ORIGINAL ARTICLE

MANAGEMENT OF VESICOVAGINAL FISTULAE IN UROLOGICAL CONTEXT

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ABSTRACT

Objective: To find out the commonest cause of vesicovaginal fistula (VVF) and describe the surgical management.

Design: A descriptive study.

Place and Duration of Study: The Department of Urology and Transplantation, Pakistan Institute of Medical Sciences (P.I.M.S.) Islamabad, from January 1995 to April 2002.

Patients and Methods: The subjects were presenting with vesicovaginal fistulae. Symptomatology and demographic causes were noted. Investigation included IVU, cystoscopy, vaginoscopy and examination under anesthesia. Repair and outcome was noted. Patients presented with genitourinary fistulae other than VVF were excluded from the study.

Results: Most of the patients were young women of childbearing age. The causative factor of VVF in 27 (84.3%) out of 32(100%) patients was obstetrical trauma. Surgical repair proved to be successful through transabdominal route in all 24 (100%) cases of VVF and in 4 (80%) out of 5 (100%) cases through transvaginal route. Repair failed in the 2(100%) attempted through abdominovaginal route and 1(100%) through endoscopic fulguration. To describe an overall result, 28 (87.5%) vesicovaginal fistulae were successfully repaired at first attempt.

Conclusion: Obstetrical trauma was the commonest cause of VVF in this series. Transabdominal repair was the most successful method of repair in this series. Despite the good results of surgical repair, attempt should be focused on the prevention of VVF.

KEY WORDS: *Vesicovaginal fistula. Genitourinary fistula. Urinary fistula. Obstetrical trauma. Gynaecological trauma. Urinary incontinence. Lower urinary tract symptoms (LUTS).*

INTRODUCTION

Vesicovaginal fistula is a complication that has been recognized since ancient times being noted in an Egyptian mummy dating back to 2000 BC.[1] Still it is a common problem, 84-97%, in developing world.[2,3] It simply reflects the lack of medical resources in these areas. Vesicovaginal fistula is a devastating complication with profound effects on the physical and psychological health as well as on social life of the patients.[4-6]

In our country fistulae due to malignancy or radiation are rare. The main bulk of the cases are due to obstetrical trauma.[7-9] These patients are usually young multiparous women and living in about 70-80%.[10-11] rural zones. Numerous techniques have been reported for the repair of vesicovaginal fistula (VVF).[8] Sims made the first successful description of VVF repair in mid-19th century. He used silver wires for suturing.[12-14] Then in mid-20th century, there were major improvements in transabdominal as well as transvaginal techniques. Despite these advances, VVF repair remains technically challenging. According to an estimate, there are some 500,000 untreated cases worldwide.[1,6]

The success rate has been associated with the etiology of the fistula, site of the fistula, size of the fistula and number of previous failed attempts at repair.

We report our experience with the treatment of vesicovaginal fistulae in the last seven years. Our objective was to review our results of vesicovaginal fistula repair and to find the commonest cause of VVF.

PATIENTS AND METHODS

Data were collected retrospectively and prospectively. In this study, we included all cases of vesicovaginal fistulae treated at Pakistan Institute of Medical Sciences from January 1995 to April 2002. All genitourinary fistulae other than VVF like vesicouterine, vesicocolic, vesicocutaneous, or ureterovaginal were excluded from the series.

Patients were initially seen in the urology clinic at PIMS. A detailed history was taken followed by examination. An IVU was done to look for any ureteric involvement. For further evaluation, patients were admitted for examination under anesthesia (EUA), cystoscopy and vaginoscopy. Decision about the route of surgery was made after EUA and cystoscopic evaluation. In cases where ureteric involvement was suspected, retrograde ureteropyelography was also done at the time of cystoscopy.

Techniques of repair include the vaginal repair, the abdominal repair, the abdominovaginal repair, using interposition grafts or flaps e.g. labial fat, gracilis muscle, peritoneum, omentum or bladder mucosa and electrocautery.

Postoperatively, patients were nursed in a position to avoid the

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stasis of urine over the suture line. Extra care was taken to ensure continuous bladder drainage. Adequate fluid intake helped in keeping the urine clear of blood. Parenteral antibiotics were administered for 5-7 days. Anticholinergics were given for bladder spasm occurred. Success was described as symptom-free state on follow-up. Descriptive statistics were used for describing the results.

Results

In this 7-year study, a total of 32 cases were included. Out of these 32 cases, there were 27 cases of VVF alone and 5 cases of VVF accompanied with ureteric involvement. Total number of patients operated upon was 34. Two cases required urinary diversion procedure, as repair was not possible in those cases. Those two cases were excluded from the study. Rest of the 32 cases included in this study underwent fistula repair. Repair failed in 4 cases.

Most of these patients were young women of childbearing age. Although the age range was wide i.e. 12-55 years, 62.5% were in the age group of 20-35 years and 28.1% belonged to age group of 36-50 years.

The causative factor of VVF in 27 (84.3%) of the patients was obstetrical trauma. It was mainly due to obstructed labor. Fistulae due to gynecological surgery were seen in 2 (6.3%) of the cases and both these cases had undergone hysterectomy due to multiple fibroids. Fistulae after urological surgery were seen in 2 (6.3%) of cases. One was a difficult vesicolithotomy and the other patient had a surgery of bladder (at a peripheral hospital) due to suspected bladder tumour. Other's cause was firearm injury (Table -I).

Previous surgery for fistula repair was already attempted in 10 cases at some periphery. Out of these 10 cases, 7 were repaired successfully but 3 cases failed to heal properly. On the contrary, 22 cases have had no previous surgery performed for the repair of fistula. Among these cases only one failed that was a huge fistula involving bladder neck and ureter. This was repaired through abdominovaginal route. Postoperatively, a very small residual rent was left.

Table I: Causative factors

Causative factor	No. of patients	%
Obstetrical trauma	27	84.3%
Urological surgery	2	6.3%
Gynaecological surgery	2	6.3%
Others (fire arm injury)	1	3.1%
Total	32	100%

Tissue interposition was done in 10 cases. Omentum was used in 7 cases, peritoneum in 2 cases and skin graft in one case. Out of these 10 cases, 8 (80%) were successfully repaired but 2 failed. These were the two huge fistulas repaired through abdominovaginal route. In 22 cases, no tissue interpositioning was performed. Out of these 22 cases, 20 (90.9%) cases healed successfully and only 2 of them failed. It implies that in uncomplicated cases, the tissue interposition might not have any added benefits if the basic principles of repair are abide by.

Transabdominal repair was performed in 24 (75%) cases (Table-II). All of these repairs healed successfully. Abdominal approach was found to be better because it provided an easier access, a better view and the additional advantage of ureteric procedures, if needed.

Table II: Technique of repair/ surgery.

Procedure	Patients No. (%)	Successful repair	Failed repair
Endoscopic fulguration	1 (3.1%)	0 (0.0%)	1 (3.1%)
Transabdominal repair	24 (75%)	24 (100%)	0 (0.0%)
Transvaginal repair	5 (15.6%)	4 (80%)	1 (3.1%)
Abdominovaginal repair	2 (6.3%)	0 (0.0%)	2 (6.3%)
Total	32 (100%)	28 (87.5%)	4 (12.5%)

Transvaginal fistula repair was performed in 5 (15.6%) cases. Four (80%) healed successfully but one failed. In that patient, previous multiple attempts at repair were already made (outside PIMS) and there was a lot of scar tissue.

In 2 (6.3%) patients, abdominovaginal route was adopted. Both of these were giant fistulae, involving ureters and bladder neck. In one case, urethra was also involved and urethral reconstruction was also attempted, but both of these cases failed. The patient with urethral reconstruction did not turn for follow-up. The other patient was left with a very small rent, which was scheduled for repeat repair.

Endoscopic fulguration of bladder mucosa was performed in one (3.1%) case. Although it was a very small fistula, but the procedure failed. Later on surgical repair through abdominal route was performed and it healed successfully.

Successful healing was achieved in 28 cases, giving an overall success rate of 87.5%. Failure occurred in 4 (12.5%) cases, including 2 cases, which healed after second repair. From the remaining two patients, one patient did not come back for follow up and the other one was scheduled for repeat repair of the residual rent.

Discussion

Vesicovaginal fistulae are seen mostly in childbearing age.[15,16] In developing countries, the major causative factor is obstetrical trauma.[16-20] In developed countries, most of the fistulae are due to inadvertent injury to the bladder during surgery especially hysterectomy [21,22] or irradiation.[23,24] This study revealed that 84% of fistulae were due to obstetrical trauma. This reflects the deficient conditions of maternity services in our country. It obviously dictates that there is an intense need to improve maternal and child health care in Pakistan.

Proper pre-operative evaluation[20] of the fistula is mandatory to make an appropriate decision about the mode of management. For this purpose, an IVU, EUA, cystoscopy and vaginoscopy was done in all the patients. IVU is an extremely valuable investigation for identification of ureteric fistula or ureteric obstruction. Retrograde ureteric study or catheterization was only done in selected cases where IVU failed to detect the ureteric anatomy in sufficient detail or if ureteric injury was suspected.

EUA gives the advantage of directly visualizing the fistula. It not only enables us to make a note of the site and size of the fistula but we can also assess the condition and mobility of the

surrounding vaginal tissue.

Through cystoscope we visualize the bladder mucosa and establish the location of fistula in reference to ureteric orifices and bladder neck. And in the same way, vaginoscopy is also helpful in localizing the fistula from inside the vagina.

Before embarking on surgical repair, we make sure that the surrounding tissues are in a healthy condition, i.e. there is no edema or inflammation. Otherwise, depending on tissue condition, we wait for 3-6 months so that tissues recover from the effects of trauma and return to a near normal state. This routine has been followed by almost every surgeon.[16,17,20]

Many studies have revealed higher success rates with abdominal approach.[15,20] Luciano et al. described it as a gold standard for supratrigonal fistulae.[25] In this study, better results were obtained with transabdominal repair. All cases of transabdominal repair healed successfully.

On the other hand, there are surgeons who got excellent results with vaginal approach.[17,18] The present study showed 80% success rate with transvaginal repair. Therefore, the success largely depends on a thorough evaluation followed by a prudent decision about the route of surgical repair. Success is also affected by many other factors, like general condition of the patient, size and site of the fistula, condition of the tissues, number of previous attempts at repair and operative facilities.

Interposition flaps of omentum are considered to be beneficial by Luciano et al.[25] They believe that it decreases the failure rate by providing an additional support, it also helps in reducing the chance of infection by reabsorbing cell remnants and local exudates. According to Smith's review[6], interposition flaps do not give any added benefit in uncomplicated cases, but it does have a definite role in fistulae after radiotherapy or when tissues to be repaired are weak. The present results also suggest that interposition flap enhances success rate, but at times, other factors (like size and site of the fistula) dictate success or failure. The fact that most of the cases without any tissue interposition also healed successfully, implicate that tissue interposition might not be deemed necessary in uncomplicated cases.

Results of this survey demonstrate a success rate of 87.5%. Previous studies of both transabdominal and transvaginal repair have described a success rate ranging from 77.7% - 87%.[15,19,20] Other studies have reported 100% success rates with transabdominal[25] and transvaginal repair.[17,18,26,27] Inspite of such results, fistula repair is still considered to be a challenge, because a successful repair requires impeccable evaluation, adequate timing for repair, prudent decision about route of surgery, immaculate technique, judicious use of tissue interposition and vigilant postoperative care. But the paradox is that most of fistulas encountered are preventable. It highlights the need to improve upon the maternal care system.

Conclusion

The most common cause of vesico-vaginal fistula in this study was obstetrical trauma, either prolonged labour or caesarean hysterectomy. Although the success rate of VVF repair was high, yet the attempt should be focussed on prevention, which should involve provision of better maternity health services in rural zones, especially in remote areas and educating the population to utilize these health care facilities. Labor should be supervised by trained health personnel and difficult labor should be referred early to the appropriate health care center.

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