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Characteristics and Surgical Success of Patients Presenting for Repair of Genitourinary Fistula in VVF Center of a Tertiary Hospital

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Abstract:

Objective(s): *To carry out a prospective review of patients who had undergone surgical repair of genitourinary fistula to determine patients' characteristics and to explore success of surgery in relation to aetilogy of fistula and attempt of surgery.*

Materials and Methods : *This cross-sectional study was carried out in patients attending the Fistula centre in Dhaka Medical College and Hospital (DMCH) from April 27th to July25th, 2013. Out of 47 patients 27 were recruited for this study. Detailed history was taken about socio-demographic character, gestational age, duration of labour, mode of delivery, conduction of labour and foetal outcome. Causes of fistula, information about fistula repair and success rate were noted. Main outcome measures were successful repair and correlation of success with aetiology of fistula, attempt of surgery. Data were analyzed by SPSS package. A p value of <0.5 was considered as significant.*

Results: *Mean age of the patients was 33.73± 10.73 years with a range of 17 to 58 years and mean height was 144.67±3.013cm. Most of the women (66.7%) were from lower social class. The most common fistula 19 (70.37%) was obstetric due to obstructed labour and in 8 (25.93%) cases it was due to consequence of gynaecological surgery. Mean gestational age of the foetus were 38.57±1.409 weeks and duration of labour was 34.83±14.618 hours. Out of 27 patients, 7 had prior fistula repair without success, 4 patients had prior 2 attempts and 3 had previous 3 and 4 attempts. In 21 patients surgical repair was done through vaginal route while 6 required abdominal approach. Local repair was done in 18 (66.67%) cases and grafting was done in 5(18.52%) cases. Fifteen (55.56%) patients had successful repair and success rate was more when it was first attempted (90%) and 20% in repeat attempt but it was statistically significant p<0.05. Success of repair was more when causes of fistula was gynaecological (87.50%) than when it was obstetrical (42.11%), p<0.05.*

Conclusion: *Success of surgery of genitourinary fistula depends upon so many factors. Gynaecological fistula can be repaired more successfully than obstetrical one. First attempt of surgery is the best attempt, so must be done at skilled hand.*

Keywords: *Genitourinary fistula, sociodemographic character, causes, surgical repair, success.*

Introduction:

Genitourinary fistula is preventable and in most cases treatable as well. Childbirth injury that leaves women incontinent, ashamed and often isolated from their families and communities. It occurs when a woman suffers from prolonged, obstructed labour without timely access to caesarean section. A debilatiting condition that has left and continues to leave-hundreads of thousands of women suffering in speculation and humiliation. It is the most distressing and demoralizing condition that a woman can experience. These unhappy women often become social outcasts. The close anatomical relationship of bladder, rectum, vagina and uterus make the reproductive tract susceptible to fistula formation during complicated childbirth and gynecological surgery.

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Most of the women of obstetrical fistula are from countries where obstetrical services are underdeveloped or absent. By contrast genital fistulae in developed countries are rare and happens as a complication of gynaecological surgery or radiotherapy[1]. Epidemological studies have shown that in developing countries, 90% of the fistula are of obstetric origin,whereas in developed countries, gynecologic surgery and radiotherapy are responsible in 70% of genital fistulae[2,3]. Obstetric fistula is a serious gynaecological problem prevailing mostly in the developing and poorest countries of the world, including Bangladesh, where skilled assistance at birth is mostly lacking. At our tertiary care centre, many patients with genital fistulae traveled from different parts of the country; some presented after failed surgery. We aimed to find out the sociodemographic character, causes of fistula and outcome of surgery in patients admitted in fistula centre DMCH. Purpose of our study was to explore the association between success of surgery and aetiology of fistula and attempt of surgery.

Materials and methods:

This cross-sectional study was carried out in a specialized Fistual Center of Dhaka Medical College and Hospital (DMCH) between 27th April 2013 and 25th July 2013. DMCH Fistula centre is a specialized fistula centre in Bangladesh where various complicated fistula patients are referred from different parts of the country and surgery is performed mostly by senior expert fistula surgeons with their dedicated team.

During study period 27 patients who underwent surgery were recruited for this study. All patients were examined under general anaesthesia and the number, site and size of fistula, as well as the pliability of tissues and the adequacy of vaginal exposure of fistula were assessed.

Detailed history was taken regarding age, parity, duration of labour, mode of delivery, person conducted delivery, condition of the baby, gynaecological operation and previous attempts of fistula surgery. Patients were examined in dorsal position and visualized by sim's speculum and simple anterior vaginal wall retractor was used to assist inspection. Bimanual digital pelvic examination was done to fell the fistula, any scar and any associated rectovaginal fistula (RVF). Patients having severe vaginal stenosis, and who were referred to urology department were excluded from the study.

Examination gave emphasis to 1. Confirm that the discharge is urinary. 2. Confirm that leakage is extra–urethral 3. Identify site of leakage and 4. Identify or exclude multiple or complex fistulous tracks.

Apart from routine general evaluation of the patients, 3 swab test was performed in some patients' where ureteric fistula was suspected and some specific evaluation - Dye test was done for most of the patients to identify the size, site and number of fistula. Cystoscopy was done to assess the relationship of ureteric orifice with fistula whenever needed.

The patients were prepared preoperatively by giving improved diet and blood transfusion. Valval skin infection and urinary tract infection were corrected before operation in order to maximize the prospects for postoperative healing.

For repair of these fistula we chose mainly transvaginal approach, when access was good and vaginal tissue are sufficiently mobile and in some cases transabdominal approach when approach was poor and fistula couldn't brought down. For transvaginal approach lithotomy position was adopted. In some cases if the access to fistula was limited by scarring, it was improved by an episiotomy, dissection was facilitated by infiltration of jungles juice (composition of 40 ml normal saline + 9 ml xylocaine + .5ml adrenaline). After mobilization of the fistula, the bladder and vagina were closed in layers with 2/0 and 3/0 inturrupted vicryl sutures. Fistula involving the bladder neck, a martius graft was interposed between the bladder and the vagina .

In post-operative period vaginal pack was given and that was removed after 48 hours. Bladder was kept empty for 21 days that is achieved by continuous bladder drainage by a indwelling catheter. The urinary output was charted hourly and fluid given initially and subsequently by mouth to ensure high output. Patient became ambulant when she feels comfortable with holding the catheter in hand to prevent kinging and dragging on the catheter. Regular voiding was encouraged after removal of catheter and a specimen of urine was sent for culture. We used prophylactic antibiotics at the time of surgery in all cases.

Patients were followed up up-to 4 weeks after surgery to determine the success or failure of the procedure. Long-term follow up were not possible because most of these patients came from remote areas of the country.

Results:

Mean age of the patients was 33.73± 10.739 years with a range of 17 to 58 years and mean height was 144.67±3.013cm. Most of the women from lower social class 66.7% and rest 33.3% were from lower middle class. Eleven (40.74%) patients were primiparous and 59.2% were multiparous.

Seven percent (7%) women delivered their 1st child at the age of 16 years. In most cases cause of fistula was obstetric 19 (70.37%) and in 8 (25.93%) cases it was due to complication of gynaecological surgery (Table 1). Mean gestational age of the foetuses were 38.57±1.40 weeks and duration of labour was 34.83±14.618 hours. Fourteen (73.68) patients delivered vaginally, 10.53% by caesarean section and 10.53% needed caesarean hysterectomy. Most of the deliveries (57.89%) were conducted by traditional birth attendance and 26.32% by doctors. Outcome of baby was invariably poor. Fifteen (78.95 %) was stillbirth and 4 (21.05%) were early neonatal death (Table 2). The duration of fistula varied from 1 year to 29 years and diameter of fistula ranged from 1–6 cm. Out of 27 patients, 7 had prior fistula repair without success, 4 patients had prior 2 attempts and 3 had previous 3 and 4 attempts. In 21 patients surgical repair was done through vaginal route while 6 required abdominal approach. Local repair was done in 18 (66.67%) cases and grafting was done in 5 (18.52%) cases and for other cases different procedures were done. Two patients needed ureteroneocystostomy, 1 patient needed creation of new urethra and in 1 patient's rectovaginal fistula repair was done along with the repair of VVF and that patient also needed colostomy. Bladder stone was removed during local repair in 2 cases, eighteen (85.18%) patients had successful repair (Table 3).

Table-I

Demographic characteristics of the patients

Characteristics	Mean	± SD
Age (Yrs)	33.78	±10.73
Height (Cm)	144.67	±3.01
Age at first delivery (Yrs)		
Social Class	N	%
Low	18	66.7
Lower middle	9	33.3
Parity		
Parimiparous	12	63.16
Multiparous	7	36.84
Cause of fistula		
Obstetric	19	70.37
Gynaecologic	8	25.93
Complex fistula (considering number size and site)		
Complex	16	59.26
Simple	11	40.74

Table 4 shows the relation of success with aetiology of fistula and no of attempts of surgery. First attempt shows higher success 12 (80%) and in repeated attempt it was 20%. Success rate was higher when fistula developed after gynaecological surgery (87.5%) than obstetrical one (84.21%). In both the situations these were statistically significant (p >0.05).

Table-II

Obstetrical parameters of fistula cases.

Parameters	Mean	± SD
Gestational age	38.57	± 1.409
Duration of labour	34.83	±14.618
Mode of delivery	N	%
Vaginal	14	73.68
Caeseraen Section	2	10.53
Caeserean hysterectomy	2	10.53
Assisted vaginal	1	5.26
Conducted by		
TBA	11	57.89
Nurse	3	15.79
Doctor	5	26.32
Outcome of baby		
Still birth	14	73.68
Early neonatal death	5	26.32

Table-III

Surgical repair

Attempts of Surgery	N	%
Ist attempts	20	74.07
2nd attempts	4	14.82
3rd and 4th attempts	3	11.11
Approach of repair		
Abdominal	6	22.22
Vaginal	21	77.78
Type of repair		
Local repair	18	66.67
Graft	5	18.52
Other	4	14.81
Outcome of repair		
Success	15	55.56
Failure	12	44.44

Table-IV

Relation of success with type of fistula and attempt of surgery

Relation	N	%	Significance
Success in relation to type of fistula			
Obstetrical causes	8/19	42.11	0.03
Gynecological causes	7/8	87.50	
Success in relation to attempt of repair			
First attempt	12/15	80.00	0.001
Repeat attempt	3/ 15	20.00	

Discussion:

About half a million women die yearly from causes related to pregnancy and delivery and for each maternal death approximately 10-15 other women sustain serious morbidity including vesicovaginal fistula [4-6]. Thus vesicovaginal fistula ((VVF) can be described as aftermath of a 'near miss maternal death'.

Prolonged obstructed labour is the major cause of vesicovaginal fistula in developing countries [7-10]. Its prevalence is also high in Bangladesh. Poverty, ignorance and lack of facility all are responsible factors for development of fistula. Taking decision to go to health facility, delay to get transportation to reach the facility and delay in starting treatment in the facility are 3 delays recognized for this occurrence.

In our series most cases 70.37% were obstetric fistula. Mean maternal age of the patient of this series was 33.73±10.7 years ranging from 17 to 58 years, mean height was 144.67±3.01cm. Seven percent (7 %) women delivered their 1st child at the age of 16. So many of the obstetric fistula patients are teenagers. It is noteworthy that early marriage and pregnancy had been known to contribute to development of vesicovaginal fistula. Besides, most of the patients were not aware of contraception. Early marriage without contraception is invariably followed by early pregnancy, at that time pelvis is not developed enough for easy passage of the foetus through the maternal pelvis leading to obstructed labour.

All obstetric fistula patients of this series came from lower social class who are poor without any education and dominated by husband and in laws who are illiterate and resistant to take decision for facility delivery. Different studies shows that majority of vescovaginal fistula patients are not literate and come from poor social class [11-15]. Three delay model contributes to the occurrence of fistula. Most of them have traditional belief and unskilled birth service such as traditional birth attendant service is widely practiced because it is more affordable for them. This is the most common cause of delay in seeking care in obstructed labour in vesicovaginal fistula patients. Delay in transporting patients to the health facility is the next common cause of delay, which could be due to long distance, non availability of vehicle or bad road. Health facilities are not available in some communities and the available one are so far. The 3rd delay is delay in receiving prompt treatment. Many health facilities that provide basic and comprehensive emergency obstetric care are understaffed, without partograph for labour monitoring or proper referral backup, which may delay time of relieving obstruction and worsening complication.

Primiparous patients are more vulnerable for developing obstetric fistula [11-15]. We also found highest number in primi cases. Mean gestational age of the foetuses were 38±1.409 weeks and duration of labour was 34.83±14.618 hours. Duration of labour was almost double of normal duration and which was responsible for pressure necrosis of vaginal and bladder tissue. Most of the babies (60.95%) delivered vaginally. It indicates that the obstruction was not due cephalopelvic disproportion. Those might be due to malrotation or resistance of soft tissue. Most of the delivery (57.89%) were conducted by traditional birth attendance and 26.32% by doctors. Majority 78.95% babies were still born and 21.05% died within 1st week of birth. This consequence is inevitable for abnormally prolonged labour.

Any surgical procedure in the pelvis can lead to fistulae formation. In the current study 26.63% of postsurgical

fistula resulted following hysterectomy. This is an iatrogenic cause of fistula. Spontaneous closure of fistula is feasible if size is tiny. A 6-8 week period of continuous catheter drainage allows the diversion of urine away from the visceral communication. Which can allow spontaneous closure before epithelialization of fistula track and this is certainly worth attempting in patients with vesico-vaginal or urethrovaginal fistula[16]. Rates of spontaneous closure, even for obstetric fistula, are reported up to 28% of the patients when early catheter drainage is instituted[17].

In this study, out of 27patients, 7 had prior fistula repair without success, 2 patients had previous 2 attempts and 1 had previous 3 and 4 attempts. Two patient's vesical calculus was removed through bladder and VVF repair done on same sitting and that fistula repair was successful. Out of 27 patients, 20 patient's repair was successful. Our success rate was 55.56%,which is comparable with other studies where urogenital fistula repair were supervised by senior expert personnel[18].,

A successful surgical repair of vesicovaginal fistula depends on numerous factors, such as fistula size, site, number, surgeon's skill, surgical technique, attempt of surgery, preoperative health condition of patient and postoperative management. The surgical technique includes a) optimum tissue condition like, adequate vascular supply and free from infection, inflammation, necrosis, option of excision of fistulous tract b) a tension free, water tight, multilayered closure with avoidance of overlapping suture line, interposition of healthy vascularized tissue between the bladder and vaginal suture lines and c) continuous postoperative bladder drainage. Surgical skill is another very important factor for success and regardless of personal preferences, surgeons involved in fistula management should be capable of all approaches and must have the capability to modify their techniques in order to select that most appropriate for individual case. Success of treatment depends on the skill and patience of the operator. Crucial stage is to mobilize bladder wall from vaginal wall with every effort to avoid injury to the bladder wall so that the supporting sutures can be inserted without tension. Next important step is to achieve complete haemostasis and proper post-operative bladder care

The success rate is high in specialized centres where there is dedicated fistula repair team and environment exist (75% to 92%) [5,18,19]. Our success rate was 55.56%, which is a bit lower in comparison to these studies. In this series cases were complex and in few cases separation was time consuming and required hours.

Success rate was higher when surgery was done in 1st occasion 80%, p = 0.001. Due to fibrosis and loss of tissue from previous surgery result of repeat surgery is usually lower than 1st surgery. Result was better when predisposing factor was gynaecological surgery. Again in obstetrical fistula associated scarring and fibrosis is poor prognostic factor surgical success. In our series success rate was higher (87.50%) in gynaecological fistula where it was 42.11% in obstetrical cases p = 0.03. Ayed M reported that obstetric fistula has lower success in repair and is a significant prognostic factor; the recurrence risk was threefold higher [20].

To date no operative technique has been described that is applicable universally to all types of urogenital fistula and surgery is tailored according to the individual case. Review of the literature shows different technique for the repair of fistula but in most of these cases the basic principle for repair of the fistula remains the same[21]. In our series 77 % of the repair was done via vaginal route, as it is less invasive and reduces the postoperative morbidity and is accompanied by more than ninety percent or higher success rate as seen in different studies [21.]

Transabdominal approach is suitable for fistula located in functional part such as bladder base or ureter. In our series 6 patients required abdominal approach. Two patients needed removal of bladder stone, two patients needed ureteroneocystostomy, one patient needed creation of neourethrea and one patient needed colostomy and repair of VVF in same sitting. Success rate of vesico vaginal repair improved by tissue interposition[22], because omental rich blood supply and has easy mobility can be used transabdominaly to support fistula repair.

In our series 02 patients required martius graft and 01 patient required labia minora graft and 2 patient needed peritoneal graft for repair of fistula, who had previous several failed attempts. Martius flap can be used for distal fistula while peritoneal flap is used for proximal fistula [23] through vaginal route. The interposed tissue serves to create an additional layer in the repair, to obliterates the dead space, to bring in new blood supply to the area and reduce post fistula repair stress incontinence in patients with urethral and bladder neck fistulas [24]. Complexity of fistula like multiple fistula, bigger size and extensive tissue loss reduces the

success. In our series 16 (59.26%) cases were complex in terms of number, size, site and tissue loss. Most of the failure (8) occurred from those group.

Conclusion:

Genitourinary fistula is an intolerable morbidity, which have lots of psychosocial effects. Only surgery is the remedy and for successful surgery dedicated personnel is needed. Among lots of factors for successful surgery our study shows that 1st attempt is the most important prognostic factor even at hand of expert person. So first surgery is the best surgery and which must be done at skilled personnel.

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