VESICO-VAGINAL FISTULA: INTERPOSITION FLAP, A KEY TO SUCCESS

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Background: Vesico-vaginal Fistula (VVF) is an abnormal communication between bladder and vagina that causes continuous discharge of urine in to vaginal vault. The objective of this study is to describe current trends of aetiology and repair of Vesico-vaginal Fistulae. This is a Descriptive Study, conducted at Armed Forces Institute of Urology, Rawalpindi and Combined Military Hospital, Kharian between May 2001 and May 2007. **Methods:** All patients diagnosed as cases of vesico-vaginal fistulae were included in the study. Their demographic profile and repair success was determined. **Results:** A total of 86 patients were included in the study. The mean age of the patients was 35.5 years (range 25–46). Total abdominal hysterectomy was the most common cause (53% of the cases) followed by obstetric causes (43.92% of the cases). Success rate of the surgery in the study was 97.5%. **Conclusion:** The common causes of vesico-vaginal fistula in this study were total abdominal hysterectomy and obstetric causes. The success rate was high, yet the attempt should be made to prevent this socially distressing condition.

Keywords: VVF, Fistula, Vesico-vaginal Repair.

INTRODUCTION

Vesico-vaginal Fistula (VVF) is an abnormal communication between bladder and vagina that causes continuous discharge of urine in to vaginal vault[1]. Vesico-vaginal Fistulae result from tissue ischemia and subsequent necrosis during labour. Pathophysiology of obstetric fistula is quite different from surgical fistula. The vesico-vaginal fistulae that result after operative complications are most often due to focal injuries, for example, injury from improper clamp placement at the time of hysterectomy. Consequently, surgical fistula is a small injury surrounded by healthy tissue. By contrast, obstetric fistula is a field injury with large defect, surrounded by damaged, ischemic tissue.[1]

Genito-urinary fistulae were identified in ancient Egyptians and Homeric medicine. The Eberspapyrus represents the first documented reference to Vesico-vaginal fistulae, with an admonition to avoid intervention. Archaeological studies have identified fistulae in well preserved mummified members of the Royal Court.[2] In 11th century, the Persian physician Avicenna made the first correlation between obstructed labour and vesico-vaginal fistulae.[3] In 1663, the Dutch physician, Hendrik Van RoonHuyse, gave a clear description of vesico-vaginal fistula and proposed a method of repair using stitching needles made of stiff swans' quill.[3] Surgical treatment for obstetric fistulae first was attempted in Renaissan Europe, with universal failure[4]. In 1838, Dr. John Peter Mettauer reported successful closure of vesico-vaginal fistula with wire sutures.[3] In 1928 the German physician, Heinrich Martius described a technique by inserting the bulbo-cavernosus muscle between the bladder and vaginal sutures in an attempt to improve the fistula repair.[3]

MATERIAL AND METHODS

The study comprised of all women who had been referred from department of Gynaecology and obstetrics of different hospitals with complaint of continuous incontinence of urine and diagnosed as cases of vesico-vaginal fistulae. On arrival, after a detailed history regarding presenting complaints, associated complaints and detailed obstetric and gynaecological history was recorded. Thorough careful systemic examination was completed. Investigations including urine analysis and renal function test were done. Intravenous Urography was done in selected cases only. Examination including cystoscopy under general anaesthesia was performed in all patients to determine site and size of fistula, condition of surrounding tissues and to plan the route of repair.

Surgery was usually planned with in two weeks of trauma or after three months of trauma or previous attempt at repair. Bladder was repaired in two layers with vicryl 2/0 using bladder flap rotation technique to rotate healthy bladder tissue to the site of vesico-vaginal fistula. An omental or peritoneal flap in case of abdominal repair and Martius labial fat pad in case of vaginal repair was sandwiched between the urinary bladder and vagina. Vagina was repaired with vicryl 2/0. A catheter was maintained in all patients. Postoperative adequate antibiotic cover was administered for 3 days. Suprapubic or vaginal drainage was not done in any case.

Patient were re-examined before discharge. They were advised to avoid coitus for three months. Follow up visits were planned after 2 wks and then 2 months. Future options for obstetric and gynaecological procedures were explained to the patient. Foley's catheter was removed after 21 days. Urinary continence was recorded as success of surgical repair.

The frequencies of the demographic characteristics of age and parity of the patients, size and aetiology of vesico-vaginal fistula were calculated.

RESULTS

A total of 86 patients were studied. 80 of them were treated by surgery. The age of the patients ranged between 25 and 47 years with a mean of 35.5. The parity of patients ranged from 0 to 7. 25 patients had history of previous failed repair of vesico-vaginal fistula. Six of them had fistulae of less than 0.8 cm and were treated conservatively by Foleys catheter which was removed after 4 weeks. Trans-abdominal repair was done in 61 patients and Trans-vaginal repair was done in 19 patients. Ureters were re-implanted in 14 patients. Successful surgical repair was achieved in 78 patients who underwent operative treatment.

Postoperatively 10 patients developed superficial surgical site infection which was managed with antibiotics and debridement and excision. 6 patients developed paralytic ileus and 2 patient developed adhesive intestinal obstruction, which were managed successfully with conservative management. 4 patients developed urge urinary incontinence which was managed conservatively.

Table-1: Age distribution (n=86)

Age(years)	Number	Percentage
25–30	38	44.0
31–35	34	39.5
36–40	6	6.97
41–45	6	6.97
>46	2	2.32

Table-2: Etiological Factors (n=86)

Causes	Number	Percentage
TAH	46	53.48
Obstructed Labour	20	23.25
LSCS	16	18.60
Missed	4	4.64

Table-3: Parity (n=86)

Parity	Number	Percentage
Primigravida	30	34.88
Second	16	18.60
Third	14	16.27
Fourth	8	9.30
Fifth And More	18	20.93

Table-4: Site of Fistula (n=86)

Site	Number	Percentage
Supratrigonal	61	70.93
Infratrigonal	25	29.06

Table-5: Size of fistula (n=86)

Size	Number	Percentage
0.5 cm	4	4.65
0.5–1 cm	2	2.32
1–2 cm	38	44.18
2–3 cm	14	16.27
3–4 cm	22	25.58
>4 cm	6	6.97

Table-6: Type of Repair (n=86)

Type	Number	Percentage
Transvaginal	19	22.09
Transabdominal	61	70.93
Conservative management	6	6.97

Table-7: Ureteric Re-implantation (n=86)

Side	Number	Percentage
Bilateral	4	4.65
Unilateral	10	11.63
None	72	83.72

Table-8: Complications (n=86)

Type	Number	Percentage
SSI	10	11.63
Paralytic Ileus	6	6.98
Intestinal Obstruction	2	2.32
Urgency/ urge incontinence	4	4.65
Failed repair	2	2.32

DISCUSSION

The frequency of vesico-vaginal fistulae varies geographically from 0.05–0.5/100 abdominal hysterectomies in USA to 0.33/1000 deliveries in Morocco.[1] The frequency of vesico-vaginal fistula in study reported by Maimoona Hafeez *et al* was 0.55/100 gynecological admissions in Pakistan.[1] Since our study was in a tertiary care hospital where we received purely these cases refereed for expert management so exact incidence could not be calculated.

According to Jonas and Petri[5], Symmonds[6], Lee *et al*[7], and Tancer[8] the most common cause of vesico-vaginal fistulae in most industrial countries is routine abdominal or vaginal hysterectomies. All major studies have shown that 75–90% of vesico-vaginal fistulae in developing countries are due to obstetric etiology.[1] But contrary to various studies from Pakistan, in our study majority were resulted of gynaecological and obstetric surgeries, 53.48% were secondary to total abdominal hysterectomy, 23.25% were secondary to obstructed labour, and 18.6% were secondary to LSCS, 4% secondary to missed abortion. Reason was probably because study was conducted in a pure tertiary care setup receiving cases from outputs of city with relatively good obstetric care units. Majority of our cases were from age group (25–30) 44% which is almost same as compared to other studies. Maximum number of fistulae were between 1–2 cm in size (44.18%). Very few were less than 0.5 cm (4.65%) and above 4 cm (6.97%).

Multiparous women, in our study, had higher incidence of vesico-vaginal fistulae where as literature reveals higher incidence in nulliparous women especially in African and underdeveloped regions. Probable reason of this difference is that in African countries there is a trend of very early marriages. The poor nutrition status prevailing in African countries contributes greatly to vesico-vaginal fistulae. Another explanation given by Fouzia Parveen *et al* is that with an increase in parity, there is an increase in birth weight,

malpresentations and malpositioning and these results in more case of obstetric injuries[9].

In our study, 10 (11.63%) patients had history of failed repair of vesico-vaginal fistula. We achieved a success rate of 97.5 % which is much better than, almost all studies reported locally. Fouzia Parveen *et al* reported 72.72% as compared to 50% success in patients with history of past surgical attempts[4]. Maimoona Hafeez *et al* reported success rate of 85.7%.[1]

As a general principle, the first attempt at repair of vesico-vaginal fistula has best chances of success. Consequently no compromises should be made when planning the repair. Multiple factors must be considered including the aetiology and duration of fistula, quality of tissues available for repair and probably most importantly the experience and training of the surgeon. Basic surgical principles should be strictly followed.

The fistula should be widely mobilized from the surrounding tissues at the time of repair to ensure a tension free repair. The repair must be water tight and done in multiple layers avoiding overlapping of suture lines.

Interposition of a well vascularized graft enhances the blood supply to the site of repair. Pelvic peritoneal flap, omental flap, Martius labial (bulbo-cavernosus) fat pad, flap and gracilis muscle flap can be used as interposition grafts. Rangnekar *et al*[10] has reported a higher success rate with interposition grafts in a retrospective study to evaluate the repair of comparable vesico-vaginal fistulae with and without the use of bulbo-cavernosus flap. A linear incision is made on the labium. The labial fat pad is differentiated from subcutaneous fat by its characteristic colour and consistency. Sharp dissection should be used to harvest the interposition flap. It is vital to protect the pedicle to ensure a well vascularized graft. The graft should be anchored into the muscular layer of urinary bladder. In case of omental flap a transverse flap should be dissected from the lower edge of greater omentum and transferred to the site of repair by anchoring it to lateral peritoneum.

It is generally preferable to identify and catheterize both the ureters so that they are readily identifiable throughout the procedure. If ureters are liable to interruption during repair, they are best managed with re-implantation of one or both ureters using submucosal tunnelling technique.

Historically 3 to 6 months waiting period between the development of a post operative vesico-vaginal fistula and an attempt at surgical repair has been recommended to allow inflammation to resolve. More recently a much more timely approach to surgical repair has been advocated with out an enforced 'waiting period'. Several authors have repeated excellent result with immediate repair of post-surgical vesico-vaginal fistula. Early surgical repair has obvious psychological and social advantages for the unfortunate women with a vesico-vaginal fistula, who is often a relatively young, active individual in otherwise good health. However clinical judgment must be used in determining the timing of repair in complicated cases, including those associated with infection, extensive loss or radiation.

CONCLUSION

Vesico-vaginal fistula is a physically, mentally and socially distressing condition. All efforts should be directed towards prevention of vesico-vaginal fistula by providing better education and healthcare facilities, propagating of awareness and provision of adequate and quality training to the treating doctors. Along with basic surgical principals of repair, interposition graft placement adds to a better success rate.

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