EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 5
Issue: 11
301-306
Year: 2018

CHARACTERISTICS AND REPAIR OUTCOMES OF PATIENTS WITH VESICOVAGINAL FISTULA

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Article Received on 28/08/2018 **Article Revised on 18/09/2018** **Article Accepted on 08/10/2018**

ABSTRACT

Background **-** Obstetric trauma and gynaecological procedures are the most common causes of Vesicovaginal Fistula (VVF) contributing to significant morbidity in the field of female urology.[1] ***Purpose*** **–** To study the cause, characteristics and repair outcomes in patients with VVF in Government based Hospital in rural India. ***Methodology*** **–** Hospital based retrospective cross-sectional study which included 45 patients who were clinically diagnosed with VVF of varied aetiology and underwent surgical repair. ***Results*** **–** Forty Five patients diagnosed with VVF were included in the study. The mean age group of women included in the study was 33.5 years. Majority of cases were secondary to gynaecological surgeries 32(71.1%), rest were due to obstetric trauma 13(28.9%). Majority were simple fistula (less than one cm in diameter) 31(69%) and rest were complex fistula (more than one cm in diameter) 14(31%). All cases underwent repair either by transabdominal approach thirty three(73%), vaginal route ten (22%), laparoscopic approach one (2.2%) and cystoscopic fulguration one(2.2%). 38 cases out of 45(84.4%) had successful closure of fistula with no urinary leakage was noted at end of three months follow up period, seven(16.1%) cases had repair failure. ***Conclusion*** **–** VVF are among the most distressing complication of obstetric trauma and gynaecological surgeries. There is rise in VVF's secondary to gynaecological surgeries and decline in number of obstetric fistulas reflecting improved intranatal services in India. Simple supratrigonal gynaecological fistulas are best dealt by extraperitoneal transvesical repair.

KEYWORDS: Vesicovaginal fistula, Obstetric trauma, Gynaecological fistula.

INTRODUCTION

Vesicovaginal fistula continues to be major cause of significant morbidity in female urology practice in today's world with devastating psycosocial and hygenic problem.[2] Obstetric trauma has been a leading cause since time immermorial but with improved maternal services and hospital deliveries there is considerable decline in the VVF secondary to obstetric trauma.[3] Accidental injury during abdominal hystrectomies account for major cause in VVF's formation in recent times in India.[4]

Globally, VVF accounts for one lakh new cases per year, major contribution being from developing countries.[5] Pathogenesis includes pressure necrosis of bladder neck in prolonged labour or accidental bladder injury in gynaecological procedures which establishes a mucosa-lined tract between the bladder and the vagina.[6] Diagnosis of VVF is traditionally based on clinical methods and cystoscopy. Continuous urinary leakage per vagina is the most common presenting symptom.[1] Vaginal examination together with cystoscopy helps to locate site, size, number and margins of fistula which aid in surgical repair.

Surgical repair is the main stay of treatment. VVF repair can be done transvaginally, transabdominally, or in a combined approach. The transvaginal approach offers a lower complication rate with shorter postoperative recovery.[7] The transabdominal route is preferred when the fistula site cannot be accessed per vagina, or when the VVF is complex.[8] Regardless of type of surgery the principle of VVF repair remains the same. The repair should be tension-free, watertight and uninfected. Highest chance of success is noted with first attempt repair by experienced surgeon and a well-planned surgery.[9] Complications include recurrent fistula formation, reduced bladder capacity and irritative lower urinary tract symptoms.[6]

In this study, we sought to establish the clinical characteristics and outcomes in patients undergoing fistula repair at our facility.

PATIENTS AND METHODS

It is a hospital based cross sectional retrospective analysis of cases diagnosed with VVF who attended the department of Urology, Government General Hospital,

Kurnool, Andhra Pradesh, India in between March 2009 and June 2015.

The study design was accepted by Institutional Review Board and conformed to the tenets of the Declaration of Helsinki. All medical records were reviewed, and the aetiology of fistula, clinical findings on admission, means of treatment and outcomes were noted. Informed consent have been obtained from all participants.

The study analysed aetiology, site, size and number of fistula. VVF's were classified as simple and complex fistulas. Simple fistulas were defined as single, less than or equal to one cm in diameter with clean margins, well away from ureteric orifices without associated ureteric injury. Complex fistula were defined as more than one cm in diameter, proximity of edge of fistula to ureteric orifices, bladder neck involvement and coexisting ureterovaginal fistula.

Methodical evaluation of cases included good history, vaginal speculum examination, ultrasound abdomen, cystoscopy which located the size, site, number of fistula, proximity of fistula to ureteric orifice and margins of fistula.

An interval period of six to twelve weeks from index surgery/ delivery and appearance of healthy mucosa surrounding the fistula were noted before taking up patient for VVF surgery. Route of surgical approach was decided based on accessibility, location of fistula and type of fistula. Complex fistula dealt by abdominal route underwent O' Conner's repair with omental graft interposition. Complex fistulas dealt by vaginal route used Martius labial flap interposition. Traction by catheter placed through the fistula facilitated better access and closer view of fistula in vaginal repair. Successful repair was considered when a woman is continent and dry following fistula surgery after one month. The mean follow up period was three months.

RESULTS

This study included 45 cases of VVF of both obstetric and gynaecological trauma. Mean age of the patients in Obstetric fistula was 28 years and gynaecological fistula was 39 years. Out of 45 total cases, 31(69%) were simple fistulas and rest 14(31%) were complex in nature. In 13 cases fistula formation was secondary to obstetric trauma, 32 cases were due to gynaecological procedure. Obstetric trigonal fistulas with/without bladder neck involvement in this study had history of prolonged labour, home delivery, still birth/neonatal death indicating mismanagement during labour. Vaginal repair of VVF was done in ten(22.2%) cases out of which two complex fistulas underwent Martius flap harvested from labial fat pad and rest simple fistulas (8) were directly closed. Cases repaired by vaginal route had 80% success rate. Abdominal approach was done in 33 (73.3%) cases where 21 cases of simple fistula were dealt by extraperitoneal transvesical method with a success rate of 85.7%. Twelve cases of complex fistulas were dealt by O' Connor repair using Omental interposition graft which had 83.3% success rate. Hundred percent success rate was noted in laproscopic repair and cystoscopic fulguration.

Prior intraureteric catheterization was done in selected cases where ureteric orifices were close to margins of fistula. One simple supratrigonal fistula was successfully repaired laparoscopically and another case by cystoscopic fulguration. Single fistula noted in 43 cases and 2 patients had double fistulae.

Table 1: Mode of VVF repair and its surgical outcome.

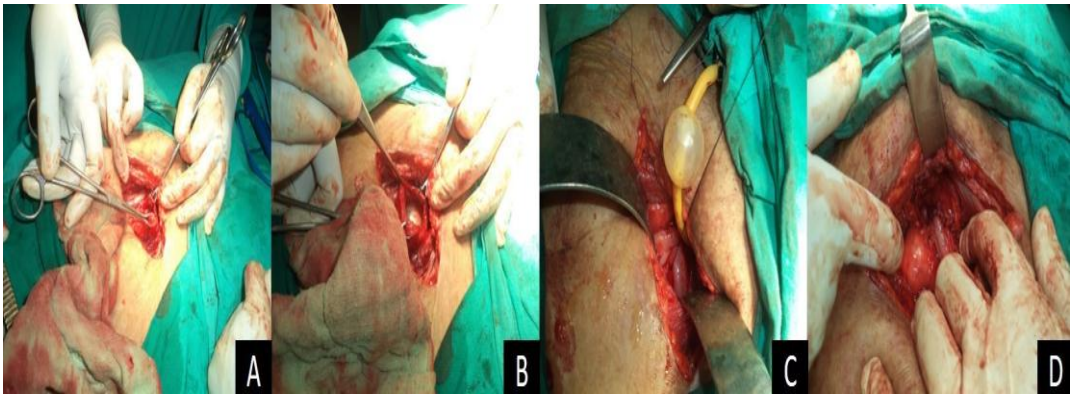
Route of Surgery	Total no of cases (n = 45)	Success rate	Failure rate
Vaginal Route	10	8 (80%)	2 (20%)
Abdominal Extraperitoneal Transvesical repair	21	21 (100%)	0
Abdominal O'Conner's repair	12	7 (58%)	5 (42%)
Laproscopic route	1	1 (100%)	0
Cystoscopic fulguration	1	1 (100%)	0

Table 2: Socio-demographic characteristics of vesicovaginal fistula patients.

Variables	Number
Age Obstetric fistula Gynaecological fistula	 28 years 39 years
Type of fistula Obstetric fistula Gynaecological fistula	 13 32
Depending on site of fistula Supratrigonal Fistula Trigonal/Bladder neck fistula	 31 14
Fistula classified depending on size and proximity to ureteric orifice Simple Fistula Complex Fistula	 31 14
Depending on fistula openings Single Fistula Multiple Fistula	 43 2

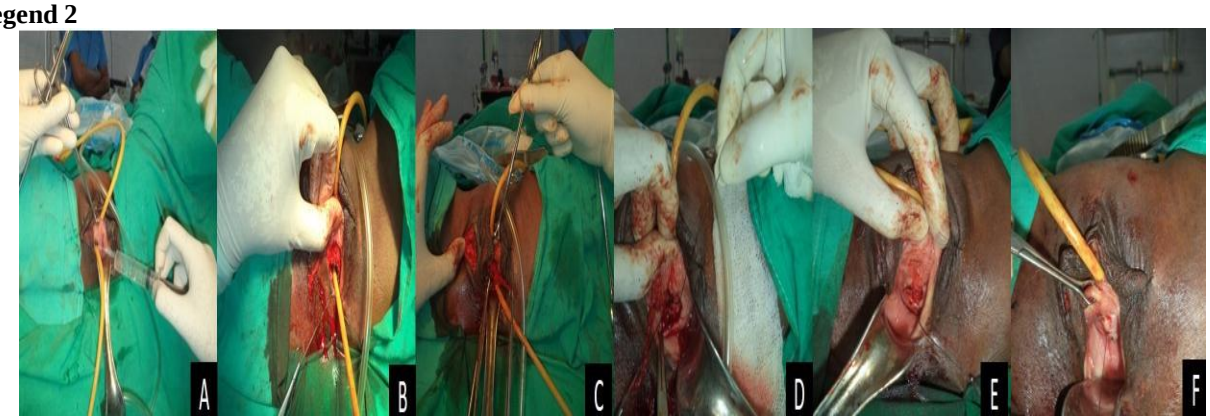
Figure Legends

Legend 1



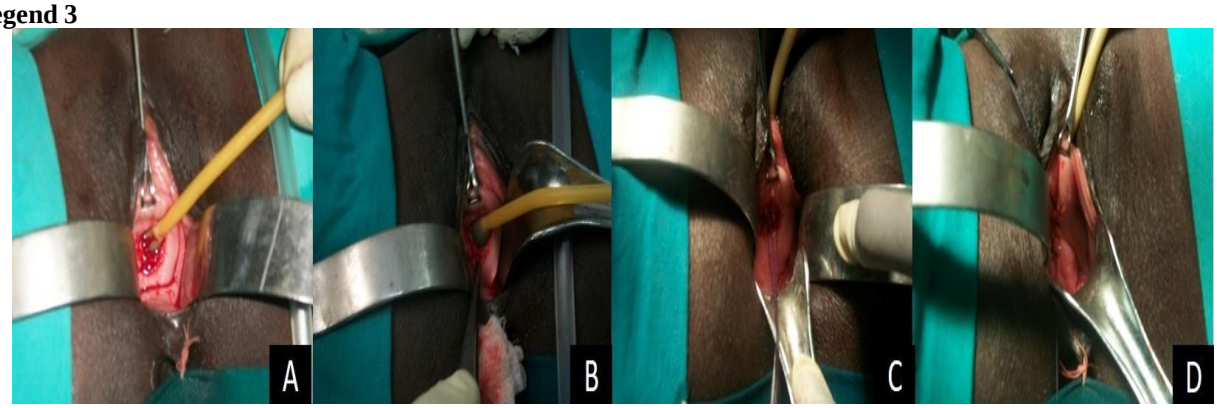
A) Extraperitoneal anterior cystostomy. B) Transvesical Approach: Bladder edges held to explore VVF opening. C) Repair of VVF in 2 layers with 3- 0 vicryl. Transurethral Foleys catheter insitu D) End of VVF repair aiming for water tight closure.

Legend 2



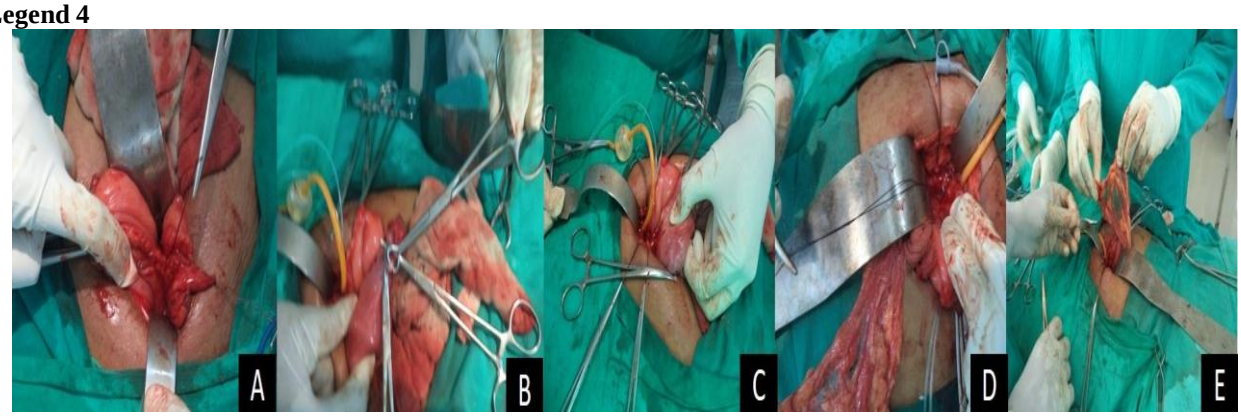
A) Normal saline infiltrated around the fistula which is drawn closer by Foleys bulb. B) 3-0 vicryl suture applied to the edges of fistula. C) Martius labial interposition flap harvested from right labia majora. D) & E) Flap secured over repaired bladder wall. F) Vaginal mucosa sutured, labial stiches done.

Legend 3



A) Foleys bulb within the fistula and circumferential incision given all around. B) Vaginal mucosa and bladder wall separated. C) Bladder wall repaired. D) Vaginal mucosa sutured.

Legend 4



A) O'Conner's repair: Bivalving of the bladder. B) VVF identified and track excised. C) Vaginal mucosa is being repaired after separating it from the bladder wall. D) Defect in bladder wall repaired. E) Omental interposition graft is placed.

DISCUSSION

Though mean age of the patients in Obstetric fistula was 28 years majority were gynaecological fistula of age 39 years. This is comparable to recent studies by Wadie and Kamal[10] in 2011 and Karateke et al. in 2010[11], whose mean age at presentation was >35 years unlike previous studies by Wall et al[12] in 2004 who reported VVF in mean age group of 27 years (range, 13-20 years). The difference in age of presentation over the years is due to different antecedent events leading to fistula. Among leading causes for VVF are the obstetric trauma and gynecological surgeries. All these years obstetric trauma due to prolonged obstructed labour was the main culprit contributing to increased incidence of VVF in India but with improved obstetric services and hospital deliveries, this trend is declining.[13] Gynecological trauma during hysterectomies resulting in VVF is being seen in increased number[14] as noted in similar studies.[15] Pressure necrosis of bladder wall occurs in obstructed labour resulting in VVF.[1] Bladder injury unrecognized at the time of hysterectomy (index surgery) leads to VVF.[1] The present study included 32(72.1%) cases of Gynaecological fistula and 13(28.8%) cases of obstretric fistula making a total of 45 cases which were admitted in a teaching hospital from 2009 to 2015 at urology department. In early years of study (2009 – 2012) there were many obstretric fistula (n = 9) than in later years n= 4 cases (2013-2015) which were of long standing duration and with history of previous failed repair. More number of gynaec fistula were noted from 2013- 2015 (n = 23), all of them following abdominal hysterectomy for benign indications like Abnormal Uterine Bleeding, Fibroid Uterus, Carcinoma in situ.

There is delay in time to presentation in obstetric group ranging from 1-8 years. All gynaec fistulas presented within one year from the time of occurrence (from immediate postoperative period to 12 months). The mean presentation of symptoms in a study was 11.5 months (range, 3-228 months)[10] while in other study was 8 months (range, 1-228 months).[15]

All gynaec fistula in the study had undergone simple abdominal hysterectomy for normal to bulky size uterus relatively benign indications like Abnormal Uterine Bleeding, Fibroid Uterus, Carcinoma in situ. These cases also had history of previous Caesarean section during their obstetric career. Attempts at mobilising adherent bladder (post LSCS) at isthmus and cervix during hysterectomy (index surgery) might have resulted in bladder injury. Such injuries left unrepaired/ overlooked at the time of index surgery leads to VVF. All obstetric fistulas had a history of prolonged obstructed labour (90% of cases) with still births (80%) which are comparable to similar study.[16] Both primigravidity and multiparity were identified risk factors for obstetric fistula.[17]

Diagnosis and timely repair at the time of index surgery can prevent the occurrence of VVF. Majority of VVF present with leakage of urine per vagina approximately 5-10 days postoperatively or 7-10 days after delivery. Diagnosis is confirmed by vaginal speculum examination and cystoscopy. Ureterovaginal fistula is differentiated by intravenous pyelography. Very tiny fistula (<3 mm) may heal by continuous bladder catheterization in immediate postoperative period for two weeks. Traditionally surgical correction of VVF is deferred for three to six months to allow inflammation and edema to settle. However early repair of simple iatrogenic fistula has been found to be highly successful. This minimizes psychological and social trauma in patient's life.

Route of approach was determined by location of fistula, relation to ureteric orifice, accessibility, surgeons preference and previous failed repair. VVF repair was done by vaginal route in 10 cases (22.2%), abdominal route in 33 cases (73.3%). One case underwent laproscopic repair (2%) and another case dealt by cystoscopic fulguration (2%). Abdominal route had two techniques extraperitoneal transvesical repair and O' Connor repair.

Eilber et al[18] followed vaginal approach as abdominal route had greater morbidity like blood loss, longer

hospital stay and more pain. However, same authors used the abdominal approach in 68% cases, vaginal in 25%, and a combined approach in 7% in other study.[10] The reason for choosing a particular route was surgeon's preference.

Transvaginal approach avoids laparotomy, cystostomy and associated with better postoperative recovery and shorter hospital stay. Success rates have been shown to be equivalent to those for transabdominal approach. Transabdominal approach is resorted to when vaginal exposure of the fistula is inadequate or the fistula is in close proximity to distal ureter. In complicated fistulae, omentum can be used as interposition graft as an added advantage. Simple fistulae can be repaired transvesically by opening the bladder (extraperitoneal). Complex fistulae repair involves bisection of bladder from dome down the posterior wall to the fistula site (O Connar's repair) unlike Kapoor et al[19] who performed surgical repair through abdominal route in complex cases and achieved 92.3% success rate. In any approach, the bladder wall is mobilized away from the vaginal mucosa and the fistula excised. The bladder and vagina are closed separately. Laparoscopic repair avoids the morbidity of open surgery, but calls for technical expertise. Very tiny fistula can be dealt by cystoscopic fulguration.

Continuous bladder drainage via a urethral catheter is imperative to allow tension free healing of repaired site and tissue integrity to re-establish. Suprapubic catheterization is also done in all abdominal repairs. Maintenance of catheter patency in postoperative period is to be given utmost priority for smooth healing and to decrease failure rates. Bladder spasms can be treated effectively with anticholinergic drugs.

Overall fistula closure rate varies among different studies due to fistula characteristics and experience of surgeon. In our present study, success rate is 84.4% which is comparable to other studies by Mary Garthwaite et al who had 85% success rate[1]and Kumar S et al[15] achieved a success rate of 85% while overall closure rate of 93.4% in a study conducted by Sori DA et al.[16] 85% success rate was noted in cases operated via abdominal approach and 80% success rate was noted in cases operated via vaginal approach which are comparable with Wadie and Kamal study which reported a cure rate of 91% with abdominal access and 70% with the vaginal route.

CONCLUSIONS

Occurrence of vesicovaginal fistula due to obstetric trauma has significantly reduced in recent times. Definitely this is due to improved intrapartum services, hospital deliveries and caesarean sections. Its unfortunate that there is increased number of gynaec fistulas due to simple hysterectomies. Judicious care exercised at the time of bladder mobilisation can definitely go a long way in the prevention of VVF. Indications, surgical expertise for hysterectomy, optimum operating conditions are cause for concern in today's practice in rural India.

Source of Support: None.

Conflict of Interest: None.

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