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# Ureteroinguinal herniation causing Ureterohydronephrosis: About one case

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**Abstract**
Ureteroinguinalheniation is a typically rare event. It is most often diagnosed with signs of complications, such as Ureterohydronephrosis on strangulation or kinking of the ureter, mostly objectified on balance sheets of unilateral lumbago. The ureter inguinal hernia must be a systematic differential diagnosis in the presence of a clinical examination revealing a clinical inguinal hernia associated with urinary signs such as unexplained ureterohydronephrosis or urinary infection or even renal failure. Here we report the case of a patient with left ureter inguinal hernia objectified in front of left lumbar pains, whose scanner showed the ureter which was bent in the hernia sac. A surgical cure of the hernia was carried out with a good evolution and disappearance of Ureterohydronephrosis.

**Keywords:** ureter inguinal herniation, ureterohydronephrosis, URO-CT.

## Introduction
Ureteral hernias are rare, usually seen in older men and are complicated by ureterohydronephrosis and even renal failure [1-4]. We report a direct left inguinal hernia of ureteral content diagnosed with uro-CT with signs of renal obstruction in order to understand its mechanisms, characteristics and complications to improve its treatment.

## Observation
It was a 70-year-old man with a history of surgical treatment of a left inguinal hernia 5 years ago, came for chronic left lumbar pain, physical and biological exams were without particularity.
Abdomino-pelvic ultrasound showed a left uretero-hydronephrosis without visualization of obstacles. The retro-vesical ureter was not dilated. There was no dilatation of the excretory cavities of the right kidney. In addition, a major prostatic hypertrophy estimated at 380 grams was highlighted.
A complementary uro-CT was performed and confirmed the results of the ultrasound. The left unilateral uretero-hydronephrosis was explained by the visualization of a left inguinal hernia with fat content but also the left ureter which was cranked (Figure 1) and thick-walled (Figure 2), at the origin of the upstream dilation. There was a delay in nephrography and secretion of the left kidney with ureteral opacification after 24 hours of injection. The retrovesical ureter was fine. There was no morphological abnormality of the right kidney.
Surgical treatment of the hernia was done and the evolution was favorable with the disappearance of uretero-hydronephrosis at 03 months of post-surgical control.


**Fig 1a:** axial CT scan without contrast injection showing two sections of thick-walled intra-hernial left ureter (Arrow)

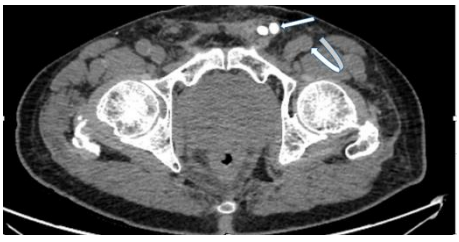

**Fig 1b:** axial CT scan after contrast injection at very late time (24 hours) showing opacification of the left intra-hernial ureter in the inguinal position (arrow). Note the inguinal vessels out and back (curved arrow).

**Fig 1c:** abdomino-pelvic CT after contrast injection at very late (24 hours) time in coronal reconstruction showing left ureteral inguinal hernia with opacification of the intra-hernia ureter which is bent.

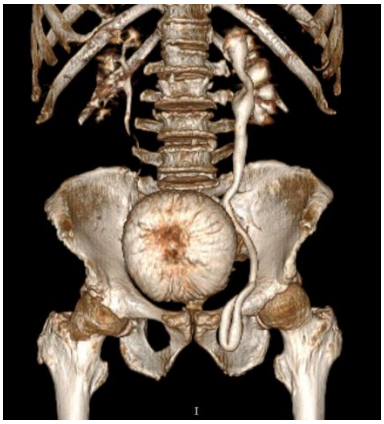

**Fig 2:** CT image after injection of constrast product at very late time (24 hours) in 3D volume reconstruction visualizing a left ureteral hernia with ureteric bend at the origin of a ureterohydronephrosis.

## Discussion

Ureteral hernias were first described in 1880 and fewer than 140 cases were reported in the literature [1].

Inguinal ureteral hernias are the most common forms of ureteral hernias, as reported by Pollock *et al* [6], ahead of the femoral ureteral hernias encountered in women [7]. Male gender, obesity, age above 50 years, and history of recent surgery are risk factors [8, 9].

Our case was discovered in a setting radiological etiological assessment in front of urinary signs and with a history of surgical cure of an ancient hernia. A similar case was described by Pierpaolo Di Nicolo *et al* in 2016 in a 52-year-old man who had dysuria and slight left inguinoscrotal pain with a history of left inguinal hernia while the abdominal examination was normal and the diagnosis was posed in front of the radiological signs [9]. Inguinal ureteral hernias can only be diagnosed at the stage of urinary infection or even sepsis. In this context, C Witney-Smith described a state of sepsis in a patient with left ureteral hernia in the sciatic foramina, giving an uretero-hydronephrosis with urinary tract infection [10].

It has been analyzed and demonstrated by Zarif Yahya *et al*. [1] or Pierapaolo Di Nicolo *et al*. [9] that ureteral hernias are more frequent on the right than on the left. In fact, on the left, Toldt's fascia is located on the secondary root of the sigmoid mesocolon, which seems to become narrowed and attached to the ureter in the retroperitoneum, making it more stable [1].

However in our case, the hernia was rather observed on the left as in the case described by Pierpaolo Di Nicolo *et al*. [9] because of the existence of the old ipsilateral inguinal hernia in the patient's history.

Pathologically, there are two types of ureteral inguinal hernias: the most frequent are paraperitoneal hernias and extraperitoneal hernias which only constitute 20% of the hernias encountered [9]. Paraperitoneal hernias have an external oblique peritoneal bag and are by far the most common, as described by Udit Singhai *et al*. [6]. On the other hand, extraperitoneal hernias, which are rarer as in our case, the hernia sac only contains fat and the ureter, without peritoneal sac as in the case described by Pierpaolo Di Nicolo [9], and J. Giuly *et al*. [11]. These extraperitoneal inguinal hernias tend to have a congenital origin. During embryonic development, the ureteral bud does not separate from the Wolff's duct and both migrate to the scrotum when the testicles descend as explained by Ayse V. Dikmen [5]. These cases can occur at any age because the anomaly exists since birth. During the surgical cure, these hernias often contain retroperitoneal fat, but without peritoneum found in the bag [8].

The direct character of our hernia case is based on the fact that the bag remains separated from the spermatic cord that passes in front of it. The deep opening of the hernia is wide and sits inside the epigastric artery, next to the superficial inguinal ring. This type is rare compared to the indirect hernia that passes through the inguinal canal along the spermatic cord. These direct hernias are rather acquired and not congenital and in our case, this can be explained by a muscular weakness related to the antecedent of the ancient hernia already treated surgically.

Radiographic features were mainly characterized by uretero-hydronephrosis initially seen on ultrasound, as well as visualization of the hernia bag containing the ureter on CT and MRI. This bent aspect of the ureter seen in our patient is described by Pierpaolo Di Nicolo *et al*. [9] on ultrasound, showing in longitudinal section an anechoic tubular structure centered by an echogenic rail corresponding to the ureteral wall in the distinct inguinal canal of the testicle, and in axial section two anechoic rounded structures superposed, corresponding to the ureter which bends on itself. Intravenous urography's results were described by O. Feyisetan *et al*. [13] who reported the case of a bilateral inguinal hernia with ureteral content with coarsely elongated ureters, writhing in the hernia sacs, responsible for dilation of excretory pathways upstream.

Surgical treatment no longer needs to be shown as the appropriate treatment even if some exceptions are beyond the rule especially in the case of low symptomatic hernias where a surveillance can be adopted while evaluating some features such as the limitation of activities due to pain or physical performance [12].

## Conclusion

Ureteral inguinal hernia is a rare affection. However, presence of urinary signs, particularly obstructive signs associated with inguinal swelling or risk factors of hernias, must first investigate an ureteral hernia because of the serious complications it may cause, namely renal failure by hydronephrosis or sepsis condition. Surgical treatment remains the appropriate treatment, with a favorable prognosis if done in time.

**Conflicts of interest:** none
**Ethical committee approval:** approved
**Patients consent:** approved

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