



Trauma and reconstruction

Laparoscopic approach for retrocaval ureter: How to decrease surgical time?

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Introduction

A retrocaval ureter or circumcaval ureter is the result of an abnormality from the posterior cardinal vein persisting as a segment of the infrarenal vena cava (VC) during development. Open ureteroureterostomy has been the gold standard for many years.

However, with the growth of minimally invasive surgery, which reduced postoperative pain, promotes less intraoperative bleeding with earlier return to daily activities and has excellent cosmetic results, laparoscopic procedures have almost replaced open Surgery.

But the main limiting factor is increased the surgical time.

Through this clinical case and literature review, we try to provide tips to overcome this problem.

Observation

A 45-year-old man presented with recurrent attacks of flank pain of three years duration. Ultrasound showed right hydronephrosis and dilatation of the upper third of the right ureter. Intravenous urography showed the “reverse J” shape of the collecting system suggested retrocaval ureter. CT urography confirmed the diagnosis (Fig. 1).

Laparoscopic transperitoneal retrocaval ureter repairment was planned for our patient.

Patient was placed under general anesthesia. A Foley catheter was inserted and the patient was placed in a 60-degree lateral decubitus position. A transperitoneal approach was used. A 12 mm port was placed at the umbilicus for the laparoscope, using an open technique. Two 5 mm ports were placed under direct vision, including 1 lateral to the right rectus muscle at the level of the umbilicus and 1 in the midline between the umbilicus and xiphoid process. An additional port was placed under ribs port.

Retroperitoneal region visualised through the incision of Toldt line and medialisation of the ascending colon.

After exposing the retroperitoneum, the dilated ureter was identified and dissected out up to the lateral border of VC. The lower ureter also was mobilized in the inter-aortocaval region.

The retrocaval segment was then entirely separated from the VC. It had a completely normal appearance (Fig. 2).

The distal part of the dilated right renal pelvis was divided and the right ureter was repositioned to lie anterior to the VC.

A 10 Fr Nélaton catheter was passed down the distal transected segment to verify the patency of the retrocaval segment. No ureteral excision was performed.

We underwent laparoscopic pyelopyelostomy using two V-Loc suture in 3/0, protected by a 4.8 French 26 cm double j stent inserted through the under ribs port.

The operating time was 110 min. On the postoperative 2nd day, the urethral catheter was removed and the patient was discharged on the third day postoperatively. Stent removal was done on the 3rd postoperative week.

Discussion

Retrocaval ureter, also known as circumcaval ureter, is a rare congenital anomaly with an approximate incidence of one in 1000 live births. Patients usually present in the third to fourth decade of life. It occurs 3 times more commonly in males than in females. Patients usually present with right flank pain.¹

When symptoms develop or functionally significant obstruction exists, surgical repair is indicated.

Standard surgical correction involves open excision of the retrocaval segment with ureteroureteral anastomosis.

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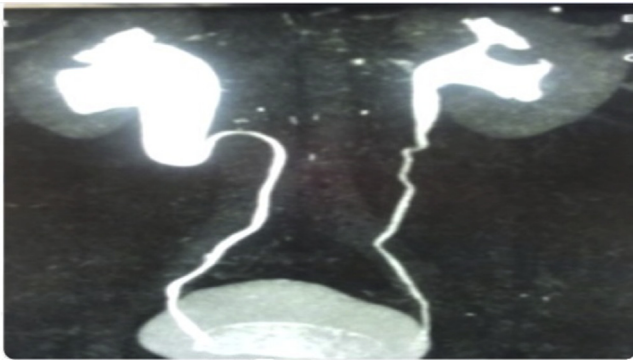


Fig. 1. A 3-D reconstructed image of CT urography showing the classical fish-hook appearance of the retrocaval ureter.

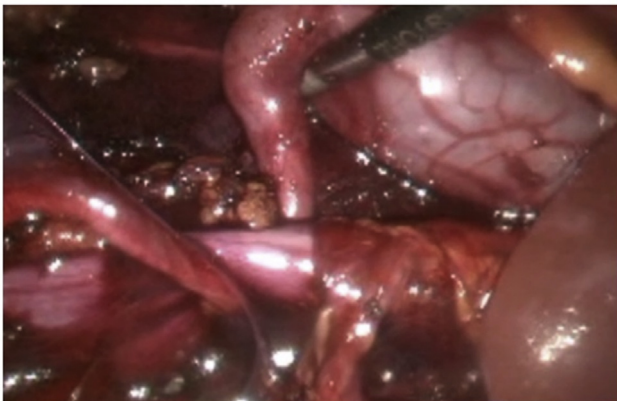


Fig. 2. Intraoperative picture shows the retrocaval ureter being lifted by laparoscopic Instruments on either side of the inferior vena cava.

The first laparoscopic repair has been reported by Baba et al. who performed laparoscopic ureteroureterostomy in 9 h and 20 min with anastomosis time of 2.5 h using 5 laparoscopic ports.²

In fact, the vascular risk with the dissection of the vena cava, the technical difficulty to perform laparoscopic ureteral sutures and the placement of the double j before completing the anastomosis, considerably increase the operating time.

Transperitoneal and retroperitoneal approaches have been reported.

It seems that retroperitoneal access is less time-consuming probably because it provides direct access to the ureter and inferior vena cava. In the other hand, transperitoneal provides superior exposure and more working space. Intracorporeal sutures may be easier by transperitoneal

way than retroperitoneal one.³

Another trick reported by Simforoosh et al., is to perform a pyelopyelostomy further than ureteroureteral anastomosis, without Resection of the retrocaval segment if he appear grossly normal.³ that was our attitude.

We think that Pyelopyelostomy is easier because it offers more space for grasping and passing the needle. Also, the risk of anastomotic stricture is virtually nonexistent.

In addition, The V-Loc closure device has many advantages: it Distributes tension without the need to tie knots, allows suture faster than the standard technique, Holds the edges together eliminating the need for a third hand.

Santosh Kumar, reports a novel surgical technique: ‘The Santosh PGI ureteric tacking fixation technique’, which consist on fixing both spatulated ureteric ends to the psoas muscle with hemlock clips. The operating time was 105 min⁴

To overcome problems related to suturing, the use of an automated suture device was suggested, using the Endostitch, also ureteroureterostomy was performed through a 5 cm minilaparotomy.^{1,4}

Otherwise, According to the publications in the literature, it is noted that some of the urologists place a double J stent before the procedure. Preoperative ureteral stenting may facilitate ureteric identification.⁴

Gokcen K, think that the double j stent inside ureter may limit the mobilization of ureter, especially the retrocaval portion.⁵

Conclusion

Laparoscopic transperitoneal approach of retrocaval ureter is useful and feasible with early post-operative recovery. We believe that Laparoscopic transperitoneal procedure may be preferable, the Pyelopyelostomy using V-LOC without resection of the retrocaval segment and intraoperative placement of a Double-J[®] stent Contributed significantly to our rather short operative times.

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