

Original Article

## Five Years Experience of Ureterovaginal Fistulae Following Obstetric or Gynecological Intervention in Ethiopia

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### ABSTRACT

**Objectives:** To study the etiology, presentation and outcome of women presenting to the Addis Ababa Fistula Hospital with an ureterovaginal fistula.

**Patients and Methods:** Women presenting with ureterovaginal fistulae following obstetric or gynecological intervention. The operating register from June 2004 to July 2009 was studied to identify women who had undergone ureteric re-implantation. Patient files were reviewed and only women with fistulae resulting from iatrogenic injury were included.

**Results:** Ureterovaginal fistulae were found in 89 women, 64 after Caesarean section, of which 43 were for a stillborn baby, 12 women have uterine rupture, 6 with instrumental delivery and only 7 with abdominal hysterectomy. The left ureter was most frequently injured (54). The number of patients seen has doubled over the past two years. Using one of four methods of repair, 88 women were continent at discharge from hospital. One died from a suspected pulmonary embolism.

**Conclusion:** The incidence of iatrogenic ureteric injury is increasing in Ethiopia and most result from Caesarean section. The reasons should be studied. Using a variety of repair techniques, all patients can be cured. However, surgeons undertaking this surgery should have a wide range of urological training.

**Key Words :** Ureter, vagina, fistula, iatrogenic, caesarean section, hysterectomy, complication

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### INTRODUCTION

In the past five years over 5000 women have been treated for obstetric urogenital fistulae at the Addis Ababa Fistula Hospital. In this retrospective study we have reviewed the etiology, presentation and outcome of 89 women who were found to have ureterovaginal fistulae resulting from obstetric or gynecological intervention.

In other reported studies, the great majority of iatrogenic ureteric injuries occurred during abdominal hysterectomy, and much less frequently following Caesarean section or other pelvic surgery<sup>1,2</sup>.

An increasing occurrence of ureteric injury resulting from Caesarean section has not been previously reported, and may be a feature of Ethiopian practice. It is unusual for one hospital in a country to deal with all the cases of identified ureteric injury, as they usually occur in very small numbers in different hospitals and would not be considered worthy of report in a scientific journal. This is not the case in Ethiopia. The Addis Ababa Fistula Hospital deals exclusively with women with urinary incontinence following obstetric or gynecological intervention, and to which all women in Ethiopia with fistulae are referred.

## **PATIENTS AND METHODS**

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The operating theatre register between June 2004 and July 2009 identified all patients who underwent ureteric re-implantation. The case notes and imaging studies were reviewed to ensure that patients with a ureter outside the bladder as a result of prolonged obstructed labor were not included.

Over this period, 89 women were identified as having ureterovaginal fistulae (imaging studies were reviewed in 85 cases). The number presenting each year is shown in the Table. The mean age was 31 years (range 18-53 years), 23 were primiparous, and 66 were multiparous. The median duration of urinary incontinence was 3 months, varying from 5 days to 20 years. The patients were referred from 44 hospitals, with a range of 1 to 6 patients per hospital (20% came from teaching hospitals).

## **RESULTS**

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The causative procedure in 64 out of 89 patients was Caesarean section (43 were for a stillborn baby), 12 women had suffered from a uterine rupture, 6 had an instrumental delivery, and only 7 an abdominal hysterectomy for a gynecological cause. In 54 women the injury involved the left ureter, 33 the right and 2 were bilateral. A concomitant vesicovaginal fistula was present in 21 patients. Intravenous urography was performed in 85 patients, which was normal in 7, 12 had no excretion of contrast, 34 showed delayed excretion and 60 pelviureteric dilatation (some patients had more than one abnormality).

Four different methods of repair were used. In 69 patients the bladder was of sufficient size and the ureter of sufficient length to use the "drop-in" technique combined with a psoas hitch<sup>3</sup>. In 16 patients the ureteric injury was more extensive, and a Boari flap was performed. Two patients underwent a transureteroureterostomy, and in one with bilateral ureteric injury an ileal interposition was performed.

One patient died from a suspected pulmonary embolism. All other patients were continent at discharge from hospital.

In view of their poverty and the distances that these patients live from the hospital, we have no long-term data with regard to follow-up.

## **DISCUSSION**

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In one of the largest studies of urinary tract injuries following gynecological and obstetric procedures, only two ureteric injuries occurred in 12567 Caesarean sections. These resulted from extension of the uterine incision into the broad ligament, with subsequent hemorrhage and poor visualization<sup>1</sup>. In a series of urological injuries following Caesarean section, the majority occurred when the Caesarean section was done on an emergency basis<sup>4</sup>. In an African setting, ureteric injury followed hysterectomy in 9 out of 19 cases, and Caesarean section in 6 out of 19 cases<sup>2</sup>. The incidence appears to be twice as common in multiparous women, and as these injuries present while the women are still in hospital they present early and are rapidly referred for treatment.

It is noteworthy that there are five hospitals in Ethiopia carrying out VVF repair, but the only hospital performing repair of iatrogenic ureteric injuries is the Addis Ababa Fistula Hospital

In this study, the incidence of ureteric injury appears to be increasing along with the increased incidence of Caesarean section. Why this is the case is not clear, but in many hospitals in Ethiopia Caesarean sections are performed by trainees without supervision. Destructive procedures for the delivery of a dead baby are taught, but very rarely performed. If the instructions were followed, then 44 injured ureters in this study might have been avoided. It is well-recognized that the left ureter is at greater risk due to

**Table 1:** Number of women with ureterovaginal fistula according to year of presentation.

Year of presentation	Number of cases
July 2004 – June 2005	14
July 2005 – June 2006	13
July 2006 – June 2007	14
July 2007 – June 2008	23
July 2008 – June 2009	25

rotation of the uterus by the sigmoid colon during pregnancy<sup>5</sup>. It is also recognized that for a right-handed surgeon, standing on the left-hand side of the patient when operating in the pelvis makes tissue handling and identification much easier. The majority of right-handed obstetricians, however, stand on the right-hand side to carry out a Caesarean section. If they were to change their position the incidence of ureteric injury might have been reduced.

There is considerable debate as to why the Caesarean rate is increasing. Being “too pushy to push” is probably not a major factor in public teaching hospitals or rural district hospitals in Ethiopia. Although it may be a factor in some private hospitals, only one patient in this study had been treated at a private hospital. An instrumental delivery or a symphysiotomy might have been appropriate in some of these women.

Four methods of ureteric re-implantation were successfully used. The majority were cured using the simple “drop-in” procedure<sup>3</sup>. Surgeons undertaking repair should have the skills necessary to undergo alternative methods of repair if required.

Intravenous urography was of value in identifying the side of the lesion in the majority of cases. In those with normal intravenous urogram, the left side was always explored first, and if a dilated ureter was found a ureteric catheter was passed to see if it entered the bladder. If it did, the right ureter was then explored and re-implanted.

In conclusion; iatrogenic injury to the ureter is a serious complication. This is the first report of an increasing incidence following Caesarean section, which in many cases could have been avoided by performing an alternative procedure for the delivery of a stillborn baby. The most likely etiology in this study is poor training and supervision of obstetric trainees, which could be overcome with the use of senior visiting obstetricians to act as mentors.

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### **REFERENCES**

1. Nawaz FH, Khan ZE, Rizvi J. Urinary tract injuries during obstetric and gynaecological surgical procedures at the Aga Khan University Hospital Karachi, Pakistan: a 20-year review. *Urologica Internationalis* 2006; 78: 106 – 111
2. Mteta KA, Mbwambo J, Mvungi M. Iatrogenic ureteric and bladder injuries in obstetric and gynaecological surgeries. *East Afr Med J* 2006; 83: 79 – 85
3. Mitterdorfer A, Williams G, Castro JE. Vesico-ureteric reflux following renal transplantation – a simple method of reimplantation. *Brit J Urol* 1981; 53: 111 - 114
4. Yossepowitch O, Baniel J, Livne PM. Urological injuries during cesarean section: intraoperative diagnosis and management. *J Urol* 2004; 172: 196 – 9
5. Elliot SP, McAninch JW. Ureteral injuries: external and iatrogenic. *Urol Clin North Amer* 2006; 33: 55 – 66