

Brief Report

Bladder mucosal autograft: An effective method for repair of vesicovaginal fistula

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Abstract

Background: to investigate the effectiveness of bladder mucosal autograft for the treatment of vesicovaginal fistulae.

Materials and Methods: Between March 2005 and June 2011, 21 patients with a single vesicovaginal fistula above the trigone, not involving the ureters, underwent surgery. Bladder was approached extraperitoneally and opened in the midline. The mucosa around the fistula was incised and inverting sutures were placed over the fistula opening. The mucosal defect was covered by a free mucosal graft from the edge of cystotomy incision.

Results: After catheter removal at 2 weeks, 18 patients (85 %) remained dry while one patient experienced urge incontinence, which resolved in a few days and another one still had urine leakage (although less than before the operation) that improved after another 3 weeks of bladder drainage. Only in one patient, the operation failed.

Conclusion: Short duration of hospitalization, simplicity of the procedure, avoidance of extensive bladder dissection, and extraperitoneal nature of the operation, along with a high success rate are the advantages of this procedure. This technique could be recommended for single fistulae not involving the ureters and not secondary to malignancies.

Key Words: Bladder mucosa, graft, vesicovaginal fistula

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INTRODUCTION

The majority of vesicovaginal fistula in developed countries results from iatrogenic injury - the most

common cause being hysterectomy.^[1-4] Other less common etiologies include radiation necrosis, obstetric trauma, local extension of malignancy, and pelvic trauma.^[5,6] In developing countries, prolonged obstructed labor remains the most common cause of vesicovaginal fistula.^[7] The main treatment is a direct closure of the fistula. Surgical approaches used for vesicovaginal fistula include combined abdominal vaginal, vaginal, or abdominal approaches. The approach chosen is contingent on several factors, including location of fistula (position related to the apex), quality of tissues, and surgical experience. The abdominal approach is mostly used where there is a

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poorly visualized tract, a narrow or immobile vagina, and in whom there is close proximity to a ureteral orifice. This technique needs extensive dissection between the bladder and the vagina, hence increased post-operative morbidity.

Bladder mucosal autograft has been used with success in a few studies and needs less extensive dissection. We report our experience of bladder mucosal autograft in the treatment of vesicovaginal fistula as a simple and effective technique.

MATERIALS AND METHODS

Between March 2005 and June 2011, 21 patients with vesicovaginal fistula underwent surgery. The diagnosis was made according to patient's history (permanent wetting after gynecological surgery) and cystoscopy. If ureteral involvement was suspected (proximity of fistula to the ureteral orifice or hydronephrosis), an intravenous urography (IVU) and/or retrograde pyelography was performed. Patients were given prophylactic antibiotics (3rd generation cephalosporins plus an aminoglycoside) and a vaginal douche with povidone iodine the evening before the operation to reduce the risk of post-operative infection. Post-menopausal women were also given oral conjugated estrogen, 1.25 mg daily during 2 weeks pre-and 4 weeks post-operatively, if no contraindication existed.

Cystoscopy and placement of bilateral ureteral catheters were performed just before the operation and skin was opened through a pfannenstiel incision. Only patients with a single fistula tract above the trigone were considered eligible for this technique and those with multiple fistulae and ureteral involvement were repaired by other techniques. Approach to the bladder was extraperitoneally. A small midline cystotomy was made and the mucosa around the fistula edge was incised with a circumferential distance of about 1 cm and fibrous tissues were removed. Continuous inverting sutures were placed along the fistula opening through the muscular layer, using 3-0 polyglactin sutures.

The free bladder mucosal graft was obtained from the edge of the cystotomy line. The mucosa was scored, using a No. 15 scalpel and Metzenbaum scissors were used to lift the mucosa off the underlying detrusor muscle. Chromic stay sutures (3-0) were used for traction as the graft was lifted upward to minimize blunt trauma of the graft by forceps. The graft size was some 40% larger than the removed mucosa around the fistula opening.

The free graft was placed over the fistula site, paying

attention not to turn the graft over and secured in place with 6 to 8 interrupted 4-0 chromic catgut sutures. Sutures were placed through the adjacent mucosa and then the mucosal graft. No attempt was made to interpose omentum between the bladder and vagina such that the peritoneum was never entered. After ensuring adequate hemostasis, bladder mucosa around the graft site was closed using continuous 4-0 chromic catgut sutures. The bladder wall was then closed in two layers after placing a 16 Fr Foley catheter and a Penrose drain was also placed. We did not use cystostomy and the vaginal end of the fistula tract was left intact.

Ureteral stents were removed the next day and the drain after 3 days but the Foley catheter was kept in place for 2 weeks.

Patients were instructed to avoid intercourse for 1 month and oxybutynin (5 mg TID) was administered until 2 days before catheter removal.

RESULTS

The mean age was 57.3 ± 10.7 years (range: 42 to 69 years). All 21 patients had a history of hysterectomy (abdominal or vaginal) as the cause of the fistula formation. Only one patient had a history of failed surgery for fistula repair and none had a history of malignancy as the cause of hysterectomy.

In none of the patients, the fistula had involved the ureter and all fistulas were located outside the trigone. The mean (range) time from fistula formation to repair was 8 (2-10) months. The mean (range) fistula size was 1.7 (1-2) cm and the mean (range) operation time was 95 (80-125) minutes. Patients were hospitalized for a mean (range) of six (5-9) days after the operation and were discharged with Foley catheter.

After catheter removal at 2 weeks, 18 patients (85 %) remained dry while one patient experienced urge incontinence, which resolved in a few days and another one still had urine leakage (although less than before the operation) that improved after another 3 weeks of bladder drainage. Only in one patient, the operation failed. Patients were followed-up for a mean (range) of 8 (3-20) months.

DISCUSSION

The earliest experience for repair of vesicovaginal fistula was reported by O'Connor.^[8] In this technique, bladder and vagina are mobilized and separated from each other by dissecting along the vesicovaginal septum. A complete excision of the fistula tract is completed; the separate closure of the vagina and

bladder is performed using absorbable sutures. This technique is most expeditiously performed intraperitoneally. Other authors have found the omentum to be reproducibly present for interpositional uses.^[9,10] Nesrallah *et al.*, described the O'Connor's technique as the gold standard for supra-trigonal vesicovaginal fistula repair.^[11]

The use of free mucosal graft was first described in canine.^[12] The authors reported good results in treating vesicovaginal fistula using a bladder mucosal autograft. In 1998, Brandt *et al.* reported good results for vesicovaginal fistula repair, using bladder mucosa. Success rate was 96.3% in 80 women.^[13] Ostad also reported satisfactory results with a free bladder mucosal graft.^[14] These promising figures are supported by two studies with success rates of 91% and 100%.^[15,16] In our study, the success rate was 95% that compares favorably with these and we used only Foley catheter and no cystostomy.

It remains true that the plan of repair should be tailored for each patient depending on the size, position, and number of fistulas and the state of surrounding tissues that may be used in the repair.

CONCLUSION

Short duration of hospitalization, simplicity of the procedure, avoidance of extensive bladder dissection, and extraperitoneal nature of the operation are the advantages of this procedure. Considering its simplicity and safety, this procedure could be recommended for vesicovaginal fistula repair. However, the applicability of this technique for fistulae secondary to malignancies, in radiated patients and for multiple fistulae is not certain.

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