructive and female urology, performed the procedure in all the patients.

In preparation for the surgery, all patients underwent a careful physical examination and thorough endocrinologic, psychological, and radiologic review. Endoscopic assessment of the urethra and bladder was done just before surgery when deemed necessary.

The procedure was performed under general anesthesia and epidural analgesia. The epidural catheter was left in place for postoperative patient-controlled analgesia. The patient was placed in an extended lithotomy position with the buttocks slightly elevated. This position allowed a wide access to the perineum, with excellent intra-abdominal exposure. A simultaneous abdominoperineal approach was used.

Through a Pfannenstiel incision, the descending colon was mobilized down to, and including, the sigmoid colon. A 10 to 15-cm of sigmoid segment was isolated on its vascular pedicle. The proximal end of the isolated segment was closed in two layers using absorbable sutures. Bowel continuity was restored with a hand-sewn single-layer anastomosis with 3-0 silk sutures. Simultaneously, another team of surgeons cut an H-shaped incision in the perineum. Dissection was done between the urethra and rectum to create a bed for the neovaginal colon conduit. A 16F Foley catheter was left indwelling in the urethra as the dissection progressed between the urethra and rectum. The cul-de-sac was opened over a Hegar dilator pushed up through the perineal route. The abdominoperineal tunnel was progressively dilated by Hegar sounds to achieve a caliber comparable to the bowel size or large enough to permit two fingers. The mobilized sigmoid segment was pulled through the abdominoperineal tunnel, avoiding any tension or twisting. The distal neovaginal opening was fixed with the vulval mucosa using absorbable sutures. In cases in which a pliable distal vagina was present, the anastomosis of the bowel with the distal vagina was done. The neovagina was packed with petrolatum gauze, which was kept in place for 48 hours. This facilitated fixation of the graft to the surrounding tissues. The proximal end of the neovagina was fixed to the sacral promontory to avoid prolapse. Finally, the abdominal wound was closed.

The patients were taught self-dilation of the neovaginal introitus and irrigation of the neovagina for mucus removal. The patients were instructed to self-dilate and irrigate the neovagina daily for 8 weeks and weekly thereafter.

The patients were instructed to visit the outpatient clinic after 1 and 6 months and yearly thereafter. The families of the patients were counseled to marry these patients to widows who had already completed their families or who were physically challenged and to adopt children. The patients underwent physical examination and personal interview to assess the postoperative results, social acceptance of the procedure, and sexual satisfaction. Another urologist did the personal interviews at the follow-up visits to avoid any bias. All patients were asked to rate the procedure on a subjective scale of 0 to 10 (0, very disappointed to 10, satisfied).

RESULTS

A total of 14 patients with Mayer-Rokitansky-Kuster-Hauser syndrome were treated at our center from January 1995 to December 2004. All patients were genotypically female. The mean patient age at surgery was 16.8 years (range 13 to 22). The mean follow-up was 4.1 years (range 6 months to 7 years). In 13 cases, diagnosis was made at the time of menarche; however, 1 patient presented after marriage.

No postoperative mortality occurred. The morbidity was minimal, in the form of a superficial wound infection and ileus in 1 patient each that were managed conservatively. All the patients adhered to the dilation protocol, and no case of introital stenosis developed. At the last follow-up, all patients had a patent neovagina, and none had complained of dryness, local irritation, or excessive mucus discharge.

With respect to the psychosexual outcomes, all patients were satisfied with the procedure. The subjective satisfaction rate with the surgical outcomes in all the patients was 8.01 on a scale of 0 to 10 (0, very disappointed to 10, satisfied). None of our patients gave the procedure a score of less than 5. None of these patients complained of significant dyspareunia.

COMMENT

Patients with Mayer-Rokitansky-Kuster-Hauser syndrome have müllerian aplasia leading to vaginal atresia. This association was first described by Mayer in 1829 and Rokitansky in 1838 after autopsy studies on patients with müllerian dysgenesis. Most of these patients present with partial or total atresia of the müllerian duct structures, including the uterus, fallopian tubes, and upper three-fourths of the vagina. The syndrome involves müllerian duplication anomalies and has a high association of urologic anomalies such as unilateral renal agenesis. Surgical treatment of this patient population constitutes a significant technical challenge, the outcome of which affects both the physical and psychosocial health of the patient.

The traditional treatment for this condition is the split-thickness skin graft. This procedure has high rates of graft failure and stenosis. Patients require frequent dilations and must wear a vaginal mold at night. This leaves a negative impact on the psychological status of the patients, often leading to noncompliance and stenosis. Other complications of this procedure include local irritation caused by incorporation of hair-bearing skin, dryness, dyspareunia, and inadequate vaginal length. The length of the skin-graft neovagina has been shown to directly correlate with the incidence of dyspareunia, with an incidence of 100% if the vaginal length is less than 6 cm.
Sigmoid vaginoplasty provides an esthetically pleasing neovagina without the use of vaginal molds and dilators. None of the patients in our series complained of local irritation, dryness, or dyspareunia. Excessive mucus discharge was reported in the initial months after surgery but subsided after 3 to 4 months, similar to that reported by Hanna.13 Although various studies have shown that intestinal neovagina tubes are superior to skin-lined perineal tubes, the potential risks of bowel complications and technical considerations involved in the procedure have persuaded gynecologists to select a less-demanding procedure. However, careful bowel preparation, meticulous attention to the technical details, and a team approach has been shown to produce excellent results with a low incidence of morbidity.

The mean patient age at surgery for our patients was 16.8 years. Although all patients had absent menarche, the concerns about the anomaly became evident only at time of marriage arrangements in most cases and after marriage in 1 patient. This probably was a result of ignorance, the low levels of literacy, and the highly conservative nature of the Indian society. Another reason for this late presentation is the paucity of hospitals specialized enough to diagnose and treat these complex anomalies.

Psychosexual profiles, as determined by personal interview of these patients, indicated that most of the patients achieved acceptable outcomes with respect to the physical appearance of the vagina. To avoid bias in reporting, another urologist in our department performed the personal interview during follow-up. The mean subjective score in our series was 8.01, with a range of 6 to 9.5, indicating that most of our patients were satisfied with the procedure.

None of the patients in our series had any major postoperative or chronic complications. However, certain potential complications merit discussion. Stenosis of the mucocutaneous junction has been mentioned in a published report.14 However, we did not encounter any such stenosis in our patients. Ulcerative colitis has been reported in the neovagina.15 Similarly, patients with hereditary polyposis syndromes such as familial polyposis, Gardner syndrome, and nonpolyposis colon cancer have the potential to develop polyps or neoplasia in the diverted sigmoid colon. Another potential complication of the sigmoid neovagina is diversion colitis, a rare disorder of unknown etiology occurring after isolation of an intestinal segment from the fecal stream.16,17 Division colitis in patients with a sigmoid vagina presents with pain, local irritation, and bleeding. Vaginoscopy will reveal erythema and edema of the vaginal mucosa. Histopathologic examination of the mucosa will reveal lymphoid hyperplasia with chronic inflammatory infiltrates.18 None of the patients in our series had these complications; this could have been because of the low incidence of ulcerative colitis in the population in the Indian subcontinent. However, continuous follow-up of these patients with regard to these potential complications is necessary.

CONCLUSIONS

Because of the lack of an adequate social support system, hospitals, and knowledge, physical anomalies such as vaginal atresia are a disaster for the patient and her family in the Indian society. Poverty and the conservative nature of the society prevent them from seeking treatment until marriage arrangements are begun or until after marriage. Thus, we need a procedure for neovaginal reconstruction that provides good functional results with the lowest postoperative morbidity and revision rate.

From our experience with sigmoid vaginoplasty, we believe that the isolated sigmoid provides an ideal material for neovaginal construction. It provides a cosmetic, self-lubricating vagina without the need for prolonged vaginal molding and self-dilation. The sigmoid neovagina gives acceptable functional results in the form of high rates of sexual satisfaction, with a low incidence of dyspareunia. The risk of stenosis and the need for revision are low with this procedure compared with free skin grafts.

REFERENCES