Trans-vaginal repair of gynecological supratrigonal vesicovaginal fistulae: A worthy option!

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Abstract

Objective: To determine the appropriateness of vaginal approach for gynecological supratrigonal vesicovaginal fistulae.

Patients and Methods: Retrospective review of consecutive women with gynecological supratrigonal Vesico Vaginal Fistulae (VVF) repaired at the fistula unit of Urogynecology department between 1996 and 2011 was done. Out of 48 cases of supratrigonal VVF of gynecological origin identified; 34 (70.8%) cases were repaired vaginally and 14 (36.8%) abdominally with a mean follow-up period of 52.8 (2-132) months.

Results: Overall 95.8% were successfully cured at first attempt. The success rate of vaginal repair (94.8%) at first attempt was comparable to that of abdominal repair (100%) (P value = 0.8946). Amongst two failed vaginal repairs, one was successfully cured by subsequent vaginal repair and other by abdominal repair.

Conclusion: Three fourth gynecological supratrigonal VVF can be repaired vaginally in first attempt with success rate comparable to abdominal approach. On the basis of this study we postulate that vaginal approach should be preferred over abdominal approach for repair of all vaginally accessible supratrigonal VVF of gynecological origin.

Key Words: Abdominal repair, gynecological supratrigonal vesicovaginal fistulae, vaginal repair

INTRODUCTION

Vesicovaginal fistulae (VVF) are dreadful complications of pelvic surgery in women. Improved obstetric care has minimized the occurrence of obstetric fistulae, hence high percentage of VVF encountered these days are of gynecological origin. Both vaginal approach as well as abdominal approach are described for VVF repair. Each approach has its merits and demerits. This article shares fifteen years of our experience of surgical management of gynecological supratrigonal VVF.

PATIENTS AND METHODS

Patients
This retrospective study was undertaken after Institutional Review Board Approval.

Inclusion criteria for this study were the cases with following characteristics:
1. Vesicovaginal fistulae of gynecological etiology located in supratrigonal region of bladder as per cystoscopy findings.
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2. Gynecological supratrigonal vesicovaginal fistulae who underwent vaginal or abdominal repair.
3. Patients for whom follow up details were available.

Patients with following findings were not included in our study:
1. Ureterovaginal fistulae
2. Vesicouterine fistulae
3. VVF involving bladder neck or trigone
4. Urethrovaginal fistulae
5. Radiation induced supratrigonal vesicovaginal fistulae
6. Supratrigonal VVF of Obstetric etiology
7. Laproscopic repair of supratrigonal VVF

48 patients with supratrigonal vesicovaginal fistulae of gynecological origin managed during the last fifteen years were identified. Patients’ age ranged from 20 to 63 (mean 37.6) years. Patients’ data was scrutinized regarding etiology, number of previous repairs, time of intervention, surgical approach, selection criteria, operative details, postoperative complications and surgical outcome.

Urine test for culture and sensitivity was done for all and patients with positive results were treated prior to surgery. Vault infection, if present was treated before taking up the patient for repair. Pre-operative ultrasonography of kidney, ureter, bladder area and intravenous urography were done for all patients to rule out ureterovaginal fistula.

All patients underwent Examination Under Anesthesia and cystoscopy. Examination Under Anesthesia was done to assess the exact site, size, number of the fistulae, vaginal mobility and extent of fibrosis around the fistula. Cystoscopy was combined to confirm the site, size, number and proximity of fistula to the ureteric orifices. Scarring of bladder due to previous repair or ureterovaginal fistula if any was identified.

Despite supratrigonal location, vaginal fistula repair was opted if the access to fistula was enabled by mobile vaginal wall and relaxed pelvic floor. Patients were not taken up for vaginal repair when the fistula was
1. Too high to reach vaginally \(n = 3\)
2. Restricted mobility of vagina \(n = 8\)
3. Fistulous edge falling at ureteric orifice requiring ureteral re-implantation \(n = 1\)
4. Need for open surgery due to comorbid pathology \(n = 2\)

These cases underwent abdominal repair.

Methods
The fistula repair was delayed for at least six weeks from the time of previous gynecological surgery so as to provide sufficient time for the inflammation to subside. Out of 48 fistulae, 34 were repaired vaginally and 14 abdominally. All repairs were done by the same surgeon.

Vaginal repair
Vaginal repair was done in lithotomy or exaggerated lithotomy position under suitable anesthesia. If pre-operative cystoscopy was suggestive of close proximity of fistula to the ureteric orifices, per-operative cystoscopic stenting of ureters was done as a first step. Repair was done without excising the fistulous tract. Circumferential incision was made around the fistulous opening after infiltrating the vaginal edges of the fistulous tract with saline adrenaline mixture. When needed, traction with Foley’s balloon was used to facilitate the access. Adequate mobilization of vagina from the underlying bladder ensured tension free closure. Suprapubic catheter was placed vaginally through the fistulous tract. Bladder end of the fistula was trimmed in case of extensive fibrosis. Bladder was closed in two layers using 3-0 vicryl, first layer as full thickness by continuous interlocking sutures. Sero-muscular layer of bladder was approximated by interrupted sutures as second layer. Flap interposition was done followed by approximation of vaginal edges using 2-0 vicryl. Rectal examination was done per operatively routinely to confirm integrity of rectum.

Abdominal repair
Abdominal repair of fistula was done using the O’Connor technique or its modification. Bladder was mobilized first and bivalved at the dome. Ureteric orifices were cannulated with infant feeding tubes for easy identification. Fistula was circumscribed and excised. Bladder was dissected off the vagina. Vaginal end of the fistula was closed first followed by flap interposition. Ureteral stents were kept if the fistula was in close proximity to the ureteric orifices. Bladder closure was done in two layers as described for vaginal repair. Postoperatively, dual bladder drainage with suprapubic and per urethral catheter was maintained for minimum of 14 days for both repairs.

We compared the outcome of vaginal approach to abdominal approach for the management of gynecological supratrigonal VVF. Follow up was done at one month, three months, six months and yearly thereafter. Abstinence from sexual intercourse was advised for three months postoperatively. Follow-up period ranged from 2 to 132 (mean 52.8) months. Success of the procedure was defined if the patient was leakage free in the follow up period after the first attempt at repair.

Statistics
Chi square test was used to analyze the data using graph pad software. Association between two variables was found statistically significant if \(P\) value was <0.05
RESULTS

48 supratrigonal VVF of gynecological etiology were managed in the fistula ward of Department of Urogynecology during 15 year period from March 1996 to March 2011. Of these 83.3% (40 out of 48) were attributed to abdominal hysterectomy whereas only 8.3% (4 out of 48) to vaginal hysterectomy for benign gynecological diseases. Fibroid uterus was the most common indication for hysterectomies followed by dysfunctional uterine bleeding [Table 1].

All were simple fistulae. 72.9% (35 out of 48) were primary fistulae while 14.6 % (7 out of 48) had previously undergone bladder rent repair and 12.5 % (6 out of 48) had one prior VVF repair.10 cases (7 vaginally group and 3 in abdominal group) presented to us within six weeks of the primary surgery. Two cases with vault infection were treated with appropriate antibiotics before fistula repair.

70.8% (34 out of 48) of gynecological supratrigonal fistulae were repaired vaginally and 29.2% (14 out of 48) abdominally. Mean age of vaginally and abdominally repaired groups was 38.12 and 36.34 years, respectively. Average fistula size was 1.2 and 1.3 cm. respectively in vaginal and abdominal groups. Number of recurrent fistulae (including prior bladder rent repair) in the vaginal and abdominal groups was 9 and 4, respectively. All were single fistulae except 3 vaginally repaired double fistulae.

Amongst the vaginally repaired cases, peritoneum was interposed in 21, omentum in 5, martius flap in 4, pre rectal fat in 1 and 3 cases were repaired without any flap interposition. Amongst the abdominally repaired cases, omentum interposition was done in ten patients while four cases were repaired without any flap interposition.

Outcome

The success with vaginal and abdominal approach was 94.1% and 100%, respectively (P value = 0.8946). Overall, 95.8% (46 out of 48) of fistulae were successfully repaired at first attempt. Two vaginally approached cases in which repair failed presented with urinary leakage at 16th and 30th post-operative days. One of them was successfully cured by subsequent vaginal repair and other underwent abdominal repair as it needed ureteric re-implantation. Follow-up was done at one month, three months, six months and yearly thereafter. All 46 patients who were dry at one month remained continent at a mean follow-up of 52.8 months. None reported with dyspareunia, increased urinary frequency or urgency.

Complications

Two (4.2%) inadvertent bowel injuries (one during vaginal and other during abdominal repair) were encountered. Both patients had three abdominal surgeries prior to the fistula repair. Development of post-operative bowel adhesions predisposed to bowel injuries and both were successfully managed by surgical gastroenterologist. None of the patients required blood transfusion. No wound hematoma or abscess was detected.

Comments

Our review reveals that abdominal hysterectomy is the most common cause for the development of iatrogenic fistulae as reported in literature. The dissection is confined to supratrigonal region of bladder during this procedure predisposing it to iatrogenic injuries.

Nesrallah et al. evaluated the success rate of transperitoneal O’Connor’s procedure to be 100% and considered it to be the gold standard for supratrigonal fistulae. Cetin et al. recommended abdominal approach for fistulae located above the interureteric ridge. Mumtaz Rasool et al. in 2006 also concluded that supratrigonal VVF are best treated with transabdominal approach. Abhay Kumar et al. in 2009 while analyzing 403 cases of VVF repaired at their center advocated transabdominal route for repair of supratrigonal VVF.

On the contrary, this review emphasizes that all supratrigonal VVF need not be repaired abdominally by virtue of their high location as nearly three fourth of gynecological supratrigonal VVF can be repaired vaginally with success rate comparable to abdominal repair.

Our hypothesis is further strengthened by Joao Paulo Zambon et al. who in 2010 reported 100% success through trans-vaginal approach in repairing 13 cases of supratrigonal VVF of which 3/4th were of gynecological origin. Rakesh Kapoor et al. in 2007 also successfully managed 17 patients with supratrigonal VVF by trans-vaginal route though only 1/3rd of them were of gynecological origin.

The vaginal approach is a less invasive approach with minimum morbidity, decreased requirement of analgesics, allows high cure...
rate, short recovery, relatively lower costs and does not require sophisticated or expensive material as needed for laparoscopic or robot assisted repairs\textsuperscript{3,4‑16} and hence should be adopted whenever feasible in supratrigonal VVF. However, details regarding these factors were not included in the current study which is a limitation of this review. Small number of cases is another limitation of the study.

With the decline in the occurrence of obstetric fistulae,\textsuperscript{2} the future generation of specialists will come across more of gynecological fistulae and hence we appeal that vaginal repair be adopted as the procedure of choice for vaginally accessible cases of supratrigonal VVF.

**CONCLUSION**

Nearly three fourth gynecological supratrigonal VVF can be repaired vaginally with success rate comparable to abdominal approach. On the basis of this study we postulate that vaginal approach should be preferred over abdominal approach for repair of all vaginally accessible supratrigonal VVF of gynecological origin.

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