Original Article

Retrospective study of 213 cases of female urogenital fistulae at the Department of Urology & Transplantation Civil Hospital Quetta, Pakistan

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Abstract

Objectives: To review our experience in causes, diagnosis and basic principles of surgical treatment of urogenital fistulae.

Methods: A retrospective study of 213 patients with different types of urogenital fistulae were reviewed between October 1995 to October 2008. They were analyzed with regard to age, parity, causal factor, mode of treatment and outcome. Patients were also evaluated at two or three weeks initially, three monthly and later depending upon symptoms.

Results: We reviewed our series of female urogenital fistulae treated over a 13 years period. Out of these 213 cases, 133 (62.44%) were Vesico vaginal fistulae, 54 (25.35%) Urethro vaginal fistulae and 26 (12.2%) were Uretero vaginal. Majority of the patients were young in child bearing age between 16 and 30 years of age, although age range was wide i.e., 11 to 50 years. The most common cause of urogenital fistulae were Obstetrical trauma due to obstructed labour in 50 (37.59%) and Gynaecological (hysterectomy 25(18.79%) and caesarian section in 9 (6.77%). Patients of Uretero vaginal fistulae were mainly due to unrecognized ureteral injuries during Gynaecological procedures (hysterectomy in 17 cases and caesarian section in 5 cases). For repair of vesico vaginal fistulae, Transvaginal route for repair was used in 53 (39.84%) patients, while Trans abdominal route for repair was used in 70 (52.63%) patients. There were 16 (12.03%) failures in Vesico vaginal fistulae with a success rate of 88%. Mean Hospital stay was 15 ± 3.5 days (range 4-30 days) and a mean follow-up of 8 ± 3.2 months (range 4 months to 2 years).

Conclusions: In this series, most of the female urogenital fistulae were vesico-vaginal with majority of the women being in the child bearing age. The most common cause was obstetrical trauma (JPMA 60:28; 2010).

Introduction

Female urogenital fistulae are severely demoralizing and disabling injuries among women who become incontinent as a result of an opening created between the vagina and urinary tract and are mainly Vesico vaginal, Uretero vaginal and Urethro vaginal fistulae.

Urogenital fistulae were identified in ancient Egyptian mummies. In 1923 Derry discovered a large vesico vaginal fistula in a mummy of queen Henhenit belonging to the 11th dynasty about 2500BC.[1] James Marrion Sim known as the 'Father of gynaecology' in USA is widely recognized as being the pioneer of modern fistula repair. He founded the first fistula hospital in New York and published the basic principles of fistula repair in 1852 which are still followed today, including adequate exposure, tension free approximation of wound edges, use of non reactive fine sutures and continuous bladder drainage following closure of fistula.[2]

The incidence of fistulae varies from country to country and continent to continent as do the main causative factors. World Health Organization (WHO) estimates that in developing countries each year five million women suffer severe maternal morbidity, obstetric fistulae being on the top of the list. It is also estimated that currently more than 2 million women are waiting for surgery world wide and about 50 to 100,000 new cases are added each year mostly in Africa and Asia. In developed countries on the contrary, fistulae are related to Gynaecologic surgery or radiation therapy.[3]

The etiology of female urogenital fistulae has changed over years and there have been developments in surgical techniques. Dr. Reginald and Catherine Hamlin left their jobs as obstetricians in Austria and built the second fistula hospital in Addis Ababa Ethiopia in 1975. They have treated more than 35000 women since then at fistula hospital. Hamlin's wish for the future is that like the first fistula hospital in New York the second in Addis Ababa should continue to function, until no longer required (fistulae have vanished). He also recommends that trainees should be encouraged to do the easier repairs at their local hospitals and refer only problem cases.[4]

The aim of this study was to review the causes, diagnosis and basic principles of surgical treatment of urogenital fistulae.

Patients and Methods

In this retrospective study medical records of 213 patients who underwent urogenital fistulae repair between October 1995 and October 2008 at the department of Urology and Transplantation, Bolan Medical College & Civil Hospital, Quetta, Pakistan were reviewed. The study included all patients having confirmed urogenital fistulae. Patients with urinary incontinence due to other causes were excluded.

Diagnosis was made by careful history, complete physical examination, routine laboratory investigations, excretory urography and endoscopic examination. Retrograde pyelography and dye test by using indigo carmine were used in suspected cases of associated ureteric injuries. Prophylactic antibiotics such as Cephradine and Gentamycin were given and continued till the removal of catheters. Sitz bath and vaginal douches were given in the morning of surgery. The type of treatment either vaginal or vesical approach was decided on examination under general anaesthesia.

For vaginal repair of Vesico vaginal and Urethro vaginal fistulae, under spinal or general anaesthesia patients were put in extended lithotomy position and cystoscopy was performed to assess the relationship of ureteric orifices to the fistula. If they were in close proximity to the fistula, ureteric catheters were passed and left indwelling during the repair. Foley's catheter was also passed and the two principle techniques such as Latzko procedure (partial colocleisis) and vaginal flap splitting closure were used. Fistula margins were inflated with adrenaline plus normal saline solution 1: 100,000 concentrations and circumferentially incised. The space between the vagina and bladder or urethra and vagina was dissected around the fistula for at least 1 to 2 cm. The fistula repair was done in three layers. First the bladder was closed by interrupted sutures using vicryl 3°. Second layer was created by approximation of perivesical or periurethral fascia over the first layer. Saline with pyodine was instilled in the urinary bladder through the Foleys catheter to check any leak. Martius flaps were also used in 8 complicated cases, in which the fibro fatty tissue of the labia majora was released and tunneled under the vaginal wall from the labia to vaginal incision and sutured in place over the fistula repair site with chromic 2°. Lastly the vaginal flaps were closed avoiding over lapping of the suture lines. A pyodine soaked pack was placed in vagina for 24 hours. Foley's catheter was retained for two weeks postoperatively.

In the abdominal approach for Vesico vaginal fistula and Uretero vaginal fistulae, again under spinal or general anaesthesia lower mid line incision was used. Rectus sheath was cut and rectus muscles were split in the mid line. Peritoneal cavity was entered and the pelvic organs were examined. Bladder was opened and ureteric openings were identified, 5F infant feeding tubes were passed in both ureters. Per urethral Foleys catheter was also passed and fixed. Fistula was identified and a Foley's catheter was passed through the fistula into vagina and the balloon was inflated. Traction on Foley's catheter helped to bring the fistula closer to the operating surgeon. The bladder was dissected from vaginal wall up to 1-2 cm below the fistula opening in the same way as in vaginal approach. The vaginal fistulous opening was freshed and closed with 3° Vicryl. After repair the ureteric tubes mobility was checked to ensure patency of ureters and the tubes were removed. Bladder was closed in two layers. In difficult/ complicated cases O'Conner and its modification[5] techniques were used in which the bladder was bivalved till the fistula site and then was dissected off the vagina. Bladder and vagina were closed separately and omentum was interpositioned posterior to the bladder and anterior to the recently closed vaginal repair. Ureteric catheters were removed. A suprapubic catheter was placed in the bladder and the bladder was closed in two layers. Pyodine soaked gauze was placed in the vagina and removed after 24 hours.

In 10 cases where the defect had involved the whole urinary bladder or urethra, in 4 of them Mitroffinaf continent urinary diversion,[6] in 4 cases Uretero sigmoidostomy and in two cases Ileal conduits were made. In 16 cases of Uretero vaginal fistula anti reflux sub mucosal tunnel uretero neocystostomy was done above a 5 Fr JJ stent. JJ stents were tied along with per urethral Foleys catheter. In 4 cases in whom the length of the ureter was short, the Boari's flap with psoas hitch was done. Foley's catheter along with JJ stents were removed after two weeks and patients discharged.

Follow up was carried out on out door basis at two or three weekly basis for three months. Abstinence from sexual intercourse was advised for three months postoperatively. Patient who developed recurrence were scheduled for re-operation at least 6 weeks after their first operation for fistula repair.

Results

We reviewed our series of female urogenital fistulae that had been treated over a 13 years period. Majority of the patients were young child bearing between 16 and 30 years of age, with a range of 12 to 50 years.

Out of these 213 cases, 133 (62.44 %) were Vesico vaginal fistulae, 54 (25.35 %) were Urethro vaginal fistulae and 26 (12.21 %) were Uretero vaginal fistulae. The location of the Vesico vaginal fistulae were trigonal 61 (45.86%), supratrigonal 42 (31.58%), and mixed (trigonal plus supratrigonal) 30 (22.56 %). The site of fistulae is shown in Table-1.

The most common causes of the Vesico vaginal fistulae due to obstetric trauma were 101 (75.93%) cases, surgical causes in 26 (19.54%) patients and miscellaneous

Table-1: Anatomical classification 0f fistulae.

Site	No.	Percentage
Vesico Vaginal	133	62.44
Trigonal	61	54.86
Supra trigonal	42	31.58
Mixed	30	14.08
Urethro vaginal	54	25.35
Uretero Vaginal	26	12.21
Unilateral	23	88.46
Bilateral	03	11.54

Total.213

causes in 6 (4.51%) patients. Causes of Urethro vaginal fistulae were pressure necrosis mainly due to foetal head and lower urinary tract instrumentation. Uretero vaginal fistulae were due to unrecognized ureteral injuries during gynaecologic procedures (hysterectomies in 20 (76.92%) cases and caesarian section in 6 (23.08%) cases). Unilateral ureter was cut in 23 (88.46%) cases while in 3 (11.54%) cases both the ureters were cut. Four cases had associated Vesico vaginal fistula (Table-2). The average time interval

Table-2: Causes of fistula formation.

Causes	Number	Percentage
Vesico Vaginal	**133**	**62.44**
(a) **Obstetric**		
◆ Pressure Necrosis	50	37.59
◆ C.S hysterectomy	19	14.28
◆ Cesarean section	17	12.78
◆ Forceps delivery	15	11.27
(b) **Surgical**		
◆ Abdominal Hysterectomy	19	14.29
◆ Vaginal hysterectomy	06	4.51
◆ Colporrhaphy	01	0.75
(c) **Miscellaneous**		
◆ Radiation for Cervical Ca.	3	2.26
◆ Neglected pessary	2	1.5
◆ Inflammatory/ tuberculous	1	0.75
Urethro vaginal	**54**	**25.35**
◆ Child birth/ obstetrical	44	81.48
◆ Lower Urinary Tract Instrumentation	6	11.11
◆ Trauma	3	5.56
◆ Radiation	1	1.85
Uretero vaginal	**26**	**12.21**
◆ Abdominal Hysterectomy	11	42.31
◆ Vaginal Hysterectomy	6	23.08
◆ Caesarian Section	5	19.23
◆ Penetrating pelvic trauma	2	7.69
◆ Pelvic malignancy	2	7.69

Total. 213

between onset of fistula and repair was 5 months (range 2 - 72 months).

For Vesico vaginal fistulae repair, transvaginal route was used in 51 (38.34%), Trans vesical in 29 (21.80), tran peritoneal in 13 (9.77%), transvesical plus vaginal route for repair was used in 28 (21.05%) cases and in other 12 cases

Table-3: Techniques of VVF repair.

Procedure	No. of Patients	Successful repair	Failed repair
Transvaginal			
Martius flaps (08)	51	47	04
Transvesicle	29	23	06
Abdom. + Vaginal	28	25	03
Trans Peritoneal	13	11	02
Endoscopic fulguration	02	01	01
Ileal conduit	02	02	00
Uretero- singmoidostomy	04	04	00
Mitraffinof	04	04	00
Total	**133**	**117 (87.97%)**	**16 (12.03%)**

2 were dealt by endoscopic fulgration, in 2 cases ileal conduits were made, uretero-sigmoidostomy in 4 cases and Mitraffinof in 4 cases, Table-3. The reasons for the tran abdominal repair were poor vaginal capacity in 4 (3.0%), large fistula size 23 (17.29%) (> 4cm) and closeness to ureteric orifices in 9 (6.76%), non visualization of ureteric orifices on cystoscopy in 7 (5.26%), extensive fibrosis and the fistula with nonpliable vagina 5 (3.75%), augmentation cystoplasty 3 (2.25%) and open cystolithotomy in one patient.

Interposition flaps were used in 40 (18.77%) patients. In trans vaginal repair, Martius flap was used in 8 (3.75%) as interposition tissue while in abdominal route it was omentum in 32 (15.02%).

Primary repair for genito-urinary fistulae was done in 191 (89.67%) women and 21 (10.32%) women underwent repeat fistula repairs. Twenty three (10.79%) patients undergoing vesico vaginal fistula repair presented with urinary incontinence while 9 (16.6%) patients of urethro vaginal fistula repair had mild stress urinary incontinence which were managed conservatively.

Thirty eight (28.57%) patients required ancillary procedures. These included ureteric reimplantation in 28 (21.05%) cases, bladder closure with Mitrofinaff in 4 (3.0%), uretero sigmoidostomies in 4 (3.0%) and Ileal conduits in 2 (1.50%) cases. Patients of Mitroffinaf continent urinary diversion required clean intermittent self catheterization to empty the bladder.

We had 16 (12.03%) failures in vesico vaginal fistulae with a success rate of 88%. Of these patients 9 (6.76%) had initial surgery by abdominal route while 7 (5.26%) had vaginal approach. In uretero vaginal fistulae we did uretero-neocystostomy over a JJ stent in all the cases with a 100% success. While in urethro vaginal fistula repairs we had 6 (11.1%) failures at the first repair.

Mean hospital stay was 15 ± 3.5 days (range 4 - 30 days) and at mean follow-up of 8 ± 3.2 months (range 2 months to 2 years).

Discussion

Female Genito Urinary Fistulae represent unpleasant health conditions caused by disabling child birth or complication of urogenital injury resulting in incontinence. These patients suffer physically, emotionally and also represent a big social problem.[7]

Pakistan is the seventh most populous country in the world (>156 million people and women in reproductive age up to 34 million). It is a developing country, with Balochistan the largest province constituting 48% of the total area of Pakistan. This province has wide spread population in remote rural areas with the lack of infra structure (like roads and transport) primary education and awareness of diseases. It is one of the most affected area for fistulae. In Balochistan province more then 90% deliveries are conducted by traditional birth attendants at home. This exposes women to a high risk for obstetric fistulae. Data on obstetric fistula is lacking in Pakistan, but it is estimated that approximately 5000 to 8000 cases occur each year.[8-11]

Majority of our patients were young in child bearing age, with 50% being below 30 years of age. This shows the trend of early age marriage in our society. Genito-urinary fistula is the main problem among women of child bearing age in developing countries.[7,12]

The etiology of fistulae has changed over years, with a wide difference between the developed and developing countries. In the industrialized world, 70% of fistulae occur during Gynaecologic surgery while in developing countries it is mostly obstetric fistulae.[2,12-14]

Basic principles of fistula repair applied were as those of others.[13,15,16] These included, adequate preoperative nutritional repletion, good haemostasis, adequate exposure of the fistula tract, water tight closure of each layer, excision of fibrous tissue from the edges of the fistula, multiple layer closure, tension free, non over lapping suture lines, adequate urinary drainage after repair and prevention of infection.

The cases of Vesico vaginal fistulae were classified into three groups. Firstly, in the Obstetric cases, the majority were due to pressure necrosis of obstructed labour, followed by forceps delivery and caesarian hysterectomy. Secondly the surgical causes were mainly due to hysterectomies. Thirdly, a general miscellaneous group which encompassed causes like radiation for cervical carcinoma, foreign bodies and inflammatory diseases. Forty four (81.48%) of our urethra vaginal cases were due to obstetrical / childbirth causes which is similar to other studies.[3,4]

The close embryologic development and anatomic proximity of the urinary tract and genital organs predisposes the urinary tract to injury during traumatic deliveries and surgery in the female pelvis (incidence 0.2 - 1%), usually occurs at the lower third of the ureter.[17-19] In 26 cases of uretero vaginal fistulae all were iatrogenic caused by Gynecologists during pelvic surgeries. This forewarns Gynaecologists, who should be aware of urological injuries and preventive steps should be taken.[17-19]

Most fistula experts are of the opinion that almost all the Vesico vaginal fistulae can be repaired by vaginal route.[3,12,17] In the presented study, both the vaginal and abdominal approaches were used for repair of Vesico vaginal and Urethro vaginal fistulae. Success lies in what experience the surgeon has. Some experts also suggest that the route of approach is best tailored to the individual patients.[4,7,20]

We repaired 13 (9.77%) vesico vaginal fistulae via abdominal (transperitoneal) route and our indications for repair were large fistulae $\geq$ 2cm in circumference, a vault fistula with poor vaginal exposure and fistulae involving the ureters. Many surgeons recommend use of flaps.[3,15,18,21] We used omentum as an intervening vascularized tissue in 32 cases. Extra peritoneal (transvesical) approach with no intestinal or omental manipulation was done in 29 (21.80%) cases. This is in agreement with others[18,22] that it reduces the incidence of complications such as Ileus or intestinal obstruction.

Most fistula experts are of the opinion that almost all the vesico vaginal fistulae can be repaired by vaginal route.[13,15,17,18] We used vaginal route for repair in 53 (39.84%) cases and its advantages were that there was minimal blood loss, low postoperative morbidity, shorter hospital stay (1-2 days) and no bowel manipulation, thus reducing operative morbidity. In cases where lesions of urinary bladder, vagina and surrounding structures did not allow closure of the fistula or in sloughed urethra, we performed uretero sigmoidostomy. Mitroffinaf and Ileal conduits. During repeat management in all cases of Vesico vaginal fistulae recurrence after primary surgical treatment, we inserted omentum or Martius flaps with a postoperative success of 97% which is comparable with other studies.[3,23]

Recently newer modalities for repair of genitor-urinary fistulae repairing such as bioglues, laproscopic approach and robot system are being used.[24]

In view of this selected retrospective study and in association with other reports from different parts of Pakistan it seems that still there is no change in the cause of genito urinary fistulae as neglected labour still remains the main cause of genito urinary fistulae as the basic health services are negligible.[8-11]

Since 2006 United Nations Population Fund (UNFPA) has focused much attention in Balochistan, in

training young surgeons to repair fistulae, identify and prevent complications that occur with successful closure. A linkage has been established between district hospitals and the private sector. NGOs, fistulae centers, which is working to improve obstetric care to prevent future urogenital fistulae.

It is recommended that large number of short comings should be addressed in our gynaecological surgery training and residency programmes. Efforts should be directed towards creating awareness and integrity of maternal health education. Physicians, Philanthropists and public should also take an initiative in this regard and provision of emergency obstetric care at the gross root level.

Conclusions

Management of genito urinary fistulae represent a significant part of our urological work due to their high incidence in this part of Pakistan. Basic principle of fistula repair remains important in all types of fistula and no single approach is applicable to all cases. Repair of fistula is the most satisfying branch of surgery, as the patients regain continence and self esteem.

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