SUPRATRIGONAL VESICOVAGINAL FISTULA REPAIR BY MODIFIED O'CONNOR'S TECHNIQUE USING A FREE SUPPORTING GRAFT

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ABSTRACT

Background: A vesicovaginal fistula (VVF) is a surgical problem and is associated with many social consequences. Multiple techniques including different approaches and different tissues as interposition grafts have been proposed for the repair of the VVF. We are reporting our experience of VVF repair with free omental graft through transperitoneal transvesical approach. **Objective:** The objective of present study was to assess the outcome of supratrigonal vesicovaginal fistula repair by modified O, connors' technique. **Patients and Methods:** This descriptive study was based on case series of nine patients of supratrigonal VVF admitted in surgical unit-1, between 1st December 2010 and 31st August 2011. After a detailed medical history, physical examination, per vaginal assessment, cystoscopy and radiological and laboratory work up these patients underwent VVF repair. Post operatively these were assessed for recovery, failure of fistula and development of any complications. Patients were re-examined before discharge from hospital. Follow up visits were planned after 2 weeks and then after 3 months in order to assess success of repair. **Results:** Mean age of the patients was 37.5± 11.7 years. Most of the patients (8) were from low socioeconomic group. Six patients had primary fistulae while 3 had recurrent. One patient had right ureteric dilatation due to iatrogenic ureteric ligation. The size of fistulae noted during the surgery was < 2 cm in 5 patients and >2cm in 4 patients. Average operative time was 72 ±15 minutes. Average hospital stay was 9.4 ±3 days. Success rate was 100% as none of the repair failed. Minor urinary leakage, minimal hematuria and laparotomy wound infection settled spontaneously. **Conclusion:** Free omental graft through transabdominal transvesical approach for VVF repair is associated with very low morbidity and carries a very high success rate.

Key words: Vesicovaginal fistula, modified O'connor's technique, graft

INTRODUCTION

Vesicovaginal fistula (VVF) has been a social and surgical problem for centuries. The exact incidence of this disorder in Pakistan is unknown, however, the reported incidence in other developing countries is 1-2/1000 deliveries with 500,000 cases occurring annually.[1] The etiology of the VVF is manifold but in about 80-90% of the cases, it occurs as an obstetrical complications.[2] Unfortunately in countries like Pakistan, obstetric VVF results from prolonged labor, while in the west over 70% follow pelvic surgery.[3,4]

VVF is associated with multifaceted morbidity as it not only leads to complications like local infection and vesical calculi formation but the continuous foul odor makes the female a social outcast.[1] VVF can appear 1-6 weeks after gynecological or obstetric surgery and recurrent fistulas can occur within 3 months of primary fistula repair.[3]

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Multiple techniques have been proposed for the repair of the VVF.[5-9] Of all techniques, the common concept is of layered closure of the fistula, to avoid failure. For supratrigonal VVF, O'Connor technique has been the most accepted method when transabdominal repair is employed.[10] The classical O'Connor operation utilizes the suprapubic access for extra-peritoneal dissection of retropubic space to dissect the urinary bladder, followed by long saggital cystotomy carried till the fistula, which is excised and then repair is done in two layers[10] by using tissue interposition between vagina and bladder suture line. The use of omentum as an interposition tissue has been reported to improve the success rate.[11,12,13] In most of the series, the used omentum was pedicled graft.[14] The success is claimed to be due to its vascularity, its ability to provide replacement tissue and a mechanism for absorption of debris. Free omentum was 1st used by Senn in 1888[15] but its use could not be popularized because of the concept of necrosis without vascular supply, but Brocq et al[16] established the fact that the free omental graft survives while preserving its specific character-and that, histologically, there is remarkable persistence of the endothelium. In a recent systematic review, Algumuthu et al[17] have reported the biological significance of omentum, its immense therapeutic potential and its application in the various disciplines of surgical practice. Herein we describe our

modifications of the O'Connor technique for repairing a supratrigonal VVF using transperitoneal approach along with free omental graft instead of pedicle omentum. The objective of the present study was to assess the outcome of supratrigonal vesicovaginal fistula repair by modified O' Connor's technique using free supporting graft.

PATIENTS AND METHODS

This descriptive study was based on case series of nine patients of supratrigonal VVF admitted in surgical unit-1, between 1st December 2010 and 31st August 2011. A detailed medical history was recorded focusing on the age, parity, duration of labour in order to know the cause of fistula and previous attempts at repair. Per vaginal assessment was done to inspect and palpate the vaginal opening of fistula. Cystoscopy was done in patients before admission by urologist except one in whom it was done by member of our team to establish the supratrigonal location of fistula and to assess its proximity to ureteric orifices. Excretory urogram was performed in 5 patients in whom cystoscopy revealed closed proximity of fistula with ureteric orifice. Two patients of recurrent VVF having local genital infection were treated before surgery with local hygienic measures and antibiotics and in 3 patients anemia was treated with blood transfusions before surgery in order to raise hemoglobin level at least up to 10g/dl.

While patient in supine position under general anaesthesia, abdomen was opened via an infraumblical midline incision in all patients. The peritoneum was opened to approach the posterior surface of urinary bladder and bowel was gently packed with sponges. After placing stay sutures on the posterior wall of urinary bladder, a short posterior midline cystotomy was done and carried up to fistula. In order to minimize urinary spillage, effective suction was used. Proximity of ureteric orifice with VVF was assessed and 5-6 Fr infant feeding tubes were used to stent both the ureters in all patients before commencing the dissection of fistula. A plane of dissection was created between bladder and vaginal vault/cervix, and fistula excised taking care of ureters. For vaginal vault closure, 2/0 interrupted vicryl sutures were used. Similar technique was used to close the defect in urinary bladder. After this, a thin piece of free omentum was interposed between vaginal and bladder suture line and any raw omental edge turned under and sutured. In all patients pelvic drain was placed. Cystotomy closed using 2/0 vicryl suture in continuous fashion in two layers and urinary bladder drained using 16F Foley catheter. Suprapubic cystostomy was not used in any of the patients. Abdominal closure was done by using the standard technique. Post operative adequate antibiotic cover was administered for 5 days. Pelvic drain removed after 48 hours and urinary catheter removed after 10 days in all except in one patient in whom it was removed after 3 weeks.

Patients were re-examined before discharge from hospital. They were advised to avoid coitus for three months. Follow up visits were planned after 2 weeks and then after 3 months in order to see success of repair.

RESULTS

Nine patients were operated for VVF using the modified O'Connor technique. Mean age of the patients was 37.5± 11.7. The youngest patient was of 23 while the oldest was of 60 years of age. Most of the patients (8) were from low socioeconomic group, one was from middle class and no one was from higher class. The most common complaint was leakage of urine per vaginum. The number of children ranged from 2 to 6. The number of patients having children 3 or less was 5; 4 patients had children more than 3. The mode of last delivery and cause of VVF has been shown in Table I. Six patients had primary fistulae while 3 had recurrent. Two patients with recurrent fistulae had history of obstructed labour followed by emergency C-Section and one patient had history of transabdominal hysterectomy due to dysfunctional uterine bleeding. IVU was done in 5 patients. It was found to be normal in 4 while one patient with history of TAH had right ureteric dilatation and right sided hydronephrosis suggesting iatrogenic ureteric injury/ligation. Cystoscopy was done in all the patients. Findings of cystoscopy like size and site were consistent with per operative findings in 8 patients. In one patient size of fistulae on cystoscopy was erroneously underestimated. The size of fistulae noted during the surgery was < 2 cm in 5 patients and >2cm in 4 patients. Most of the patients (6) had fistulae in midline, 2 had close to the left ureter while one had close to the right ureter. Average operative time was 72 ±15 minutes. Average hospital stay was 9.4 ±3.0 days. In most of the patients Foley catheter

was removed on 8th post operative day. Post operative recovery was uneventful in majority of the patients. Success rate was 100% as none of the repair failed. Minor urinary leakage, minimal hematuria and laparotomy wound infection settled spontaneously. Subjective improvement in quality of life was reported in all of the patients.

Table I: Etiology of VVF as noted in patients (N=9)

Etiology		Type of Fistulae		Total
		Primary	Recurrent	
Obstetrical	Vaginal Delivery	2	0	2
	C-Section	2	2	4
Gynecological	TAH	2	1	3
Total		6	3	9

DISCUSSION

Mean age at which the patients underwent fistulae repair was 37.5 years. The patients were older than those reported in most of the Indian and African Series.[18-20] The difference may be because of the facts that more than 55 % of the patients were older than 40 years of age, as either they had developed fistulae after TAH or they had presented for the repair of a recurrent fistula. Moreover, most of the African studies have mentioned age of development of fistulae rather than age of repair.

In our study, 66.6 % of the patients developed fistulae because of the obstetrical reasons. Similar findings have been reported by others from underdeveloped countries.[21-23] However, in western world, the most of the vesicovaginal fistulas are gynecological in origin.[22] Almost all patients of VVF operated in our unit gave birth either at home or at "a hospital" with virtually no obstetric facilities. Similarly caesarean sections were done at hospitals with uncertain obstetric facilities. Thaddeus and Maine[24] reported that in developing countries, the outcome of obstructed labour and its complications are influenced by delay in decision to seek care; delay in arrival at a health care facilities; and delay in provision of adequate care. Our results showed that 44.44% of the babies were delivered by caesarean section. Caesarean section will not always prevent fistula formation. The use of the partograph differentiates normal from abnormal progress and identifies those women likely to require intervention.[25]

Surgeons differ in their approach to repair vesico-vaginal fistula ranging from transvaginal and transabdominal to laparoscopic. The selected route of repair depends mostly on the training and experience of the surgeon. The best approach is probably the one in which the surgeon is most experienced.[26] Hilton P et al mentioned that a combined transperitoneal-transvesical procedure is particularly useful for VVF following cesarean section.[1] We used the same approach because majority of our patients had iatrogenic fistulas due to previous surgery in peripheral hospitals. Success rate in our study was 100 % as none of the fistulae failed and it was consistent with that mentioned in literature. Lee RA et al and Nanninga JB et al have reported success from 94-100% for the transabdominal approach.[27,28] This is better than the transvaginal and laparoscopic approaches. Success rate ranging from 82-94% have been reported for the transvaginal approach[3, 29, 30] and 93 % for laparoscopic repair.[8]

Regarding the use of interposition graft, again the choice is variable. Evan and colleagues [31] have recommended an interposition flap while approaching transabdominally, regardless of fistula etiology. Most of surgeon use a pedicled omentum in transabdominal repair of VVF.[1,32] It is hypothesized that the omentum tissue promotes wound healing through anti-inflammatory pathways, and because the omentum is rich in adipocytes, these may modulate the anti-inflammatory responses.[33,34] However, in our study we reviewed the concept of Brocq et al [16] that the free omentum could be placed between two suture lines with as good results as pedicled omentum.(Free omentum became unpopular in recent years because of its fear of necrosis). Nevertheless, technique of transplantation of free omentum is important. In our experience the best results with free omental graft are achieved when we use the thinnest and most vascular area of omentum; the graft extends beyond the raw area to be covered; the edges are turned under; and very fine catgut sutures are used and placed close together around circumference of graft.We found no case of post operative necrosis manifesting as abscess or even minor infection (leucocytosis with fever) in any of our patient. The success rate of our technique using free omentum was much higher than that reported in literature for other types of grafts. For instance, Raz S[12] has described an 82% success rate with the flap-splitting technique combined with an adjunctive peritoneal flap procedure and Vyas and

colleagues[35] have reported of a 91% success rate using mucosal autografts for repair of VVF. However, the results of graft from the anterior abdominal wall fat as reported by Moharram[36] and those of gamma-radiated human dura mater as reported by Alagol and colleagues[37] are comparable to our technique. Morbidity in our patients was negligible.

CONCLUSION

Free omental graft through trans-abdominal trans-vesical approach for VVF repair is associated with very low morbidity and carries a very high success rate.

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