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CASE REPORT

A rare indication of robot-assisted uretero-ureterostomy: ovarian vein syndrome

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Abstract
Ovarian vein syndrome is a rare cause of ureteral obstruction. Most of these cases occur during pregnancy likely from the gravid uterus causing ovarian vein dilatation and valvular incompetence. Hormonal changes associated with pregnancy also affect the muscular wall of ureter, causing decrease in tone and may facilitate compression as well. There is a predilection for right side and in thin females. The traditional treatment has been the ligation of ovarian vein and ureterolysis. We report a case of ovarian vein syndrome in a young female which was managed by robot-assisted laparoscopic ovarian vein ligation, resection of stenosed ureteric segment and end-to-end ureterostomy.

Keywords Ovarian vein syndrome · Uretero-ureterostomy · Robot assisted · Pregnancy

Introduction

Ovarian vein syndrome is one of the rare causes of ureteral obstruction. Though most of the cases occur during pregnancy, some may present in chronic form years after pregnancy. It commonly presents in multiparous females. Several pathophysiological mechanisms have been postulated like aberrant ovarian vein, pregnancy induced changes, and inflammation causing retroperitoneal fibrosis. Clinical presentation is varied and commonly presents s with vague abdominal pain. Surgical ligation of ovarian vein is the traditional option for managing symptomatic cases and ureterolysis may be required at times. Stenosed ureteric segment is rare finding and end-to-end anastomosis should be considered in such scenario.

Case history

A 27 year old Gravida 2 Para 2 female presented with complaints of right flank pain. Her previous pregnancy was uneventful. She denied any history of fever, dysuria, bowel problems and haematuria. On examination, she was thin built and lean with BMI of 19 kg/m^2. General physical and systemic examination was grossly normal. Routine haematology and biochemistry profile was normal and serum creatinine was 0.8 mg/dL. Urine analysis was within normal range. USG abdomen was done which showed right renal hydronephrosis with prominent upper ureter. CT urography revealed grossly dilated right ureter till upper border of L5. Ureter was seen taking a medial turn and was passing between the right ovarian vein and the right common iliac vein (Fig. 1). On retrograde pyelography, there was jet sign present at the upper border of L5 with contrast going proximally and filling the grossly dilated upper ureter. A diuretic renal scan revealed hydronephrotic right kidney with mildly impaired cortical function (relative function RK 38%) and obstructed drainage at upper-ureteric level. With the working diagnosis of upper-ureteric stricture, patient was taken up for robot-assisted laparoscopic repair exploration and repair. Patient was placed in right flank-up position under general anaesthesia. Robotic ports were placed after creating pneumoperitoneum as per the standard technique followed in robotic pyeloplasty and docking was done. Right hepatic flexure and ascending colon was mobilised and duodenum kocherization was done. The ureter and ovarian vein were identified. We found to our surprise, right ovarian vein was dilated and prominent and compressing the anterior surface of ureter at L5 level (Fig. 2). No other anomalous vessel was seen. Ovarian vein was dissected. Ureter appeared stenotic for a length of 2 cm. The ovarian vein was lifted and clipped

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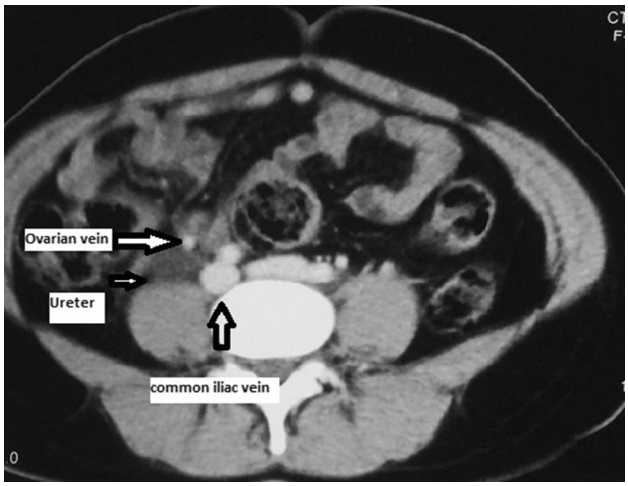

Fig. 1 Computed tomography abdomen axial cuts at L5 level showing dilated right ureter in between the ovarain vein and common iliac vein as pointed

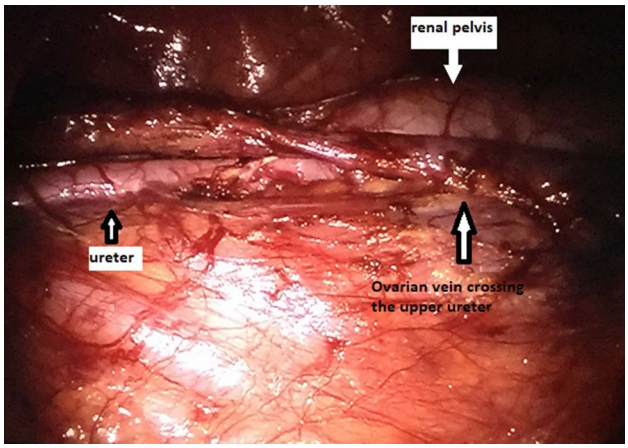

Fig. 2 Intraoperative image showing dilated right ovarian vein crossing the ureter and compressing its anterior surface causing proximal hydroureteronephrosis

at two ends and cut (Fig. 3). The stenotic ureteric segment was excised and end-to-end spatulated ureteric anastomosis was done using vicryl 3–0 over 4.8fr DJ stent. 18fr drain was placed. Postoperative course was uneventful. The urinary stent was removed 3 weeks after surgery Follow-up renal scan at 6 months is normal and patient is pain-free and doing well.

Discussion

Ovarian vein syndrome (OVS) is a rare cause of ureteral obstruction seen in multiparous females. Ovarian vein syndrome was first reported by Clarke [1] in which he published

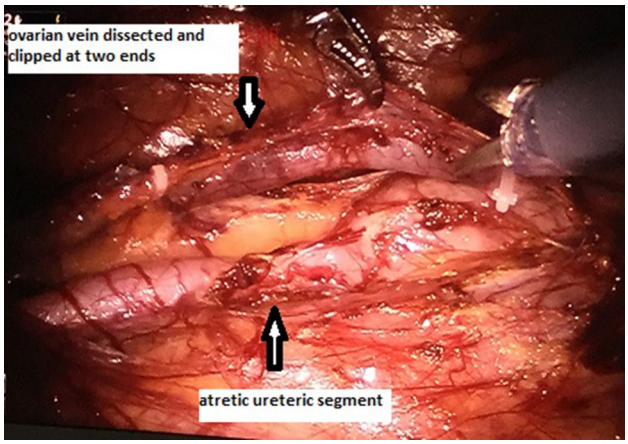

Fig. 3 Intraoperative image showing dissection of right ovarian vein being lifted up and clipped at two ends

a series of 129 cases of right ovarian syndrome and proposed that an aberrant ovarian vein which arises from persistent posterior subcardinal vein is the cause for ureteric compression. The crossing of this aberrant vein usually occurs at the pelvic brim where the ureter is relatively fixed, in contradiction to L3/L4 level crossing by a normal ovarian vein. Dykhuizen [2] proposed that there is a common connective sheath encasing both the ureter and the ovarian vessels which fixes the ureter at pelvic brim. Hormonal changes associated with pregnancy are also hypothesized as a cause for OVS. Elevated levels of circulating oestrogen and progesterone alters the muscular ureteric wall, causing a decrease in tone that facilitates its compression [3]. This is seen more commonly in multiparous females.

In our case, this young multiparous female had the crossing of ureter at the level of upper border of L5 caudal to the usual crossing of ureter by ovarian vein. The likely postulated hypothesis is the dilatation of ovarian veins during her previous pregnancy may be compressing the ureter and causing ovarian vein syndrome.

However Dure Smith [4] suggested persistent elevation of ovarian vein pressures are needed to compress the thick-walled ureter. Such high pressures are not achieved even during pregnancy. The argument was that ovarian vein can achieve such high pressures only during labour. Right side is predominantly involved [5] as also seen in this case. This is probably explained by the course of right ovarian vein and its proximity to the iliac vessels. Clark proposed that aberrant ovarian veins draining into right renal vein could be the cause as well [1].

Ovarian vein syndrome usually presents as non-specific pain in the iliac fossa, hypochondrium and flank. The pain is provoked by lying down on the affected side. These patients are usually multiparous. They may also present with features of ureteric obstruction as in this case—with symptoms of

flank pain and deterioration of renal function. The pain episodes may be cyclical associated with alteration in hormonal levels. Given the varied presentation of this rare condition, other common causes of ureteric obstruction should be ruled out. OVS should be distinguished from pelvic congestion syndrome which is charecterised by dilatation of entire anastomotic network of pelvic veins.

Ultrasound is the initial investigation to assess genitourinary tract, document hydronephrosis and rule out any mass lesion. Colour doppler may be considered in case of high suspicion which demonstrates dilated ovarian vein > 6 mm with valvular incompetence. However CT or MRI are investigation of choice to confirm the diagnosis and rule out any other anomalies [6]. Retrograde pyelogram can be done as an adjunct to delineate the exact location of obstruction. Renal dynamic scan should be done to demonstrate obstructed drainage and split function.

Medical therapy is rarely successful and long-term relief seems limited [7]. Radiologic coil embolization has been tried with success upto 85%, but side effects and complication are not acceptable [8]. Surgery in the form of ovarian vein ligation and ureterolysis forms the best modality of treatment with excellent long-term results. Since the time of Elarshy et al.'s [9] report of successful transperitoneal laparoscopic surgery for ovarian vein syndrome, many authors have reported good short-term and long-term outcomes with laparoscopic surgery. We did robot-assisted surgery, as the minimal invasive approaches have shown good safety and produced similar outcomes compared to open surgery. We dissected the ovarian vein overlying the ureter and clipped and cut the two ends. As the ureteric segment appeared stenotic, we performed resection and uretero-ureterostomy for this case. This case is unique in the sense that stenosed ureteric segment caused by compression from ovarian vein is a rare finding and we had to perform uretero-ureterostomy in this index case, although similar treatment has been reported for the analogous problem in boys—testicular vein syndrome [10].

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Compliance with ethical standards

Conflict of interest No conflict of interest among any authors.

Ethical approval This article does not contain any studies with animals performed by any of the author.

Informed consent Informed consent was obtained from the patient included in the study.

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