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Causes of Juxta-cervical Fistula, Difficulties Faced During Repair and Repair Outcome: 52 Cases

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Abstract:
Genitourinary fistula in the region of the cervix is termed as juxta-cervical fistula. This is more common in multiparous individuals, especially those who voluntarily bear down before full cervical dilatation. Also frequently seen after caesarean delivery. But local harmful indigenous treatment in the genital area for genitourinary prolapse or any other reason should be kept in mind. Repair can be done vaginally, abdominally or sometimes may need a combined method. During surgery, less difficulties are felt if both the proximal and distal fistula margins are easily visible. Always precaution should be taken during lateral dissection towards the cervix to avoid ureteric injury.

Introduction:
Genitourinary fistula has a grievous impact on women's health. The fistula can be obstetrical and non-obstetrical. The fistula that develops after labor and its complications are termed as obstetric fistula. Obstetric fistula has been recognized since ancient times. In 1935, professor Derry in Cairo described a large vesico-vaginal fistula in a mummy of Queen Henhenit (2050 BC) [1]. In developing countries, the most common cause is obstetrical [2]. Still, prolonged obstructed labor is the predominant cause of obstetric fistula in many of the developing world [3], the mechanism is prolonged ischaemic pressure necrosis, and usually leakage starts after 7-10 days [3, 4]. In this case, the baby is usually stillborn or severely asphyxiated. The relationship between obstructed labor and obstetric fistula was first documented by Avicenna (the renowned Arabo-Persian physician) [5]. Obstetric genitourinary fistula can also result from direct tearing of soft tissues during precipitous labor [6]. Also direct injury (perforation or cut) can take place during instrumental deliveries or operative procedures like caesarean delivery/ caesarean hysterectomy, where urinary leakage usually starts immediately. But the symptoms of fistula due to ischaemic pressure necrosis (involvement of tissue in a ligature) following a surgical trauma, likely to be evident after 7-14 days [4]. The non-obstetrical causes are gynecological operative injury, advanced malignancy like carcinoma cervix, following radiotherapy, infective; it can be traumatic following sexual violence ; or can be congenital [2,7]. Another term, iatrogenic fistula (IF), which may be either obstetrical or gynecological, unintendedly caused by a health care provider during medical procedure (during caesarean section or hysterectomy etc) [8,9]. IF can be ranging from "definitely iatrogenic" to "likely

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iatrogenic" [10]. The caesarean delivery with a live baby is unlikely to develop pressure necrosis [11]. Vesico-cervico-vaginal fistula (VCVF) following caesarean section (CS) with a history of live baby, are “definitely iatrogenic” [10]. And VCVF following CS for a still born baby are "likely to be iatrogenic"; provided the fistula size is less than 3 cm and definitely located in the cervical canal, an analysis on the basis of author experience [12].

Still, there is no universally accepted system of classification of obstetric fistula. The genitourinary fistula is mostly classified clinically on the basis of site, size and scarring. As per site of involvement, this fistula can be juxta-urethral, mid-vaginal, juxta-cervical, circumferential and miscellaneous like uretero-vaginal, vault fistula [13].

Genitourinary fistula in the region of the cervix is termed as juxta-cervical fistula. The location of fistula due to prolonged obstructed labor depends on force and duration of compression, and also the state of cervix during impaction. Patients who start voluntary bearing down effort before full cervical dilatation and before good descent of head, the vaginal vault and cervix may undergo pressure necrosis and are likely to develop fistula in this region [14]. This explanation was stated by Mahfouz Naguib in 1930 (Mahfouz 1930) who described the patho-physiology of obstructed labor clearly and concisely [15]. The level at which the fetal head is arrested may be determined by the configuration of the women’s pelvis. Multiparous women are more prone to develop juxta cervical fistula. It is also commonly found in those who are delivered by C-section. Juxta-cervical fistula probably result from vertical tear in the lower segment with associated bladder injury during caesarean section [4].

Juxta-cervical fistula can be typed as: both fistula margins are visible, only distal fistula margin is visible (here the anterior cervical lip is usually split open) and both fistula margins are invisible (intracervical). The route of fistula repair can be vaginal, abdominal or combined. Urologists prefer the abdominal approach, while most gynecologists like to repair vaginally [16].

This study was designed to find out the causes of juxta-cervical fistula and difficulties faced during repair and ultimately repair outcome.

Materials and Methods:

It was a cross sectional study during the period of May 2011 up to November 2021. In this period, a total of 52 juxta-cervical fistula patients were admitted and operated at six different hospitals in Bangladesh. All the patients were enlisted in this study. A standard data collection sheet was used. The information recorded on the sheet was based on detailed history (by interviewing the patients/ attendants), proper clinical examination and after surgical intervention. Fistulae involving the urethra or bladder neck up to cervix were excluded in this study.

Diagnosis was done from history, per vaginal examination and dye test, sometimes under anaesthesia. For confirmation, other investigations like MRI, cystoscopy, cystography, CTU (computed tomography urography) etc were not done [17]. In most of the low-resource settings, urinary fistula diagnosis is based mainly on clinical findings along with dye test, sometimes intravenous urogram (IVU) is done to identify the uretero-vaginal fistula.

Before operation, careful evaluation was done to diagnose the type of juxta-cervical fistula with an aim to design the treatment plan.Sometimes the final diagnosis and treatment plan was decided just preceding the operation under anesthesia. Even in some cases, the treatment plan was modified during the surgery.

All the information and data were systematically recorded and analyzed.

Result:

Fig-1 shows, among 52 cases, 48 (92.30%) were due to obstetrical causes and 4(7.70%) were non-obstetrical but nonmedical causes (indigenous treatment of genital prolapse by quack). Of 48 obstetric fistula cases, 24(50%) delivered vaginally where 16 were multi- and 8 primipara. The rest half of patients (19 multi- and 5 primipara) were delivered by caesarean section, and seems to be iatrogenic. Among 24 iatrogenic cases, 9(37.50%) were "definitely iatrogenic", VCVF with history of live birth where duration of labor pain was less than 24 hours and leakage started immediately; and the rest 15(62.50%) were "likely to be iatrogenic", i.e VCVF with still-born.

Fig-1: Causes of juxtacervical fistula:

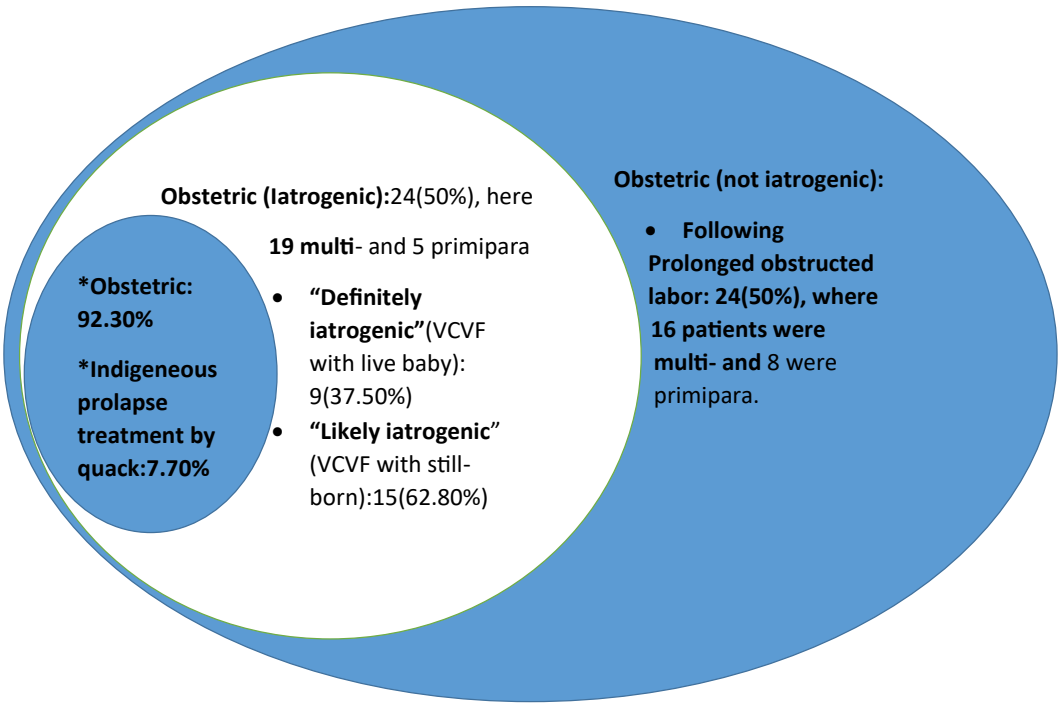

FIG: 1

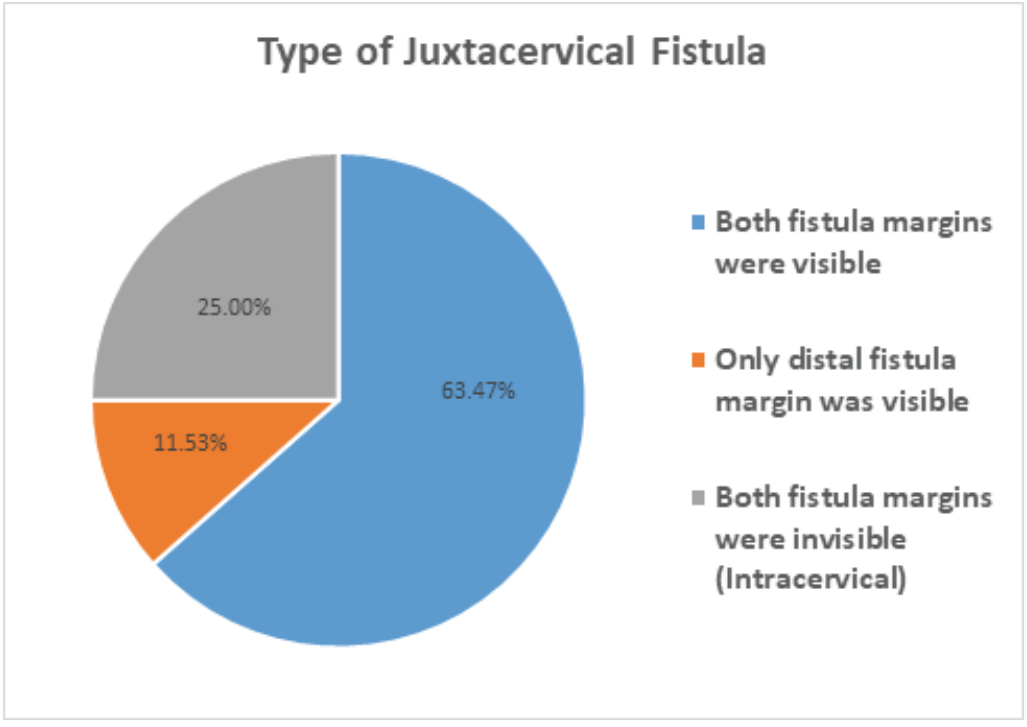

FIG: 2

The pie chart (FIG: 2) shows the types of juxtacervical fistula. Among 52 cases, both fistula margins were visible in 33 (63.47%) patients, both fistula margins were invisible in 13 (25.0%) patients and only distal fistula margins were visible in 6 (11.53%) cases.

Table-1: Cervical/vaginal anatomy distorted / unaltered in obstetric cases

Anatomy	N=48
Avulsed anterior cervical lip	19
Displaced external cervical os	4
Vaginal stenosis with pin-point external cervical os	2
Unaltered	23

Tanterior cervical lip, 4 had extreme lateral displacement of external cervical os and 2 had vaginal stenosis with pin-pointed external cervical os; the rest 23 had unaltered anatomy.

Table-2: Distribution of patients according to size and need of ureteric catheterization during surgery and history of previous repair operation.

(N = 52)

Fistula	Number of patients
Size:	
Medium	29
Small	23
Ureteric catheterization:	
Needed:	10
Not needed:	42
Previous H/O fistula surgery:	
Yes	2
No	50

Table-2 shows, out of 52 cases, 29 had medium and 23 had small sized fistula. Of 52 patients, 10 needed ureteric catheterization and 42 not needed. Only 2 patients had history of previous repair operation.

Table-3: Methods of Repair (N = 52)

Route of repair	Number of patients	Percentage
Vaginal	48	90.30%
Combined	4	7.70%

Table-3 shows, among 52 cases, 48 (90.30%) were repaired through vaginal route by flap splitting method, and 4 (3.84%) by combined abdomino-vaginal route.

Table-4: Outcome of repair during hospital discharge (N=52)

Outcome	Number of patients	Percentage
Successful:	50	96.15 %
Hole closed & dry	47	
Hole closed with SI		
• Moderate SI	1	
• Mild SI	2	
Unsuccessful & drop out	2	3.85 %

Table-4 shows, out of 52 patients, 50 (96.15%) were closed during discharge from hospital (except 2 cases who needed 2nd attempt, rest all were repaired at 1st attempt). Of these 50 cases, 47 were closed without any complication; the rest 4 had closed hole with SI, 1 had moderate and 2 had mild SI. Only 2 (3.85 %) cases were unsuccessful and ultimately drop out.

Discussion:

In this study, 92.30% juxtacervical fistula were due to obstetrical causes. Here 50% of patients were delivered vaginally after prolonged obstructed labor. The possible explanation given previously [14]. Another 50% were iatrogenic fistula (following C-section), either “definitely iatrogenic” or “likely iatrogenic” shown in FIG: 1. In Bangladesh, incidence of prolonged obstructed labor is decreased. Maternal death due to obstructed labor was 3% among age (15-49) in three years preceding the survey, BMMS, 2016; Simultaneously, C-section rate is gradually increasing specially at private facilities [18]. Our aim is to increase the institutional delivery. Regarding C-section, rationality and expertise is utmost important factor.

The rest 7.70% patients developed fistula due to local harmful indigenous treatment for genitourinary prolapse (application of local harmful medicine over prolapse or ligature on the prolapse part or combination of these). Not only in Bangladesh, other developing country like Northern Nigeria where genitourinary fistula was observed following local harmful medicine or technique ("gishiri cutting"- cutting of anterior vaginal wall for treatment of obstructed labor, dyspareunia, dysuria, amenorrhea etc) [19]. So creating awareness through advocacy by local leader, leaflet paper, media etc may be helpful to eliminate this injurious event.

In this study, 72.92% patients were multiparous. “Juxtacervical fistulae are more common in multigravida in whom labor is often obstructed at the inlet because of a secondary flat pelvis “John St. George (1969) cited in Wall (2001) [14].

Some difficulties faced during surgeries: 1) Identification of fistula especially where one or both fistula margins were invisible. 2)

Assessment of fistula size, the tiny fistula found larger during dissection. 3) There was difficulty in exposure where anatomy was distorted. 4) Ureteric orifices near to fistula margin. From beginning to end of surgery, always ureteric position was kept in mind and ureteric catheterization was done as per need. All these repaired done at centers where cystoscopy facility was not available. During repair of juxta-cervical fistula, lateral dissection towards the cervix must be done carefully to avoid ureteric injury [4].

Here, most (90.30%) patients were repaired vaginally. The rest 7.70% cases were repaired combinedly, here dissection started vaginally but the whole of the fistula tract was not accessible, so ultimately repaired abdominally through trans-vesical approach. A retrospective study by Chigbu compared the outcome of juxta-cervical fistula from vaginal or abdominal approach [20], although both had similar primary repair success rate but the abdominal route was associated with more need of blood transfusion.

Among 52 patients, 50 (96.15 %) were primarily closed, of which only two cases needed 2nd attempt of repair. Of these 50 cases, 3 had mild to moderate stress incontinence. Fistula surgery should be done by a skilled fistula surgeon, because the first attempt at repair is likely to be the most successful [21].

Conclusion:

Juxta-cervical fistula is more common in multiparous and also after caesarean delivery. For prevention, close intra-natal monitoring along with expertise during C-section is an utmost important factor.

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