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The Causes and Prophylactic Measures of Vesico-Vaginal Fistula in Yemen

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Original Research Article

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Abstract: The actual causes of urinary (and recto) vaginal fistulae in Yemen are not known exactly, our study will try to determine the causes, thus will help to avoid these bad sequels. This study done at Jibla hospital, 92 patients were included in the study, these patients belong to 10 provinces with their different districts as Jibla hospital is a referral hospital. All cases were studied from the view of residence (urban or rural), the age of marriage (under or above 18 year), availability of health services, obstetrical and surgeon experiences. All measures of study are the same for all cases; any case with special clinical presentations is excluded from study. Out of 92 patients, 46 (50%) of the patients who get vesico-urinary fistulae are married below 18 year age old, 20 (21.7%) of the patients who get vesivo-urinary fistulae sustained pelvic non obstetrical surgeries and 26 (28.3%) of the patients who get vesico-urinary fistulae occurs due to multi factors like poor antenatal care, malnutrition, low education,..etc. Avoidance of early marriage to the females (below 18 year age old), and good training to the surgeons with improvements of antenatal care will reduce the risk of urinary fistulae markedly.
Keywords: VVF, causes and prophylactic measures, surgical principles.

INTRODUCTION

Vesicovaginal fistula (VVF) is an abnormal fistulous tract extending between the bladder (or vesico) and the vagina. There may be just one opening, or may be more, that allows the continuous involuntary discharge of urine into the vaginal vault and since the vagina is not designed to hold urine you will not be able to control this. In addition to the medical sequelae from these fistulas, they affect physical, mental, social and sexual life of the patients [1].

The females with vesico-urinary fistulae will separate them self totally from the community due to bad smell of urine which leaked involuntarily, and she feels shameful, as will as she gets repeated attack of urinary tract infections. It may be the result of a congenital birth condition such as VATER or VACTERAL.

Obstetric fistula is usually caused by childbirth as a result of pronged obstruction of labour when the pressure from the emerging foetus presses on the pelvic walls cutting the blood flow in the region. VVF can also result from violent rape and other forms of trauma hence causing the traumatic istula. 97% of fistula in developing countries is caused by prolonged obstruction of labour [2]. VVF can also result from violent rape; this injury has become common in some war zones, where rape is used as a weapon against civilian populations resulting to VVF [3].

The magnitude of the fistula problem worldwide is unknown but believed to be immense. In developing countries, the predominant cause of VVF is prolonged obstructed labour (97%), which is associated with marked pressure necrosis, oedema, tissue sloughing, and cicatrisation. The frequency of VVF is largely reported in developing countries [4]. Conversely, in industrial countries iatrogenic injury to the urinary tract is the most common cause of VVF and the majority are consequences of benign gynaecological surgery [5]. It is estimated that 0.8 per 1000 of all hysterectomies are complicated by the development of a VVF [6]. Other causes in the developed world include malignant disease and pelvic irradiation [7]. In contrast to obstetric and irradiation fistulas, the typical postsurgical (post hysterectomy) fistula is the result of more direct and localised trauma to healthy tissue [8].

In 2002 the WHO identified the following geographic areas where obstetric fistula prevalence is high: virtually all of Africa and south Asia, the less-developed parts of Oceana, Latin America, the Middle East, remote regions of Central Asia, and isolated areas of the former Soviet Union and eastern Europe. VVFs in developing countries are attributed predominantly to inadvertent bladder injury during pelvic surgery (90%). In contrast to developing countries, countries that practice modern obstetrics have a low rate of VVF [9]. Less frequently, VVF may occur; (1) between the bladder and cervix or uterus; (2) between the ureter and

vagina, uterus, or cervix; and (3) between the urethra and vagina. Of note, a ureteric injury is identified in association with 10-15% of VVFs [10]. Although vesico-vaginal fistulas (VVF) are the most commonly acquired fistulas of the urinary tract, we lack a standardized algorithm for their management [11]. So it is important to know the pre disposing factors or the causes in order to avoid this big event which not affect the mother's health only but also leads to social, psychological and economic problems. The females with vesico-urinary fistulae will completely separate from the community because of the foul smell of urine that has been leaked involuntarily, In addition to feeling shame shy, and also exposed to frequent attack from urinary tract infections.

The present study focuses on the find out the main causes of urinary (or recto) vaginal fistulae, patients' profile, type of fistulae and results of surgical repair of urinary fistulae at a tertiary care hospital within a period of eleven years through the application of a proper rule regarding the age of marriage, proper follow up during pregnancies, proper ways of deliveries, the proper interval periods between pregnancies, nutritional state of mothers and educations of families in particular the mothers about the pregnancies and deliveries.

PATIENTS AND METHODS

Ninety two of vesico-urinary fistulae patients were included in this study. This study was conducted at Jibla hospital in Ibb city, most cases referred to our hospital from other hospitals in Ibb province and other provinces, from January 2007 to December 2017. The history was taken from each patient in this study, including name, age, residency (rural or urban), period of the fistula, age of marriage, The age at which the first pregnancy occurred, the antenatal care facilities, place of delivery (at home or at medical center), normal vaginal or by c/section and the experts of the surgeons.

Clinical examination

Clinical examination were done for each patient to assess the general health (nutritional state, anaemia, physique, ….etc) and local examination including vaginal examination, methylene blue test through folly's catheter is performed for each one to recognize the sites and the numbers of the fistulae. Sometimes cystoscopy examination is done, Intravenous pyelogram (IVP) was done to those patients with possibility of uretro-vasical fistulae or to those patients whom diagnosis is not settled by previous tools, as well as all laboratory tests, x-rays, Electrocardiogram (ECG) and medical consultations needed were done.

Surgeries were done mostly through abdomen or through vaginal vault ,whatever the approach , folly's catheter is inserted to a urinary bladder after proper vaginal disinfection to be used as a guide during dissection, canulation of both ureters is done to avoid ureteric orifices injury and to make sure that both ureters are patent and save guarded specially when the fistula is close to the ureteric orifices, the fistula(or fistulae) is excised and repair is done in tow layers using long absorbable 3 or 4 zero stitches (usually vicryl), after repair , big pore folly's catheter is left between 2-4 weeks and also we put tube drain for 7-10 days, postoperative antibiotics are given, urinary bladder irrigation is done for few days, patient usually discharge from the hospital within 10-12 days.

Note: No fistula repair done after one week or before three months from occurrence depending on tissue repair response.

RESULTS

This study was carried out during a period from January 2007 to December 2017 on 92 patients. This study was conducted at Jibla hospital in Ibb city, most cases referred to our hospital from other hospitals in Ibb province and other provinces. By collecting and analysis the data (92 cases), the detailed results of this study are presented in the following tables and graphs:

Table-1: The distribution of patients according to governorate

Governorate	No. of cases	Percentage (%)
Ibb	48	52.2
Taiz	14	15.2
Dhamar	12	13
Hudaidah	6	6.5
Reymah	4	4.3
Amran	2	2.2
Hajah	2	2.2
Aldhalea	2	2.2
Aljawf	2	2.2
Total	92	100

From total number of patients (92), Ibb governorate represented the highest number of patients (48) with percentage (52.2%), while Amran, Hajah, Aldhalea and Aljawf governorates were the lowest

number (2) with percentage (2.2%) (Table 1); In terms of patient residence in the governorate according to social situation, whether rural or urban, about 72 with percentage (78.3%) of the cases came from rural area while 20 cases (21.7%) from urban area (Table 2).

Table 2: The distribution of patients according to living in governorate

Living place	No. of cases	Percentage
Rural	72	78.3
Urban	20	21.7
Total	92	100

Depending on the type of fistula the results of our study showed that majority of vesico-urinary fistulae are vasico-vaginal (90 %) and less common uretero-vaginal (8.7 %) and rarely recto-vaginal (1.3%)(Table 3).

Table 3: Types of vaginal fistula

Types of fistula	No. of cases	Percentage
V – V F.	83	90.2
U – V F.	8	8.7
R – V F.	1	1.1*
Total	92	100

*post coitus

The results showed according on age; that the ages of patients ranged between 14 and 50 years; there were 46 cases (50%) among married women who were under the age of 18 years (Figure 1).

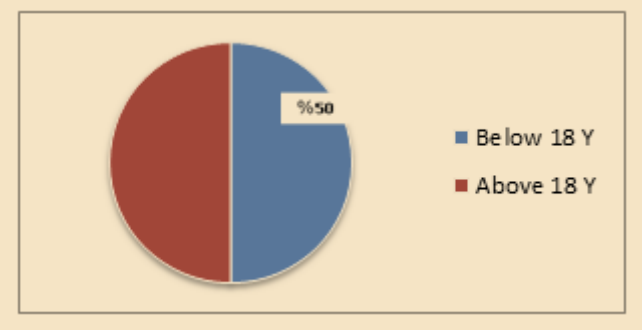

Fig-1: Showing the distribution of patients according on age

Depending on the causes of the fistula, the results showed that 78.3% of the cases were caused by obstetrics, and most of them require immediate surgical interventions (ruptured uterus or ruptured urinary bladder,….etc) while remaining 21.7% are due to non-obstetrical causes (pelvic surgeries including gynecology) (Table 4).

Table-4: Causes of vaginal fistula

Causes of fistula	No. of cases	Percentage
Obstetrical F.	72	78.3
Non obstetrical F.	20	21.7
Total	92	100

Based on the results of surgery, there were 84 cases (91%) came to our hospital for the first repair, while 8 cases (9%) came after surgeries done outside our hospital, Overall success rate of repair at first attempt in our hospital was 75 (81.5%)(Figure 2).

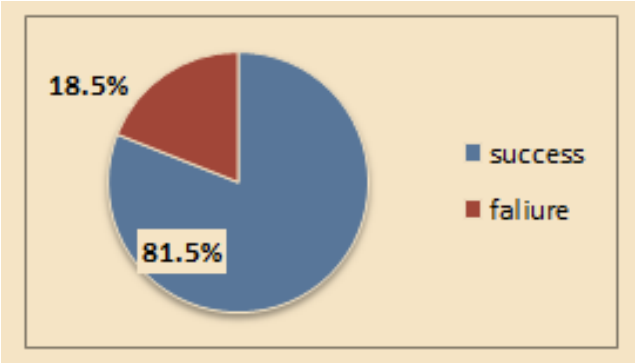

Fig-2: Shows the success rate of fistula repair in the first attempt

DISCUSSION

The purpose of this study is to know the causes of VVF in order to put a plan for prophylaxisto that in Yemen measures to avoid vesico-vaginal fistula in Yemen, these results were developed through scientific analysis to discuss this subject in order to reach reasonable results.

Our results showed that of the urinary-vaginal fistulae results from poor ante natal care, poor nutrition, bad obstetrical history, and insufficient health services during labor especially at rural areas (78.3%) compared with urban areas (21.7%) (Table 2); these results were similar to that found by researcher ngoma, who said that the poverty is the root-cause of obstetric fistulas. Early marriage, low social status for women, malnutrition, and inadequately developed social and economic infrastructures are all more common in poor areas. Most importantly, these areas lack access to emergency obstetric services due to nonexistence of health care centers and trained personnel. Fistulas are most prevalent where maternal mortality is high. Maternal deaths are due to preventable caused by hemorrhage, infection, hypertensive disorders of pregnancy (pre-eclampsia and eclampsia), unsafe abortion, obstructed labor, etc [12].

The highest frequency of VVF was recorded less than 18 year age, accounting for 50% of patients. .(figure 1) (table no.3), This is consistent with the findings of [13], that showed high incidence of fistulae among those who married early in a study conducted at the University of Maiduguri Teaching hospital. Early age of marriage is normally followed by early pregnancy when the pelvis is not adequate for labour [14]. Thus, it can generally be said that the age of acquiring the disease in early adolescence, this is because they have an incomplete body growth and inability to deal psychologically with this new and important event, The results were also similar with the studies conducted in northern Nigeria where a common condition among adolescents was found to be less of 18 years but rare after the age of 30, in addition the identified predisposing factors were early marriage and pregnancy, while unskilled birth attendance and late presentation to the health facilities was common nationwide [15].

Vesico -vaginal fistulae are avoidable complications if we try to avoid the predisposing factors or at least we can decrease the incidence to the minimum , this need teamwork which includes education for the community about the disadvantage of early marriage of females(under 18 year age old), education about the importance of wide intervals between pregnancies and deliveries, proper antenatal care and well trained medical team for deliveries(midwifes and physicians)and well trained surgical team. The findings of a larger proportion of VVF patients being unbooked for antenatal care in this study are consistent with other studies [16]. Reasons as to why most of the cases did not receive any form of antenatal care possibly include the fact that most were rural dwellers and had poor access to health services and facilities. Add to it through results, if early marriage is avoided will reduce the risk of such fistulae up to 50%, so whenever the girls were younger the greater the risk of vaginal fistula. A study done in Nigeria (Kano Teaching Hospital) published by Annal of African Medicine in 2003 reveals that early marriage is the main cause of the v-v fistulae, which is the same result of our study,, as well as other causes such as obstructed labor and poor ante natal care [17]. These problems highlight the need to design and implement an effective health education programme on female education, family life education and utilization of maternity services especially in rural communities. Local governments should have a special counselling and enlightenment programme in their localities for religious and traditional leaders on the subject of VVF in particular the need for community participation in providing transportation and other logistic support so as to avail every pregnant woman with essential obstetric care particularly so during emergencies [18].

The second cause of urinary-vaginal fistulae is pelvic non obstetrical surgeries especially gynecological surgeries (mostly total abdominal hysterectomy), this constituent (21.7%) which indicate poor surgical training (Table 4). There is large difference in the aetiology of vesico-vaginal fistulae

(VVF) around the world. In the developed world, VVF usually occurs after elective hysterectomy. In developing countries the prolonged obstructed labour remains the most common cause of VVF [19, 20]. In our research, obstetrical trauma, resulting from neglected obstructed labour was responsible for developing 72(78.3%) cases of urinary fistulae, which is comparable to the studies conducted by authors from India [21], but is in contrast to studies conducted from Singapore and Thailand [22, 10]; where since nineteenth century the VVF has become more associated with gynaecological surgeries like hysterectomies rather than obstetric procedures. More and more people are interested in treating and caring for these women, but little is known about surgical management and most operators have developed their own methods based on their experience over the years [23].

All fistulae were repaired through vaginal route; trans-abdominal route was reserved only for repair of vesico-uterine, uretero-vaginal fistulae or patient requiring uretero-sigmoid anastomosis. The generally accepted principles of fistulae repair including adequate exposure of operative field, wide mobilization of bladder from vaginal wall, identification of ureters, tension free water tight multilayered closure of bladder and vaginal walls and continuous post-operative bladder drainage were observed. Most commonly method used was multilayered closure. In our series the success rate of repair of vesico-vaginal fistulae from first attempt done at Jibla hospital to those cases which came to the hospital directly is about 81.5% (75 case out of 92 case) while the remaining percentage 18.5% (17 cases out of 92 case) They need another surgeries (figure 2). The selected route of repair of VVF depends on the training and experience of the surgeons. Most fistulae experts are of the opinion that almost all vesico-vaginal fistulae can be repaired by vaginal route [24, 25]. Vaginal route should be preferred because it avoids laparotomy, splitting of bladder and recovery time is shorter with less morbidity, blood loss, post-operative bladder irritability and post-surgical pain [26]. Fistula is repaired within one week or after three months of occurrence depending on tissue repair response. The timing of the fistula repair is one of the contentious aspects of fistula management. Surgical success must not be compromised by operating too early, despite the fact that the waiting period is distressing for the patient. The delay allows slough to separate, inflammatory changes to resolve and reduce the size of fistula. We follow the waiting time period of three months from causation of fistula or previously failed surgical attempts. We believe this gives healthier tissue for operation at the time of surgery. The success rate after fistula repair varies from 85% to 92%, and the best chance for success is with the first operation [27]. In our series, the success rate after the first attempt of repair of urogenital fistulae was (81.5%) which is comparable with the success rate given in the literature [26, 28].

CONCLUSIONS

- About 50% of vesico-vaginal fistulae are a result of early marriage (under 18 year age).
- About 21.7% of vesico-vaginal fistulae are a result of non-obstetrical pelvic surgeries due to poor surgical training.
- About 78.3% of vesico-vaginal fistulae are due to multi factors like results from poor ante natal care, poor nutrition, bad obstetrical history, and insufficient health services during labor especially at rural areas.

RECOMMENDATIONS

- Avoid early marriage of females (under 18 year age old) due to incomplete development of body reproductive organs.
- Good training of the surgeons.
- Improvement of ante natal care and health services to make the labor safe.

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