

## CASE REPORT

# Herniorrhaphy: an unusual cause of ureteral injury in Nigeria

Amogu K. Eziyi<sup>1</sup>, Amarachukwu C. Etonyeaku<sup>2</sup>, Abimbola O. Olajide<sup>1</sup> & Musibau. O Adejumobi<sup>1</sup>

<sup>1</sup>Department of Surgery, Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Nigeria

<sup>2</sup>Department of Surgery, Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Osun State, Nigeria

### Correspondence

Amarachukwu C. Etonyeaku, Department of Surgery, Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Osun State, Nigeria. Tel: +234-8036-369808; E-mail: dretonyeaku@gmail.com

### Funding Information

There was no funding solicited or received for this work.

Received: 3 February 2014; Revised: 14 May 2014; Accepted: 8 June 2014

*Clinical Case Reports* 2014; 2(6): 247–249

doi: 10.1002/ccr3.98

## Introduction

Case reports are important as they describe rare clinical conditions, highlight uncommon challenges or therapeutic adaptations. They can, however, draw attention to uncommon sequel of standard treatment to serve as caution in future practice. Herniorrhaphy is a common elective surgical procedure worldwide [1–3]. Ureteric injury following herniorrhaphy is rare [4]. This is probably the first reported case from Nigeria.

## Case Report

We present a 66-year-old male farmer with right inguino-scrotal swelling noticed 10 years earlier which became irreducible 2 years prior to presentation. Three hours prior to presentation, he developed noncolicky suprapubic pain and nausea. There was no vomiting, constipation or abdominal distention. He had dysuria, urgency, urge incontinence, and feeling of incomplete emptying of the urinary bladder. He had a chronic dry cough and smoked two packets of cigarette per day in last 15 years. He was not febrile, pale or dehydrated. His respiratory rate, pulse

### Key Clinical Message

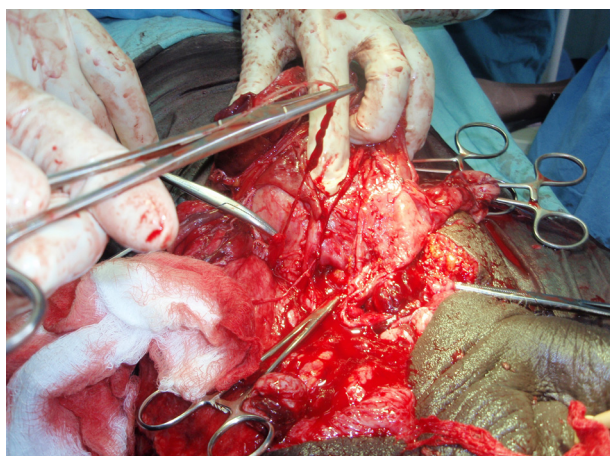
Herniorrhaphy is a common surgery worldwide. Common complications include hemorrhage, infection, chronic pain, and recurrence. Ureteric injury from herniorrhaphy is unusual. We present a case of ureteric injury complicating an inguinal herniorrhaphy for a huge right inguino-scrotal hernia. Patient had primary uretero-neocystostomy but died from septicemia in the postoperative period.

### Keywords

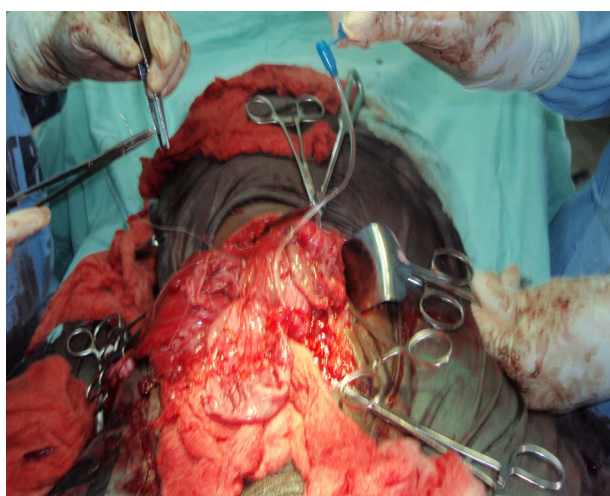
Complications, herniorrhaphy, sliding hernia, ureteric injury.

rate and blood pressure were 22 cycle per minute, 100 beats per minute and 200/120 mmHg respectively. The abdomen was full and he had suprapubic tenderness. There was an irreducible right inguino-scrotal swelling masking ipsilateral testis. The bowel sounds were normal. Digital rectal examination revealed an enlarged prostate. A provisional diagnosis of lower urinary tract infection (UTI), incarcerated right inguino-scrotal hernia with bladder outlet obstruction due to prostatic enlargement was made. The complete blood count, fasting blood sugar, serum electrolytes, urea, and creatinine, prostate-specific antigen, urine microscopy, culture and sensitivity, chest x-ray, and electrocardiography done were all normal. Ultrasonography revealed a thickened urinary bladder wall, bilateral pelvi-calyceal dilatation of kidneys but the ureters could not be visualized. Prostate gland was enlarged with heterogeneous echo pattern while other intraabdominal structures were normal. Scrotal ultrasound reported a large cystic mass on the right extending into the groin and surrounded by loops of bowel. The patient's anesthetic risk was assessed to be ASA III (E). Patient had urethral catheterization and intravenous antibiotics. Blood pressure was controlled with sublingual

nifedipine. He consented to herniorrhaphy. Intraoperative findings were: a right pantaloon hernia sac (the indirect sac containing an inflamed appendix about 16 cm in length, while the direct sac component contained grossly normal cecum and the urinary bladder). The right ureter was inadvertently transected during dissection which necessitated laparotomy and conversion from spinal anesthesia to general anesthesia. The patient had Bassini-type right inguinal herniorrhaphy and reimplantation of the transected right ureter into the urinary bladder over a transvesical ureteric stent (figure 1 and 2) an urologist at the same session. Surgery lasted about 3 h. He developed features of Systemic Inflammatory Response Syndrome (SIRS) which progressed to multiple organ failure culminating in death by the fourth day postsurgery. Postmor-



**Figure 1.** Showing the transected ureter held with a clamp.



**Figure 2.** Showing the insertion of size 5 feeding tube as a stent post-ureter-neocystostomy.

tem was not done as relatives declined consent. Probable cause of death was septicemia with multiple organ failure.

## Discussion

Groin hernia surgery demands sound knowledge of the anatomy of the region as it does the principles of good perioperative care. Complications may arise from groin hernia repair; these commonly include: hemorrhage, surgical site infection, numbness of groin, chronic pain, and abnormal scar [5]. Injuries to gut and bladder can occur during repair of complicated hernias (incarcerated, obstructed or ischemic/gangrenous) and in *hernia-englissade*. The latter type was noted in our patient.

Generally ureteric injuries are either caused by external violence, usually penetrating missiles, or more commonly from surgical misadventure. Ureteric injury may complicate 0.5% to 1.0% of all pelvic operations. Most of these are gynecologic procedures, urinary tract procedures commonly account for 30%. The most common procedures are hysterectomy, salpingo-oophorectomy, vesico-urethral suspension, ureteroscopy, endo-pyelotomy, and ureterolithotomy and surgical procedures on the great vessels and colon as well as retroperitoneal tumor excision [6]. Lately, laparoscopic procedures have become a common cause of ureteric injuries [7]. Ureteric injury following groin hernia repair is extremely rare [4]. It is likely to occur if the ureter forms part of the sac or is contiguous with the spermatic cord as was seen in this patient. Ureteric herniation can either have a peritoneal covering (Para-peritoneal herniation, 80%), or lacks peritoneal covering (extraperitoneal, 20%) [4]. Para-peritoneal ureteric hernia is common on the right, in males between fourth and sixth decades of life, and occurring in association with a sliding indirect hernia. Our patient fits into the description. The hernia was a decade old and had been incarcerated for 2 years. These could distort anatomical planes (due to adhesion) and make dissection difficult. The patient also had UTI, symptomatic prostatic enlargement, and hypertension; all of which could promote adverse surgical outcome. Ureters within the hernia sac or contiguous to it can be identified as a thickened cord which exhibits peristalsis especially when stimulated, and contain fluid (urine) on test aspiration. The lower urinary symptoms (LUTS) noted in the patient could have been from the prostatic enlargement or from the involvement of the bladder in the hernia process or from the UTI. The presence of prostatic enlargement with dilatation of proximal urinary tract as seen in our patient was previously reported by Kate et al. [8]. Preoperative diagnosis of groin hernia containing the ureter or bladder can be made with a micturating cystogram [9] or an intravenous urogram. This could help avoid ureteric

injury during surgery by delineating its path. Early detection at time of injury and primary repair is said to confer better prognosis [10]. Intraoperative localization of point of ureteric injury can be achieved using intravenous 5 mL of indigo carmine intravenously and observing its extravasations into the periureteric tissues.

The diagnosis of a ureteric injury generally is not made until many days after the injury has occurred. Most common signs and symptoms seen in these patients are flank pain, fever, anuria (if bilateral), uretero-vaginal fistula, and uretero-cutaneous fistula. In these conditions, an excretory urogram or computerized tomography (CT) scan would be mandatory. If the patient is scheduled for exploration or the presence of an injury is in doubt, then a retrograde ureterogram is strongly advised. Uretero-neocystostomy can be used to repair distal ureteric injuries that occur so close to the bladder thus precluding need for a “psoas hitch” or Boari procedure. Our patient’s injury was detected at surgery and primary repair was done. Death following hernia repair has been previously reported [11]. Mortality is said to be worse in the elderly, following emergency procedure and in the face of comorbid diseases [12]. The mortality recorded may be due to his high preoperative cardio-pulmonary risk status (long-term smoking with chronic cough, and severe hypertension); long duration of surgery in an elderly patient who had spillage of potentially infected urine in to the surgical wound. The resultant septicemia from the latter coupled with the metabolic response to surgery in an already challenged cardio-pulmonary system could be enough to tip him into SIRS and finally death from multiple organ failure. We cannot categorically state the primary cause of death; an autopsy would have helped elucidate this. Autopsy was not done because patient’s relations did not consent to it.

## Conclusion

Complete inguinal hernia may contain the lower urinary tract especially if the patient presents with LUTS. Preoperative radiological evaluation is advised in such cases to avoid injury to the ureter and/or bladder.

## Conflict of Interest

None declared.

## References

1. Mbah, N. 2007. Morbidity and mortality associated with inguinal hernia in Northwestern Nigeria. *West Afr. J. Med.* 26:288–292.
2. Bax, T., B. C. Sheppard, and R. A. Crass. 1999. Surgical options in the management of groin hernias. *Am. Fam. Physician* 59:143–156.
3. Agbakwuru, E., A. O. Arigbabu, and O. D. Akinola. 1995. Local anaesthesia in inguinal herniorrhaphy: our experience in Ile-Ife, Nigeria. *Cent. Afr. J. Med.* 41:405–409.
4. Sharma, R. K., K. Murari, V. Kumar, and V. K. Jain. 2009. Inguino-scrotal extra-peritoneal herniation of a ureter. *Can. J. Surg.* 52:E29–E30.
5. Jenkins, J. T., and P. J. O’Dwyer. 2008. Inguinal hernias. *BMJ* 336:269–272.
6. Assimos, D. G., L. C. Patterson, and C. L. Taylor. 1994. Changing incidence and etiology of iatrogenic ureteral injuries. *J. Urol.* 152:2240.
7. Fahlenkamp, D., J. Rassweiler, P. Fornara, T. Frede, S. A. Loening. 1999. Complications of laparoscopic procedures in urology: experience with 2,407 procedures at 4 German centers. *J. Urol.* 162:765.
8. Kraft, K. H., S. Sweeney, A. S. Fink, C. W. M. Ritenour, and M. M. Issa. 2008. Inguino-scrotal bladder hernias: report of a series and review of the literature. *Can. Urol. Assoc. J.* 2:619–623.
9. Sripathi, S., K. V. Rajagopal, C. Kakkar, and A. Polnaya. 2011. Case Report-Inguinoscrotal ureteral hernia diagnosed on micturating cystourethrography. *Indian J. Radiol. Imaging* 21:199–201.
10. Blandy, J. P., D. F. Badenoch, C. G. Fowler, B. J. Jenkins, and N. W. Thomas. 1991. Early repair of iatrogenic injury to the ureter or bladder after gynaecological surgery. *J. Urol.* 146:761–765.
11. Nilsson, H., G. Stylianidis, M. Haapamäki, E. Nilsson, and P. Nordin. 2007. Mortality after groin hernia surgery. *Ann. Surg.* 245:656–660.
12. Haapaniemi, S., G. Sandblom, and E. Nilsson. 1999. Mortality after elective and emergency surgery for inguinal and femoral hernia. *Hernia* 4:205–208.