



## A CLINICAL STUDY OF UROGYNECOLOGIC FISTULA

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## ABSTRACT

**AIMS AND OBJECTIVES:** The objective of our study was to enunciate the patient demography, patient profile, incidence, type of surgery, as well as the long term outcomes encountered in the management of all types of genital fistulae at a tertiary care center.

**Methodology:** This study was a prospective study done at GGH, Guntur, which is a tertiary care center. The study was done over a period of 30 months that is between October 2015 to September 2017 to evaluate the patient demography, patient profile, incidence, causes of various urogenital fistula, the diagnostic criteria and surgical methods for correction of urogenital fistula, and to compare the outcomes with the existing studies.

**Results:** Mean age of presentation of fistula was 36.9yrs with vvf being the most common type. Majority of them had gynaecological etiology and total incontinence being most common symptom. Most fistula were 1 to 2cm in size. Both abdominal and vaginal approaches for VVF can give excellent results in carefully selected cases.

**Conclusion:** Successful outcome can be achieved with carefully planned and performed surgery. The best chance of a successful repair is at the first attempt. Both abdominal and vaginal approaches for VVF can give excellent results in carefully selected cases.

**KEYWORDS :** Urogynecological fistula, vesicovaginal fistula, urethrovaginal fistula.

## INTRODUCTION:

Fistulae were the most distressing and feared complications of gynecologic and obstetric procedures<sup>1</sup>. The principal cause in developed countries has come to be trauma due to gynecological surgeries, mainly hysterectomy. However, concerning parts of the world which were still in developing phase, difficult labour has not left its place as the most common reason for the most frequent type of UGE, i.e., vesicovaginal fistula (VVF). This unpleasant complication leaves affected women with continuously leaking urine, excoriation of vulva and vagina, often rendering them social outcasts<sup>2</sup>. The key to successful repair of any fistula especially VVF lies in the classic principles defined by Couvelaire in 1953, good visualization, good dissection, good approximation of the margins and good urine drainage<sup>3</sup>. These principles can be achieved both through vaginal and abdominal approaches. Although the choice of technique partly depends on the characteristics of the fistula (site, size, clinical context), it also largely depends on the experience of the surgical team.

## METHODOLOGY:

This study was a prospective study done at Department of Urology, GGH, Guntur. The study was done over a period of 30 months that is from October 2015 to September 2017.

All the patients with confirmed urogynecologic fistulae either diagnosed at the study institute or referred from outside were included in this study. Our inclusion criteria were patients having a history of obstructed labor, hysterectomy and lower segment caesarean section (LSCS), radiotherapy, instrumental delivery, or trauma. Patients with urinary incontinence from other causes were excluded.

Socioeconomic standards were evaluated using modified kuppusswamy scale. Malnutrition statuses assessed by low body mass index (BMI).

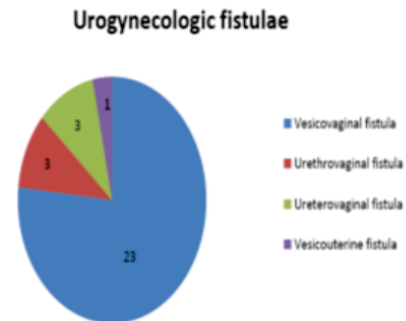
Routine blood investigations were done. Urine culture was carried out in each case and appropriate antibiotics administered as per the sensitivity report.

Diagnosis was established by careful history, physical

examination, ultrasonography, intravenous urography and endoscopic examination. Cystoscopy along with examination under anesthesia (EUA) was done to assess the actual, size and site of fistula and number of fistulae. All the patients underwent surgical repair. Complications were noted.

Success was defined as continence's, absence of LUTS and good quality of life at 3 months of follow up.

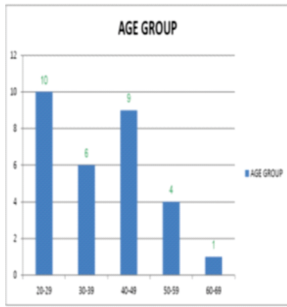
## RESULTS:



A total of 30 patients were studied. 23 patients were diagnosed with VVF, 3 patients with ureterovaginal fistula, 3 patients with urethrovaginal fistula. 1 patient with Vesicouterine fistula. There was one failure in our study. The patient was having trigonal VVF and she underwent vaginal flap repair. There were two patients with recurrent fistulae. Both recurrent fistulae were VVF. One patient previously operated at our institute and another patient was operated elsewhere. Both the previous repairs were done by vaginal flap techniques.

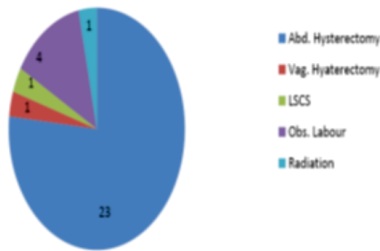
The follow up period varied from 3 - 18 months with more than half of women had 1 year of follow up.

22 women were from rural background and 8 women were from urban areas. Of the women in the study, 4 were primipara, 8 women had one child, 11 women had 2 - 3 children and 7 women had at least 4 children. Mean hospital stay was 21 days in the study.



Women aged in the range of 20- 60 years with the mean age is 36.9 years. 10 patients were between 20 – 29 years , 6 patients were between 30 – 39 years,9 patients were between 40- 49 years,4 patients were between 50 – 59 years where as 1 patient is above 60 years.

**ETIOLOGY**



Etiologically, majority 25(73.5%) had gynaecological causes, 23 underwent abdominal Hysterectomy, 1 patients underwent vaginal hysterectomy. 5 had antecedent event of obstructed labour. Of the 5 cases, 1 had lower segment caesarean section, 2 had forceps deliveries. 2 patients had home deliveries with long duration of labour. 1 patient had a history of radiation for carcinoma cervix. 2 patients had Cephalo Pelvic Disproportion.

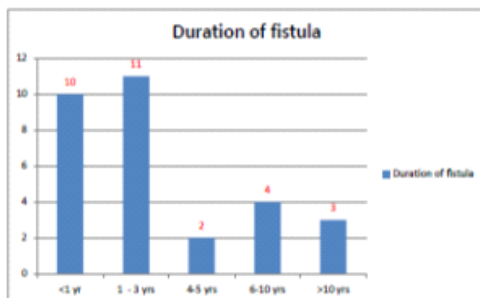
**SYMPTOMS**

Symptoms	No of Patients
Total incontinence	23
Normal Voiding + Incontinence	6
Associated symptoms	1
Hematuria	3
LUTS	
Flank pain	3

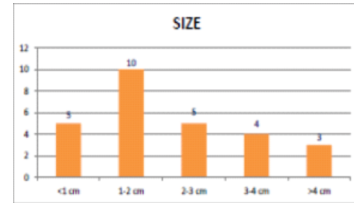
**Duration of the fistula:**

The time since fistula varied from less than 1 year to more than 10 years.

Majority of the women, 21 (87.5%) were suffering with incontinence since 3 years of antecedent event. 10 women presented within in the first year. 11 women presented between 1 - 3 years. 2 women presented between 4-5 years. 4 women presented between 6-10 years after UGF. 3 women had UGF for more than 10 years.



Patient distribution in relation to their fistula size



The size of the fistula varied from < 1 cm to > 4 cm. Majority of the women[13] had 1-2 cm fistula. 5 women had < 1 cm fistula, 5 women had 2-3 cm fistula, 4 women had 3-4 cm fistula and 3 women had > 4 cm fistula. Size was not considered for ureterovaginal fistulae.

**VESICOVAGINALFISTULA**

Type of VVF	No
Supratrigonal	18
Trigonal	5
Total	23

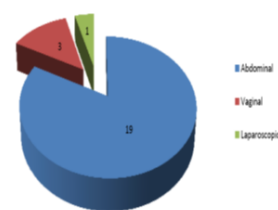
**Fistula**



Out of the 23 patients with VVF, 22 had simple fistulae and 1 had complex fistulae. 22 patients had their first presentation; whereas 1 patient had recurrent fistulae which was previously managed at private hospital.

**Vesicovaginal fistula repair**

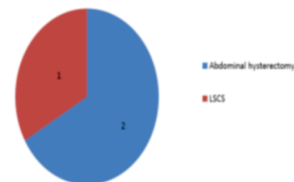
**VVF REPAIR**



19 VVF patients had abdominal O'conor repair. 3 patients had vaginal repair. 1 patient underwent laparoscopic VVF repair.

**Ureterovaginal fistulae**

**Etiology**



Out of the 3 patients with ureterovaginal fistulae, abdominal hysterectomy was the antecedent event in 2 patients and 1 patient presented with history of LSCS. All the ureterovaginal fistulae were unilateral fistula.

**Surgery**



Out of the 3 patients with ureterovaginal fistulae, stenting was successful in 1 patient and 2 patients underwent ureteric reimplantation. DJ stent was kept in all the patients. Stent removal done 8 weeks postoperatively.

**Urethrovaginal Fistulae**

UVF	No.
UVF alone	3

**Etiology:**

All the Patients had obstructed labour.

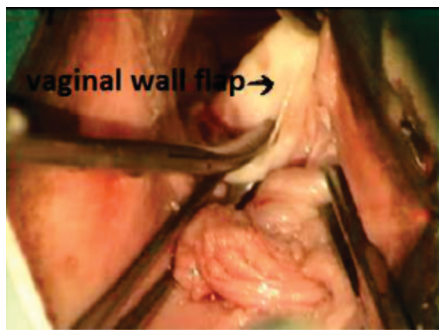
**Surgical management:**

UVF	Procedure
UVF alone	Vaginal flap repair

**VAGINAL FLAP TECHNIQUE**

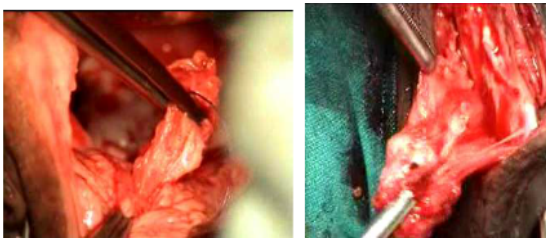


Circumferential incision of fistula



vaginal wall flap →

**Anterior vaginal wall flap**



**Martius flap**

**VesicoUterine Fistula:**

VUF	NO
VUF	1

**Etiology**

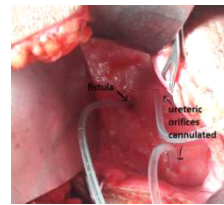
The patient underwent LSCS, following which developed menuria.

**Surgical Management:**

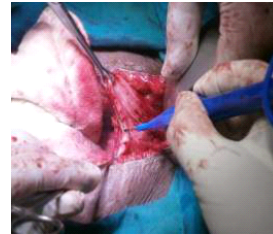
VUF	Procedure
VUF	Abdominal repair

The patient had defect in posterior wall of bladder communicating with the lower segment of uterus. The uterine defect was closed, bladder was repaired in 2 layers and an omental interposition was done between uterus and bladder.

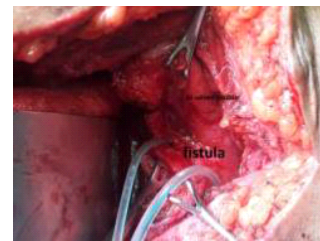
**O'CONOR ABDOMINAL REPAIR**



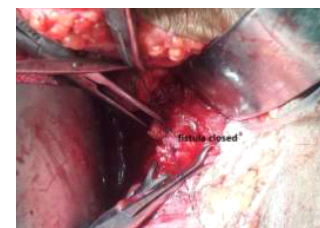
**Supratrigonal fistula**



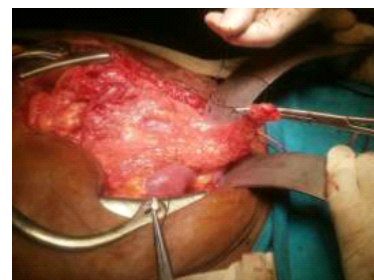
**Bladder bivalved**



**Bladder bivalved**

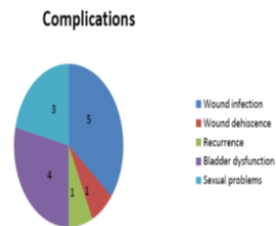


**Fistula closed**



**Omental flap**

**Complications:**



In our study, 1 patient developed recurrent fistula after 2 months of repair, was subsequently underwent successful second repair. 5 patients had wound infection, treated with appropriate antibiotics. 1 patient had wound dehiscence, repair done successfully. 4 patients had complaints of denovo urgency, managed with anticholinergics. 3 patients had complaints of dyspareunia, managed by vaginal dilatation.

## DISCUSSION

During our study period, we managed 30 cases of urogynecologic fistulae. Out of the 30 cases, majority 22 (73%) were vvf, rest of the cases were urvf 3(10%), uvf 3(10%). We had 1 case with combined VVF and UVF. There was 1 vuf. First repair is always the best chance to achieve continence. Subsequent repairs will always be difficult because of lack of clear cut anatomical planes and compromised vascularity of the tissues.

The age of the women in the study ranged from 20 to 60 years. 22 women were from rural background and 8 women were from urban areas. Majority of the women 76% were from the lower socio-economic strata and an equal number were malnourished, 40% were illiterate and 69% were short stature, with heights less than 5'. Regarding parity only 17.6% (n=6) patients were primigravida and 82.3% (n=28) were multiparous women.

A study done at Banaras Hindu University, between January 1990 and January 2006, there were 22 VVF and 68% were from obstetric causes<sup>4</sup>. Similarly higher incidence of obstetric urogynecologic fistulae reported in studies from AIIMS, Delhi<sup>5</sup>. But in our study, majority, 24 (80%) were from gynecological causes, with abdominal hysterectomy accounted for 23 cases. All the Patients with UVF had obstructed labour. 3 patients had LSCS and one patient had instrumental delivery. The reason could be because of increased incidence of hysterectomy, especially in urban and semi urban areas. The time of presentation usually variable. In our study majority of the women presented within 3 years of antecedent event.

Out of the 23 patients with VVF, 22 patients had single fistula whereas 1 patients had multiple fistulae. Urethrovaginal and ureterovaginal fistulae were single. All the ureterovaginal fistulae were unilateral in presentation.

Out of the 23 patients with VVF, 22 (95.6%) were simple fistulae and 1 was complex fistula.

Out of the 23 patients diagnosed with VVF, 18 had supratriangular fistulae, 5 had fistula located in the trigone. In 1 patient fistula was located close to ureteric orifice, which necessitated ureteric reimplantation.

The size of the fistula in the present study varied from < 1 cm to > 4 cm. Maximum number of women (13) had fistula 1-2 cm in diameter. Larger fistulae may recur and should be treated with interpositional grafts for successful outcome.

Melah et al. suggested that performing an early surgical repair allows one to achieve the same success rate as a delayed one<sup>6</sup>. As most of the women presented to us after a minimum period 3 months of antecedent event, early repair was not an option. We operated on them once their evaluation was over and their anaemia was corrected and infection treated. One patient with radiation induced VVF, presented 6 years after completion of radiation and we had a waiting period of 8 months, as the tissues were unhealthy as well as edematous. The ideal timing of intervention is still debated.

There are varied approaches for repair of these urogynecologic fistulae. Eilber et al. emphasized that the approach chosen should depend on the surgeon's abilities, preference and experience<sup>7</sup>. Majority of the women, 22 (64.7%) with VVF patients underwent O'Connor transabdominal repair. 5 Patients underwent vaginal repair.

We routinely cannulate the ureteric orifices either with infant feeding tubes or with ureteric catheters. Ureteric catheterization reduces the risk of incorporating the ureters in the suture line during repair and allows drainage of urine if oedema occurs around the ureteric orifices.

The omentum have been most commonly used in the repair of radiation fistulas or to limit scarring and reduce post-fistula repair stress incontinence in patients with urethral and bladder neck fistulas.

Ranganeekar and colleagues reported higher success rate with the use of Martius flap in both VVF and UVF<sup>8</sup>. Eilber and colleagues also reported favourable results with use of Martius flap<sup>9</sup>. In the present study all the patients in VVF and UVF groups, interpositional grafts were used to cover the fistula and to separate the adjacent structures. Omentum was used in all the abdominal repairs, whereas Martius flap was used for vaginal approach.

In 2 studies by Dowling et al and Selzman et al, the authors successfully managed ureterovaginal fistulae with internal stenting. They advocated that if ureteral continuity can be demonstrated on imaging, retrograde placement of a stent is often possible. However, the recurrence of vaginal leakage of urine is a common finding after removing a nephrostomy or DJ stent. Badenoch, Flynn et al advised an early repair, as it is not associated with an increase in morbidity or failure rate<sup>10</sup>. Out of the 3 patients with ureterovaginal fistulae, stenting was successful in 1 patient and 2 patients underwent ureteroneocystostomy with psoas hitch. DJ stent was placed in all the three patients. Stent removal was done 8 weeks postoperatively. All 3 women were continent after that, Ureteroneocystostomy is recommended where ureteral stents fail. Nephrectomy or renal embolization and percutaneous ureteral occlusion should be used for those who are poor surgical risks<sup>11</sup>. Khalid al Otaibi et al published use of memokath 051 stent for successful repair of URVF<sup>12</sup>

The management of urethrovaginal fistulae, is another challenging task because of extensive tissue loss, large defect and involvement of sphincter mechanism. In our study patients with UVF alone underwent vaginal flap repair. In all the patients Martius flap harvested and used as interpositional flap. Webster and colleagues<sup>13</sup> recommended Martius flap for all patients undergoing urethrovaginal fistula repair.

The rate of successful fistula repair reported in the literature varies between 70 and 100%. The success rate in our study is 97%. There was one failure in our study.

In our study, 1 patient with previously repaired VVF, developed recurrence after 2 months of repair, was subsequently underwent successful second repair. 5 patients had wound infection, treated with appropriate antibiotics. 1 patient had wound dehiscence, repair done successfully. 4 patients had complaints of denovo urgency, managed with anticholinergics. 3 patients had complaints of dyspareunia, managed by vaginal dilatation. 2 patients with urethrovaginal fistula, developed transient urinary retention, which was managed by CIC. Eventually both the patients recovered normal voiding pattern.

Success rates of some studies with repair of genitourinary fistulae reported in the literature during the past 10 years

Author	year	country	patients	Years	technique	Success rate%
Dennro et al. [188]	2013	Sweden	19	6	Abdominal / vaginal	100
Altaweel et al. [189]	2013	Saudi Arabia	25	8	Abdominal	95
Raashed et al. [190]	2010	Pakistan	81	2	Vaginal / Abdominal	87
Kochakam and Pummangura [191]	2007	Thailand	45	7	Vaginal / Abdominal	100
Kamboj et al. [176]	2007	India	52	6	Vaginal / O'Connor	94.2
Khan et al. [192]	2005	Pakistan	30	6	Transvesical	80
Sotelo et al. [193]	2005	Venezuela, Brazil	15	7	Laparoscopic	93
Present study	2017	India	30	2	O'Connor/ Vaginal	93.3

**Ureterovaginal fistulae**

Study	No	Etiology	Laterality	Surgery	Success %	Remarks
Benchekroun [194]	45	71 obstetric 29gynec	U/L 42 B/L 3	Ur. Reimp 27 Boariff 3 psoas hitch 5 Nephrectomy 2 DJ stent 2 Appendicoureteroplasty 2 Ileoureteroplasty 2 EEA 1	77	2 nephrectomy
Mandal AK [108]	31	All gynec		Ureteroneocystostomy 29boari 10.direct 19 Conservative mx 2	100	Renal salvage in all cases
Haqnavaz [195]	28	Gynec 20 Caesarean sec 8	23 U/L 3 B/L	Ureteroneocystostomy in all cases	100	Renal salvage+
Shaw J [196]	19	18 hysterectomy 1 LSCS		Ureteroneocystostomy 14 Stenting 5	100	Renal salvage+

B.Murtaza [197]	17	10 gynec 7 LSCS		14direct ureteroneocystostomy 2 boari flap.1 psoas hitch	100	Renal salvage +
Present Study	3	2 gynec 1 LSCS	ALL U/L	1 DJ stenting 2ureteroneocystostomy	100	Renal salvage +

**Urethrovaginal fistulae**

Author	No	Etiology	Surgery	Success	Remarks
HaqNavaz [195]	54	44 obstet 6 instrument 3 trauma 1radiation	Vaginal flap repair		
DY Pushkar [173]	71	Obstetric trauma 30 and vaginal surgery 41	Vaginal rep	90.1%	SUI is high
Abdelbary [198]	19	Post birth trauma	Vaginal flap	100	Ant vag wall sling for correction of SUI
Present study	4	Obstructed labour	Vaginal flap	100	

**SUMMARY AND CONCLUSIONS**

Urogynecologic fistulae are devastating conditions that severely affect the quality of life of women. Thorough evaluation and planned surgical management are essential to correctly diagnose and treat this condition.

The best chance of a successful repair is at the first attempt. Both abdominal and vaginal approaches for VVF can give excellent results in carefully selected cases.

Use of inter positional tissue graft is essential for successful outcome.

For ureterovaginal fistulae, ureteral stenting can be tried at first attempt and will be successful in a small fistula.

Unobstructed post-operative urinary drainage is essential for successful healing of the fistula. Regular follow up is essential to detect any complications and their successful outcome.

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