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Retrocaval Ureter: A Case and Review of the Literature

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ABSTRACT

The retrocaval ureter is a rare disease found most often in young adult males, the usual clinical manifestation is right lumbar pain due to obstruction of the upper urinary tract. The diagnosis is based on CT and the treatment is mainly laparoscopic as our observation shows.

Key Words: Retrocaval ureter, urinary tract, circumcave, congenital anomaly

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INTRODUCTION

The retrocaval ureter (circumcave or postcave) is a rare congenital anomaly of the inferior vena cava and ureteral relationship where the infra-renal segment of the inferior vena cava is prominent to the embryologically normal ureter [1]. It manifests itself as an irregularity in the embryogenesis of the inferior vena cava and not in that of the ureter. Clinical symptomatology is not specific to the abnormality and diagnosis is based on imaging data [2].

OBSERVATION

This is a 20-year-old patient who has been consulting for right-sided lumbago for a year and a half, has no particular history, and the clinical examination is strictly normal. The biological assessment was without particularities. The abdominal ultrasound shows a dilated pyeloureteral right extended on 10cm without a visible obstacle. Uroscanner is in favor of right ureteropyelocalicic dilatation on probable ureter retrocaval (Figure1). The patient was admitted to the operating room for the management of a retrocaval ureter by laparoscopic approach (Figure2).

The procedure consisted of a release of the adhesions and resection of the subcellar zone, finally an anastomosis on a JJ probe, and drainage of the retroperitoneum. The duration of the intervention was 120 minutes. The patient was discharged on D4 postoperatively and the ablation of the double probe was done one month postoperatively.

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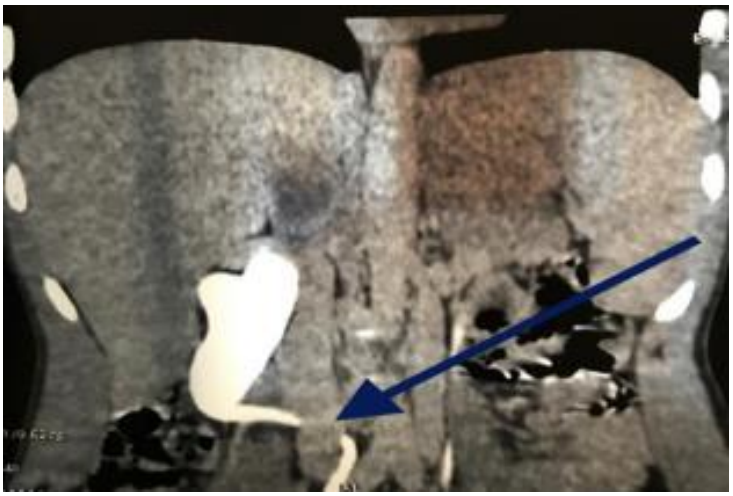

Figure 1 : CT appearance of a right ureteropyelocalicielle dilation evoking a retrocaval ureter

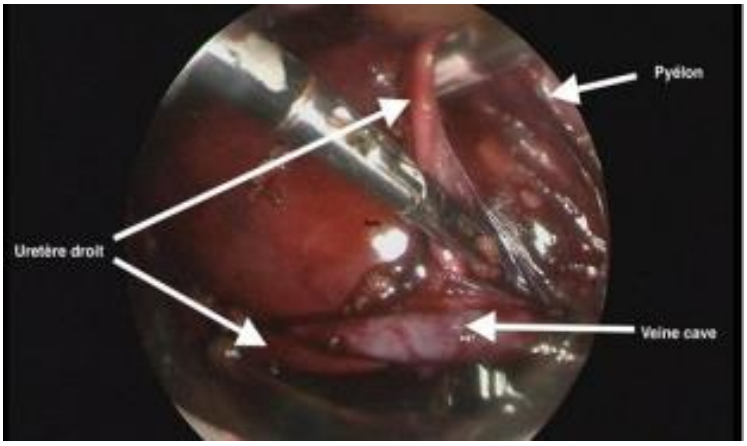

Figure 2: an intraoperative image of the ureter, right pyelon, and vena cava.

DISCUSSION

The retrocaval ureter (circumcave or postcave) is a rare congenital anomaly of the ratio of the inferior vena cava and the ureter, where the infreninal segment of the inferior vena cava is placed in front of the embryologically normal ureter. The first autopsy case was reported in 1893 [3]. Nowadays more than 200 cases have been collected and the frequency is always increasing. The average age of discovery of this anomaly is 40 years with a male predominance (sex ratio of 3 men / 1 woman). Only 25 cases were reported in children in the literature [4]. Embryologically, the retroclaved ureter is an abnormality of development of the venous system and not of the urinary system. The constitution of the inferior vena cava is made from three bilateral venous systems. The posterior cardinal veins are longitudinal in the dorsolateral position, the subcardinal veins in

the medial position, and the supracardinal veins responsible for the final formation of the IVC. The persistence of the posterior cardinal vein is at the origin of the retrocaval ureter, that of the right supracardinale vein gives a normal ureter, whereas persistence of the left supracardinal vein with vena cava positioned on the left side and the vein right supracardinale is associated with the duplicity of the IVC and normal ureter [5]. An anatomical classification, proposed by Kenawi and Williams in 1976 [6], distinguishes two anatomical types according to the height of the retrocaval segment of the ureter. This is based on the radiographic aspect and the location of the narrowing of the ureter. Type 1 is more common and occurs in 94% of cases [7]. The path of the ureter is normal until the height L3 where it then passes behind the inferior vena cava. Type 2, the pelvis and the initial segment of the ureter occupy an almost horizontal position. The location of the median deviation of the ureter is located more proximally than is the case in type 1. The curve that the ureter forms passing behind the inferior vena cava is light and thus takes the form of a sickle. The degree of dilatation of the pyelocaliciel system and the ureter is less pronounced in this type. In our three patients, radiological examinations showed a type 1 retrocaval ureter. In terms of diagnosis, the clinical symptomatology is nonspecific but generally related to the degree of the obstruction and associated complications. Apart from some cases of asymptomatic retrocaval ureter accidentally discovered during a radiological examination such as the case of our first patient, 80% of the CRUs are revealed by various clinical manifestations [8]. In adults, pain is the most common sign either in the form of intermittent or constant back pain or renal colic attacks. In children, infection dominates the clinical picture with fever, abdominal pain, and vomiting. However, no symptoms are pathognomonic retrocaval ureter and the diagnosis of this malformation is based on imaging means including intravenous urography and urography. In addition to their diagnostic value, they make it possible to assess the consequences of ureteral obstruction and to detect associated lesions (congenital malformation, acquired pathology of the urinary system). These elements help to determine the therapeutic indications. At a distance, they allow the monitoring of operated or non-operated patients [9]. Therapeutic indications depend primarily on the degree of obstruction of the malformation but also the repercussion on the renal parenchyma; ranging from surgical abstention, which is justified only in the non-obstructive retrocellular ureter without renal pain, to nephrectomy performed in the rare cases of kidneys destroyed. Conventional or laparoscopic conservative surgery is of interest in other cases. The method usually used is the uncrossing of the ureter with the restoration of continuity of the excretory tract. However several other surgical techniques have been described including section and anastomosis of the inferior vena cava, and v. cava supporter (the vena cava supporter) ; all these techniques can be performed in open surgery or laparoscopic surgery. The technique of sectioning and anastomosis of the inferior vena cava is currently abandoned because it leaves in place a ureteral segment that may contain intrinsic anomalies causing the obstruction [2]. Laparoscopic reconstructive techniques have been described by several authors who believe that laparoscopic surgery should be a technique of choice in the surgical treatment of retrocaval ureter. Indeed Salomon et al. [10] reported the first extraperitoneal case, whereas the transperitoneal approach remains the most common [11]. According to CHEN et al. [12], this technique offers several advantages over conventional open surgery: it is minimally invasive, the convalescence period is shorter and the cosmetic effect is better.

CONCLUSION

The retrocaval ureter is a congenital malformation whose diagnosis is based on the uro-scanner. Although conventional open surgical treatment has satisfactory results, laparoscopic surgery offers many

benefits including a less invasive approach and good functional results.

Competing interests

The authors declare that they have no competing interests.

Author contributions

All authors contributed to the development of this publication and approved the final manuscript.

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