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RETROCAVAL URETER- PRESENTATION, DIAGNOSIS AND MANAGEMENT: SERIES OF 4 CASES

Urology

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ABSTRACT

Retrocaval ureter is a rare congenital anomaly which usually presents in third or fourth decade with flank pain and hydronephrosis. It is due to anomalous development of inferior venacava in which ureter passes posterior to it. Surgical correction is considered as standard of care. We report four cases of retrocaval ureter, of which one being asymptomatic is managed conservatively with watchful waiting and other three cases were symptomatic and managed successfully by laparoscopic ureteroureterostomy with uneventful intraoperative and postoperative period and early resumption of day-to-day activities.

KEYWORDS

Retrocaval ureter, hydronephrosis, CT urogram, laparoscopic ureteroureterostomy

INTRODUCTION

Retrocaval ureter is a rare congenital anomaly with late presentation. There are little over 200 case reports in the literature. It is due to aberration in development of inferior vena cava (IVC). Persistence of the subcardinal veins or posterior cardinal venous system results in anomalous development of IVC which courses anterior to the ureter for a variable distance and causes the ureter to hook around it. Hence it is also called as preureteral venecava or circumcaval ureter[1].

It occurs mainly on right side but can rarely occur on left side in case of situs inversus, persistence of left subcardinal vein or duplication of IVC[2].

It usually presents in third or fourth decade with flank pain and hydronephrosis. Hydronephrosis is due to kinking or adynamic segment of ureter or compression of ureter by IVC against the psoas muscle[1,3,4].

Surgical correction is considered as standard of care. Open repair was offered in the past but with the advancements in minimal access surgery and specialised training, laparoscopic repair is gaining momentum in treatment of retrocaval ureter with comparable results to that of open surgery.

Case 1

16 years female presented with recurrent right flank pain. Clinical evaluation revealed mild right renal angle tenderness. Ultrasound showed right hydronephrosis. Serum creatinine and serum electrolytes were within normal limits. CT urogram revealed right retrocaval ureter. Patient was treated with laparoscopic ureteroureterostomy over DJ(double J) stent with excision of retrocaval segment. Operating time was 130 minutes. Postoperative period was uneventful and was discharged on 3rd postop day. DJ stent was removed after 6 weeks.

Case 2

60 years male patient presented with lower urinary tract symptoms with increased frequency and recurrent episodes of UTI. No history of flank pain. On evaluation with ultrasound abdomen and pelvis, it showed BPH with right hydronephrosis. Serum creatinine and electrolytes were within normal limits. Urine examination revealed 10-12 pus cells and Urine culture showed E coli and was treated with culture specific antibiotics. BPH was medically managed. CT urogram revealed right retrocaval ureter. Right retrocaval ureter was treated with ureteroureterostomy over DJ stent with excision of retrocaval segment. Operating time was 110 minutes. Postoperative period was uneventful and was discharged on third postop day. DJ stent was removed after 6 weeks.

Case 3

38 years male patient incidentally diagnosed with right hydronephrosis on master health check-up. Serum creatinine is in normal limits. CT urogram revealed right retrocaval ureter leading to hydronephrosis. As patient was asymptomatic, he was not offered surgical correction and he is on regular follow up.

Case 4

26 years female presented with right flank pain with normal renal function and right hydronephrosis. On evaluation with CT urogram, she was found to have right retrocaval ureter. Patient was surgically treated with laparoscopic ureteroureterostomy. Operating time was 105 minutes. Patient was discharged on second postop day. DJ stent was removed after 6 weeks.

Case	Age (yrs)	Sex	Presentation	Diagnosis	Treatment
1	16	F	Right flank pain	Ct urogram	Surgical
2	60	M	UTI	Ct urogram	Surgical
3	38	M	Incidental	Ct urogram	Observation
4	26	F	Right flank pain	Ct urogram	Surgical

Table showing clinical presentation, diagnostic imaging and treatment of four cases.

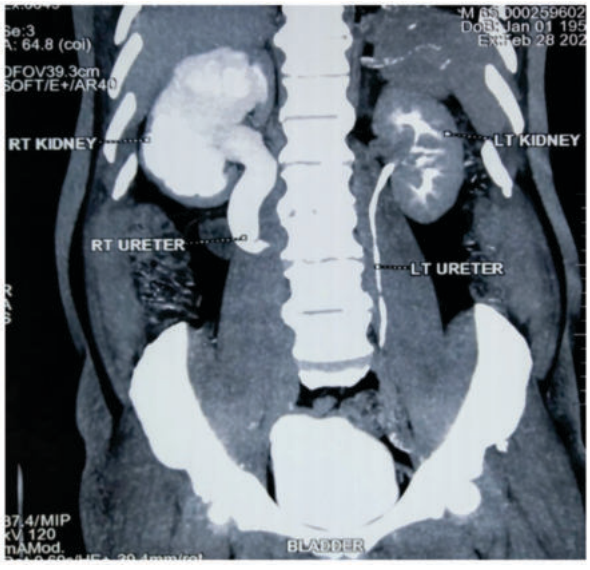

Figure 1: CT urogram showing right retrocaval ureter.

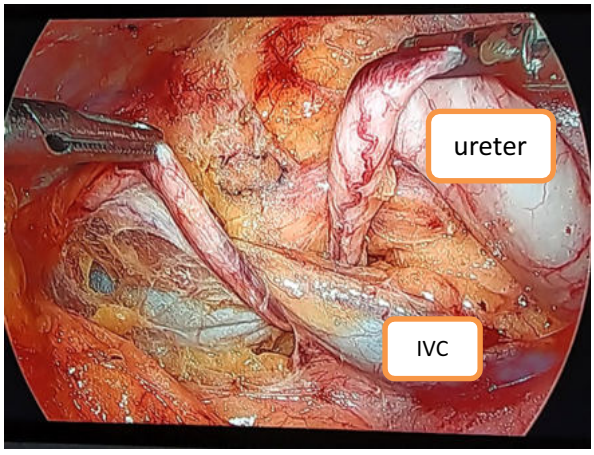

Figure 2: Intraoperative image of right retrocaval ureter.

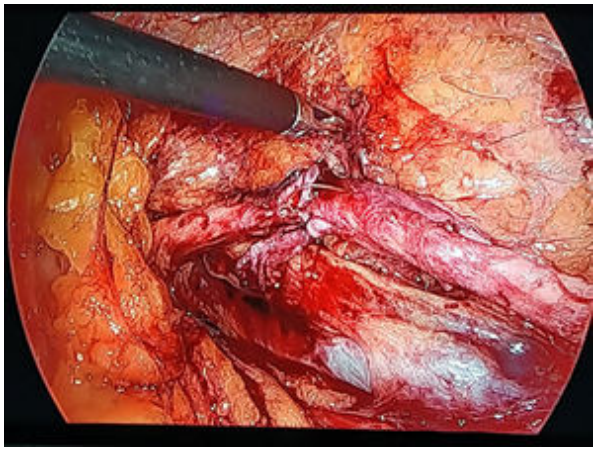

Figure 3: Intraoperative image of anastomosis of ureteroureterostomy

DISCUSSION

Retrocaval ureter was first reported in 1893 by Hochstetter. It is a congenital anomaly which usually presents in third or fourth decade. Patients may present with flank pain, recurrent UTI, hematuria, urolithiasis, renal failure or may be asymptomatic and incidentally detected[5].

In 1969, Bateson and Atkinson[6] radiologically classified retrocaval ureter into two types. Type I or low loop type is most common with moderate to severe hydronephrosis in up to 50% of cases with obstruction at level of third lumbar vertebra. It has a typical S-shaped, fish hook or Shepherd crook deformity. Type II is associated with mild or no hydronephrosis and most of them are asymptomatic with a 'sickle-shaped' curve of the ureter at the point obstruction of renal pelvis[6]. It accounts to 10% of cases.

Ultrasound shows hydronephrosis. Retrocaval ureter can be diagnosed by IVU which shows proximal curving with non-visualisation of middle and distal ureter. CT scan is better than IVU as it delineates ureter and IVC. MRI will give similar information without radiation exposure[7,8].

Baba *et al.* reported first successful laparoscopic pyeloplasty for retrocaval ureter in 1994[4,9]. First laparoscopic ureteroureterostomy was performed by Matsuda *et al* for retrocaval ureter[10]. First retroperitoneal laparoscopic repair of a retrocaval ureter was reported by Salomon *et al*. in 1999[11]. H. K. Nagraj *et al.* reported a case of tranperitoneal laparoscopic approach for retrocaval ureter[12]. B. Nayak *et al.* reported a case series of robotic repair of retrocaval ureter[13].

In our series, two patients presented with flank pain, one patient presented with recurrent UTI and other case is asymptomatic and incidentally detected on health check-up. These cases were diagnosed to be having right retrocaval ureter with CT urogram. Asymptomatic case was treated conservatively with watchful waiting and three symptomatic cases underwent laparoscopic transperitoneal ureteroureterostomy over 6Fr/26cm double J stent with mean operating time of 115 minutes. Operating time decreased with each case. Intraoperative and postoperative period was uneventful and the cases were discharged on second to third postop day. Double J stent was removed after 6 weeks. All cases were doing well on 6 months followup with normal serum creatinine.

Main advantage of laparoscopic approach is less blood loss and early recovery and disadvantage is increased operating time because of intracorporeal suturing.

CONCLUSION

Retrocaval ureter is a congenital anomaly which usually presents in 3rd and 4th decade but can present at any age. Presentation is variable from being asymptomatic to flank pain and recurrent UTI. CT urogram has replaced IVU in most of the centres as it can assess kidney function and give anatomical details of the kidneys, ureter and venacava. Results of laparoscopic repair are comparable to that of open repair with lesser postop morbidity. With advancements in minimally invasive techniques and specialised training, laparoscopic management has become standard of care in management of retrocaval ureter.

Conflicts of Interest: Nil

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