



# Clinical Profile, Surgical Approach and Outcome of Complicated Genital Fistulae in Urban Population of a Developing Nation

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## Abstract

**Objectives** To study aetiology and management of complicated genital fistulae and to evaluate the outcome of the treatment.

**Methods** This observational study enrolled patients with complicated genital fistulae from September 2008 to August 2018 at Sant Parmanand Hospital, Delhi. Patients underwent a reparative surgery or ureteric stenting after a detailed preoperative workup. Patients were followed up for the assessment of outcomes.

**Results** A total of 16 patients were recruited: Ten (62.5%) patients had fistulae secondary to gynaecological surgeries (seven laparoscopic and three abdominal hysterectomies) and six (37.5%) patients had obstetric fistulae. At a mean follow-up of 5.8 years among obstetric fistulae and 7.3 years among post-operative fistulae, 100% success rate was maintained with the first attempt of reparative surgery or ureteric stenting. There were no major complications. Two patients had recurrent urinary tract infections, and one patient had transient urinary incontinence for 4 weeks.

**Conclusion** The study demonstrates that complicated genital fistulae occur more commonly secondary to gynaecological surgeries as compared to obstetric complications in a contemporary cohort from a metropolitan city. A 100% success rate of reparative surgery could be achieved with a transperitoneal approach. Good outcome in ureteric fistulae can be achieved with conservative approach, after proper case selection.

**Keywords** Complicated genital fistula · Urogenital fistulae · Laparoscopic hysterectomy · Vaginal hysterectomy · Obstetric fistulae

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## Introduction

Genital fistula is an abnormal communication between genital tract and urinary or intestinal tract. This is an incapacitating and crippling condition and may socially outcast a healthy woman.

Although the global burden of the disease is not exactly known, it is estimated at 3 million worldwide, with the addition of 30,000 to 130,000 new cases per year [1]. The

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prevalence of 1.5–1.7 per 1000 women has been estimated by national community-based survey in Ethiopia [2] and Bangladesh [3].

Genital fistulae can occur because of obstetric complications, gynaecological procedures and trauma. Even in expert hands, urinary tract injuries are known to occur during gynaecological procedures. The incidence as well as the aetiology of genital fistulae shows geographical variation. In developed part of world, two-third of the urogenital fistulae are iatrogenic following gynaecological surgeries for benign pathologies. The remaining are due to advanced malignancy, radiotherapy, congenital and obstetric complication [4]. In high-income countries, less than 20% are obstetric fistulae, with most of them following obstetric intervention (caesarean section, caesarean hysterectomy, instrumental delivery) and not because of obstructed labour. Up to 70% of all surgical fistulae are associated with hysterectomy [5]. In contrast to this, obstetric fistulae (1.1 per 1000 births) [6] due to unassisted and unsafe practices constitute the majority of unrepaired fistulae in developing countries. Fistulae occurring due to obstetric complications are more complex, with cultural, socio-economic, physical and geopolitical contributors.

Genital fistulae anatomically could be urogenital or genito-intestinal fistulae, the former being more common. Currently, no universally accepted classification of fistula is available. However, studies have identified factors that could help in predicting unsuccessful fistula closure [7, 8] based on which 12–25% of all fistulae are classified as complicated genital fistulae. These are characterized by size more than 3 cm, trigonal involvement, fistula secondary to malignancy or radiotherapy, loss of vaginal tissue leading to its shortening, involvement of urethra, ureter or bowel and when surgical approach is difficult.

The reparative surgeries for complicated genital fistulae do not always result in successful outcome. As suggested by the statistics, the huge burden of the condition and unmeasurable suffering caused by genital fistulae to otherwise healthy women, deserves utmost attention. The operative implications as well as conservative approach such as ureteric stenting deserve analysis for improving outcomes.

## Aims and Objectives

1. To study the aetiology and management of complicated genital fistulae in a multi-super-speciality city hospital
2. To evaluate the surgical approach for reparative surgery and their outcome.

## Materials and Methods

Observational study was carried out at Department of Gynaecology and Urology, Sant Parmanand Hospital, Delhi, India, from September 2008 to August 2018 after approval from the institutional ethics committee. During this period, 16 patients with complicated genital fistulae who were managed by a team of specialized doctors, comprising gynaecologists and urologists, were recruited. Previous case records of patients were studied, and patients were followed till the end of study.

Preoperative workup consisted of detailed history, review of the delivery or operative notes, clinical examination, Moir's test to confirm the leak and site of leak and routine laboratory investigations including hemogram, renal function test and urine examination with culture/sensitivity. Retrograde pyelogram, barium meal follow through, barium enema, MRI (magnetic resonance imaging) and CECT (contrast-enhanced computed tomography) were carried out wherever required. If present, urinary tract infection was treated before the procedure. Wherever required, examination under anaesthesia was performed in the same setting just before the surgery. All patients were planned for surgery or stenting after written informed consent with proper counselling, bowel preparation and peri-operative antibiotic cover. Regional anaesthesia was preferred. The approach was decided keeping in mind the ease of performing the procedure.

## Outcome

Out of 16, 62.5% (10) fistulae were secondary to surgery for gynaecological conditions and the rest 37.5% (6) were obstetric fistulae. All patients were literate and belonged to middle socio-economic strata, except one with massive vesicovaginal fistula (VVF) belonging to low socio-economic background. The age of patients varied from 20 to 45 years with a mean of 40.5 years. The mean age for obstetric fistulae was 28 years, in contrast to 49 years for post-operative fistulae. The duration symptoms ranged from 5 days to 5 years.

All the obstetric fistulae were referred patients. Two resulted from difficult deliveries, with both having fatal neonatal outcomes. One of them started having urinary leak, 3 weeks after caesarean section for obstructed labour, eventually developing subsymphyseal fistula presenting after 1 year. Abdominal repair of the fistula with O'Connor's approach (transperitoneally approaching fistula through bladder) with bladder neck reconstruction was carried out. The other woman presented 10 years after

she had difficult instrumental vaginal delivery resulting in massive VVF. Total abdominal hysterectomy was performed to optimally repair the fistula. After a follow-up of 2.5 and 7 years, respectively, both remain continent. A patient with uretero-vaginal fistula had developed continuous dribbling of urine on tenth post-operative day after emergency lower segment caesarean section. She presented 4 months after surgery with a small left uretero-vaginal fistula 4 cm from uretero-vesical junction, which was managed by double J (DJ) ureteric stenting for 12 weeks. Patients remain dry henceforth.

Two of the obstetric fistulae developed following procedures for abortion. One had undergone dilatation and evacuation for missed abortion an year before and presented with secondary infertility and complaint of watery leaking with ammoniacal odour during intercourse. Post-coital test revealed no sperms despite normal semen analysis, and Moir's test was negative. Multiple small VVF (four in number) were seen on cystoscopy and vaginoscopy. Abdominal repair with O'Connor's approach was carried out. Patient had a successful pregnancy 3 years later and remained continent on follow-up. Another young patient with secondary infertility and persistent vaginal discharge had undergone dilation and evacuation 18 months before. On diagnostic hysteroscopy, bowel lumen was seen. Laparotomy was performed, and a 5-mm colouterine fistula was repaired successfully.

One ano-cutaneo-vaginal fistula was encountered in a young patient 10 days after delivery, following faulty episiotomy repair. Perineal excision of fistulous tract and layered closure was carried out successfully.

In our study, all the post-operative gynaecological fistulae resulted post-hysterectomy. Laparoscopic hysterectomy accounts for seven of them and three secondary to total abdominal hysterectomy. All hysterectomies were performed for benign uterine pathology. The mean duration of onset of symptoms was 9.3 days post-surgery. Total laparoscopic hysterectomy (TLH) and laparoscopic-assisted vaginal hysterectomy (LAVH) were implicated in five and two cases of fistulae, respectively. One of the five patients who underwent TLH presented 5 days post-operatively with urinary leak and septic shock. After resuscitation, she was diagnosed to have uretero-vaginal with associated vesicovaginal fistula. Three months of conservative management was followed by abdominal VVF repair by

O'Connor's approach with ureteric re-implantation and psoas hitch. Out of five patients who had total laparoscopic hysterectomy, three were diagnosed to have uretero-vaginal fistula. Two of them were managed with abdominal ureteric re-implantation and psoas hitch. The third patient of uretero-vaginal fistula following TLH underwent successful conservative management with DJ stenting. Another patient who had uretero-vaginal fistula following LAVH was managed similarly with DJ stenting. Both conservatively managed patients remain dry till date. One uretero-vaginal fistula was formed after TAH which was repaired by ureteric re-implantation. Two of the patients developed urinary leak due to multiple inaccessible VVF near vault few days following TLH and total abdominal hysterectomy (TAH), respectively. Both were repaired through modified O'Connor's technique transperitoneally with omental reposition. Intraoperative haemorrhage was noted in the operative notes of primary surgery in five out of six uretero-vaginal fistulae (Tables 1, 2).

Two patients had rectovaginal fistulae (RVF), one each following TAH and LAVH. The former was obese and underwent colostomy with RVF repair vaginally with paediatric laparoscopic instruments, as the site of fistula was difficult to access. The other patient had faecal incontinence 3 weeks after LAVH. Operative notes revealed use of cautery on posterior vaginal wall to achieve haemostasis. RVF repair was performed abdominally, and colostomy was performed.

Adequate hydration with daily fluid intake of 3 to 5 litres was maintained in all patients, and prophylactic antibiotics were continued for 5 days. All patients had indwelling three-way urethral catheter for 14 days to ensure continuous urinary drainage. No patient underwent suprapubic catheter insertion.

Patients with obstetric fistulae and post-operative fistulae underwent a mean follow-up of 5.8 years and 7.5 years, respectively. All patients (including the three patients managed conservatively with DJ stenting) remained dry on follow-up, without needing a repeat procedure. The complications encountered included recurrent urinary tract infections and abdominal pain. One patient had urinary incontinence lasting 4 weeks following catheter removal due to small capacity bladder, improved on medical management. Two patients who presented with infertility conceived and delivered successfully.

**Table 1** Aetiological factor (*n* = 16)

	Obstetric fistulae ( <i>n</i> = 6)	Post-surgical fistulae ( <i>n</i> = 10)
Prolonged labour with NVD/LSCS	3	Total abdominal hysterectomy 3
Episiotomy repair	1	Total laparoscopic hysterectomy 5
Medical termination of pregnancy	2	Laparoscopic-assisted vaginal hysterectomy 2

**Table 2** Types of fistula and the surgery performed along with the surgical approach

Fistula	Surgical approach	Surgery
<i>Obstetric fistula</i>		
Massive VVF	Abdominal	Hysterectomy and VVF repair
Subsymphyseal large VVF	Abdominal	O'Conor's VVF repair with omental reposition with bladder neck reconstruction
Colouterine fistula	Abdominal	Fistula repair without colostomy
Multiple high VVF	Abdominal	O'Conor's VVF repair with omental reposition
Ano-vaginal cutaneous fistula	Perineal	Fistula repair
Uretero-vaginal fistula	Conservative	DJ Stenting
<i>Post-surgical fistula</i>		
Multiple VVF (post-TLH)	Abdominal	O'Conor's VVF repair with omental reposition
UVF and VVF (post-TLH)	Conservative management followed by abdominal approach	O'Conor's VVF repair with ureteric re-implantation and psoas hitch
UVF (post-TLH)	Abdominal	Ureteric re-implantation and psoas hitch
UVF (post-TLH)	Abdominal	Ureteric re-implantation and psoas hitch
Multiple vault VVF (post-TAH)	Abdominal	O'Conor's VVF repair with omental fat reposition
RVF (post-TAH)	Vaginal	Colostomy with vaginal fistula repair
RVF (post-LAVH)	Abdominal	Colostomy with RVF repair
UVF (post-TLH)	Conservative	DJ stenting
UVF (post-TLH)	Conservative	DJ stenting
UVF (post-TAH)	Abdominal	Ureteric re-implantation

LAVH laparoscopic-assisted vaginal hysterectomy; RVF rectovaginal fistula, TAH total abdominal hysterectomy, TLH total laparoscopic hysterectomy, UVF uterovesical fistula, VVF vesicovaginal fistula

## Discussion

The smell of urine or faeces and inability to stay dry is humiliating, rendering a patient both physically and psychologically distressed. Every effort should be made to prevent genital fistulae. The majority of obstetric fistulae are preventable by a simple yet difficult-to-achieve solution, that is, health care for all [9]. Concurrently, immediate access to health care should be ensured for timely management of fistulae already occurred.

There exists a geographical variation in aetiology of genital fistulae. In contrast to developing countries, where obstetric fistulae remain more common, surgery and radiation are major contributors in the developed world. We encountered less of obstetric fistulae (37.5%) as our institute mainly caters to middle socio-economic strata of urban population. Similar trends were shown by Venkatramani et al. in Indian population where 58.6% were gynaecological fistulae [10]. All obstetric fistulae in our study were referred from peripheral centres, with at least four being iatrogenic. No patient was less than 20 years old, and only two of the six obstetric fistulae resulted from difficult delivery, both developing massive fistulae. This is unlike the series reported by Goswami et al. [11] who reported 37.7% patients less than 20 years age and almost 50% fistulae following difficult delivery in an illiterate and low socio-economic population. Two post-abortion fistulae were encountered, implicating

that all women in need of abortion must be referred to appropriate healthcare centre, as abortions by untrained personnel carry a high risk of complications.

Ten cases of post-surgical genital fistulae were treated in the study period, all following hysterectomy (seven abdominal and three laparoscopic) for benign uterine disorders. The literature shows that incidence of post-hysterectomy fistulae varies depending on the approach [10]. The lowest is with transvaginal (0.2:1000), followed by transabdominal (1:1000) and laparoscopic procedures (2.2:1000) [12]. This is consistent with the present data, where none of the fistulae followed vaginal approach and laparoscopy was twice more commonly associated with genital fistulae as compared to abdominal approach. Further, the occurrence of fistula was associated with intraoperative haemorrhage and possible excessive use of electrocautery. We encountered five isolated and one combined ureteric injuries. Five were following laparoscopic approach, supporting the fact that the ureteric injuries are six times more common in laparoscopic as compared to open hysterectomy [12].

Recently, Paul Hilton has proposed the concept of retrogressive evolution of surgical practice (pertaining to teaching and training in gynaecology and workforce planning, inappropriate audit and operational research in obstetrics), to explain the increasing rate of iatrogenic urogenital fistulae [13]. The inadequate training might be a reason for rise in incidence of iatrogenic gynaecologic fistulae, as more and

more hysterectomies are performed laparoscopically, by newly trained surgeons. This problem is amenable to rectification if the trainer and the trainee toil together, with the aim of achieving minimal complication rate, intraoperative recognition and repair of injury.

All the genitourinary fistulae in our study were approached transperitoneally, as complex fistulae involving ureter, large part of bladder and urethra require more difficult surgeries for their treatment [14]. Although laparoscopic approach for repair is an option, we found transperitoneal approach for complicated genital fistulae offers wider inspection, better dissection and excellent results. The ano-vagino-cutaneous fistula was repaired through perineal approach. The faecal fistulae were also repaired abdominally except one post-hysterectomy high rectovaginal fistula in a very obese patient with previous multiple abdominal surgeries. This patient also had colostomy and big para-stomal hernia. Fistula was repaired vaginally using by converting high fistula to complete perineal tear. The colostomy closure and hernia repair followed 3 months later.

The success rate in our study was 100% in the first attempt. The success rate for primary surgical repair ranges from 88 to 93% and decreases with each successive attempt [1]. Goswami et al. [6] reported an overall success rate of 75.55%. The successful repair of complex genital fistulae can be achieved, provided repair principles such as careful dissection of planes, adequate haemostasis and proper repair in separate planes are kept in mind [15]. Omental interposition in between the planes gives the best possible results as advocated by Turner Warwick [10, 16].

The limitation of the study is that many patients were referred from other centres. Also the patient cohort in this study may not be representative of the whole community as India comprises of heterogeneous population.

## Conclusion

As access to healthcare continues to improve in developing countries, obstetric fistulae are becoming less frequent. In an urban centre, the majority (62.5%) of genital fistulae were secondary to gynaecological surgeries, similar to the developed world. Still obstetric fistulae were also not uncommon, pointing towards need to continue endeavours towards providing universal access to skilled birth attendants and safe abortion practices. Faecal fistulae are a rarity in various case series, but we encountered four such cases. Intraoperative haemorrhage and subsequent excessive cautery use was found to be common occurrence during hysterectomy where subsequent fistula was formed. Vaginal approach for hysterectomy may be preferred in view of least fistula incidence. A 100% success rate was achieved by utilization of appropriate surgical technique and conservative ureteric

stenting wherever appropriate. Transperitoneal access for complicated fistula repair helped improve surgical outcomes in the studied patient cohort.

Till the time we attain healthcare access for all, we should provide social and psychological support to the patients and train medical personnel in the most affected parts of the world in reparative surgeries. Formulation of a standardized training module so as to appropriately train surgeons is need of the time, such that we move to the time of less iatrogenic complications and more successful reparative outcomes.

## Compliance with Ethical Standards

**Conflict of interest** All the co-authors declare that there is no conflict of interest.

**Human Participants** It is an observational study involving human participants.

**Informed Consent** Informed consent was taken from each participant.

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she has been actively involved with community-level healthcare camps organized under the auspices of Okti Foundation (a non-governmental organization for promotion of community health in areas with scarce healthcare access).

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## About the Author



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