Role of Modified Martius Flap In The Repair of Vesicovaginal Fistulae

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ABSTRACT

Objective — *To assess the outcome of interpositioning modified Martius flap in repair of vesicovaginal fistulae (VVF) of more than 2cm size.*

Study design — *Descriptive case series.*

Place & Duration of study — *Departments of General Surgery Khyber Teaching Hospital (KTH) and Hayatabad Medical Complex (HMC), from January 1997 to December 2016.*

Methodology — *The case records of the patients were reviewed. All patients who had simple fistulae and those requiring repair through abdominal approach were excluded. All the patients had vaginal examination for confirmation of leakage following which they were subjected to cystoscopy/EUA to assess the number of fistulae their location and tissue scarring. Dye test was also done when needed. IVU, cystogram, urine c/s, were done in all patients. Modified Martius flap repair was performed. Patients were discharged on 3rd postoperative day and followed up for three months.*

Results — *Eighty-one patients underwent modified Martius flap repair for vesicovaginal fistulae. Mean age of the patients was 40 year (range: 20-60 year). Obstructed labor was the main etiological factor in 64 (79.01%) patients followed by gynecological surgeries in 10 (12.34%) patients. Fifty-three (66.25%) patients were operated for recurrent fistula formation. Post surgery 10 (12.34%) patients complained of stress incontinence and were treated conservatively. Vaginal bleeding was noted in 6 (7.40%) and labial wound infection in 4 (4.93%) patients. Recurrence occurred in 7 (8.64%) patients which included 3 (3.70%) patients who were operated upon, for recurrent fistula formation.*

Conclusion — *Modified Martius flap technique is a good treatment option for the management of vesicovaginal fistula with minimal complications and better cosmesis.*

Key words — *Vesicovaginal fistula, Martius flap, Urinary incontinence.*

INTRODUCTION:

Genital tract fistula in the developing world is still a significant problem. This is attributed to many social and health care related issues. It is estimated that around 2 million people are suffering from genital tract fistulae worldwide.[1] Genitourinary fistulae have been reported in approx 1-2 per thousand deliveries. In Pakistan, they have been observed in 3% of the cases, most of them are VVF.[2]

Obstructed labor has been the major etiological factor accounting for 80-90% of the cases, however in recent years genital tract fistulae secondary to iatrogenic injuries have increased in number.[2,3] Fistulae that are <2.5cms are termed as simple fistulae; whereas, complex fistulae are >2.5cms which also includes multiple or recurrent fistulae. It also includes fistulae due to malignancy and radiation.[4] Simple fistulae maybe treated conservatively or by simple repair. It is recommended to use interpositional tissue/ flap/graft (between the two suture lines) in the repair of complex

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fistulae.[4-7] Use of gracilis muscle, omentum, peritoneal flap, bladder wall flap, labia majora fat pad (Martius flap) etc have been reported with variable outcome.[7]

Martius flap due to its accessibility, rich vascularity and close proximity to the fistula site is being practiced by many surgeons. It not only serves to separate the two repaired fistula sites but is also responsible for neovascularization, providing lymphatic drainage and obliteration of dead space. It causes minimal functional loss and cosmetic deficit making it the preferred tissue choice for interpositioning.[5] It was introduced by Heinrich Martius in 1928.[8] Since then various modifications have been made. Elkin, Delancy and Mcguire in 1990 utilized the pedicled flap of adipose tissue in the labia majora without any muscle attached and termed it as Modified Martius flap.[9] The purpose of this study was to report effectiveness of the use of modified Martius flap in VVF.

METHODOLOGY:

This was a case series conducted in the Departments of General Surgery KTH and HMC. Records of patients operated from January 1997 to December 2016 were analyzed. It included 81 patients with the age range of 20-60 year. Patients who had simple fistulae and those requiring repair through abdominal approach were excluded from the study.

All the patients were admitted through OPD. Vaginal examination was done to find out leakage of urine. Patients were examined under anesthesia and cystoscopy performed to assess the number of fistulae, their location and extent of tissue scarring. Dye test was also done when needed. Other investigations performed included IVU, cystogram, urine c/s in addition to routine blood chemistry. A gap of at least 2-3 months from the previous surgery was ensured.

Evening before surgery TED stockings were applied and triple sulpha vaginal swab was placed which was removed in theatre. Preoperatively, a single dose of ceftriaxone and metronidazole was given. Cystoscopy was done to catheterize the ureteric orifices and identify the fistula site. During operation the fistula was dissected and scar tissue excised till the attainment of healthy tissue margins. Vesical surface was closed using polyglycolic 3-0 sutures. An approximately 8-12 cm incision was made in the labia majora and the fat pad dissected out. The anterior pedicle was ligated while posterior pedicle remained intact. A tunnel was made in the vaginal wall in order to bring in the pedicled flap and placed on top of the repaired vesical surface.

Vaginal wall was closed in a single layer using polyglycolic 2-0 and packing done. Labial incision was closed with subcuticular stitches. Patient was catheterized for three weeks. Vaginal pack was removed after 24 hours. Patients were discharged on 3rd postoperative day and were followed up for three months.

RESULTS:

This study was conducted on 81 patients who underwent modified Martius flap repair for vesicovaginal fistulae. Mean age of the patients was 40 year with range of 20-60 year. Obstructed labor was the main cause in 64 (79.01%) patients followed by 10 (12.34%) patients who had previously undergone gynecological surgeries. Radiation/malignancy was cause for fistula formation in 5 (6.17%) patients and fistulas due to RTA with pelvic fracture were encountered in 2 (2.46%) patients.

Of the total, 53 (66.25%) patients were operated for recurrent fistula while 28 (34.56%) were repaired for primary fistula formation. Post surgery 10 (12.34%) patients complained of stress incontinence ad were treated conservatively. Vaginal bleeding was noted in 6 (7.40%) which was treated with intermittent packing. Labial wound infection was encountered in 4 (4.93%) patients. Dyspareunia was observed in 5 (6.17%) patients while numbness was reported in 3 (3.70%) patients which was also treated conservatively. Three (3.70%) patients developed deep vein thrombosis (DVT). Eleven (13.58%) patients had hematuria which was treated with continuous bladder wash. Two (2.46%) patients had clot formation while 1(1.23%) had hematoma collection which was treated conservatively. Four (4.93%) patients developed constipation and were prescribed stool softeners and laxatives. Recurrence was noted in 7 (8.64%) patients undergoing VVF repair including 3 (3.70%) patients who were operated upon for recurrent fistulae formation These patients were subjected to the same procedure after a time interval of 3-6months, and are not included in the study.

DISCUSSION:

Modified Martius flap is a good surgical option for repair of complex vaginal fistulae. It is the tissue of choice for interpositioning flap because of dual blood supply. It adds new blood supply to the ischemic area, fills up the dead space, promotes granulation tissue formation and prevents contact of the two repaired suture lines. In situ Martius flap is a recent

innovation being practiced by surgeons in which labial incision is avoided, leaving the pudendal nerve intact, thus resulting in decreased complication rate of numbness and dyspareunia.[10]

Successful surgical repair of fistulae is based on the principles which can be summarized as appropriate timing of repair, adequate exposure, complete excision of the scar tissue, wide dissection of vaginal flap, tension free closure with delayed absorbable sutures and adequate postoperative drainage.[11] Conflict exists on the timings of repair. Flisser and Blaivas recommends early repair of fistula i.e within 10 days of onset.[12] however some surgeons prefer at least two months gap for inflammation to subside and restore tissue health ensuring successful repair.[13] Use of Martius flap also enables early repair of fistulae as the fresh interposed tissue arrests the ongoing ischemic process at the repaired sites by angiogenesis.[7] Our protocol is to repair the fistula site at least three months after the time of insult. .

Obstructed labor (80.24%) and gynecological surgeries (13.58%) were the commonest causes observed for fistula formation in our study. It is in accordance with other studies conducted in the developing world.[11] In our study hematoma formation at flap harvesting site occurred in 1.23% of the patients, while vaginal bleeding noted in 7.40%. In Kasyan study 5.4% of the patients had hematoma and wound infection. They concluded that Martius flap has minimal impact on the cosmetic appearance of the patients, however some degree of numbness may be felt at the harvest site for which consent should always be taken.[5]

In 6.17% of the patients who underwent Martius flap repair in our setup reported to have dyspareunia. In a study conducted by Petrou et al, 13% of the patients complained of dyspareunia while 62% had numbness at the harvest site.[14] The decreased ratio of these complications in our study can be attributed to social restraints and under reporting by patients. In a study comparing Martius flap with simple anastomotic repair it was observed that none of the patients undergoing Martius flap experienced dyspareunia as compared to 33.33% of the patients undergoing anastomotic repair.[6] Recurrence of fistula was noted in 8.64% (7/81) patients in our study which is comparable with other series.[6,7,15]

CONCLUSIONS:

Modified Martius flap was found to be a good treatment option for the management of vesicovaginal fistulae with high success rate. There were minimal complications noted in this series.

REFERENCES:

1. Pushkar DY, Sumerova NM, Kasyan GR. Management of urethrovaginal fistulae, Current Opinion in Urology. 2008;18:389-94.
2. Amna A, Sirichand P, Nadeem F. Women Perception and Awareness about Genitourinary Fistula. J Liaquat Uni Med Health Sci. 2015;14:129-32.
3. Retrospective study of 213 cases of female urogenital fistulae at the Department of Urology & Transplantation Civil Hospital Quetta, Pakistan. J Pak Med Assoc. 2010; 60:28-32.
4. Reichert M, Schwandner T, Hecker A, et al. Surgical Approach for Repair of rectovaginal fistula by modified Martius flap. Geburtshilfe und Frauenheilkunde. 2014;74:923-7.
5. Kasyan G, Tupikina N, Pushkar D. Use of Martius flap in the complex female urethral surgery. Central Europ J Urol. 2014;67:202-7. doi:10.5173/ceju.2014.02.art20.
6. Rangnekar NP, Imdad Ali N, Kaul S A. et al. Role of the Martius procedure in the management of urinary-vaginal fistulas. J Am Coll Surg. 2000;191:259-63.
7. Punekar SV, Buch DN, Soni AB, Swami G, Rao SR, Kinne JS, et al. Martius labial fat pad interposition and its modification in complex lower urinary fistulae. J Postgrad Med.1995;45:69-73.
8. Martius H. Die operative Wiederherstellung der volkommen fehlenden Harnrehre und des Schiessmuskels derselben. Zentralbl Gynakol.1928;52:480.
9. Elkins T E, DeLancey J O, McGuire EJ. The use of modified Martius graft as an adjunctive technique in vesicovaginal and rectovaginal fistula repair.Obstet Gynecol.1990;75:727-33.
10. Deng DY, Rutman, Matthew, Rodriguez LV, Raz S. The in-situ Martius flap, description of a new technique. J Urol. 2005;173.
11. Hanif MS, Saeed K, Sheikh MA. Surgical

management of genitourinary fistula. J Pak Med Assoc. 2005;55:280-4.

12. Flisser AJ, Blaivas JG. Outcome of urethral reconstructive surgery in a series of 74 women. J Urol.2003;169:2246–9.

13. Rafique M. Genitourinary fistulae of obstetric origin. Int Urol Nephrol 2002; 34:489-93.

14. Petrou SP, Jones J, Parra RO. Martius flap harvest site: patient self–perception.J Urol. 2002;167:2098-9.

15. Keettel WC, Sehring FG, deProsse CA, Scott JR. Surgical management of urerthro vaginal and vesico vaginal fistulas. Am J Obstet Gynecol.1978;131:425-31.

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