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VIDEOABSTRACT

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Robot-assisted pyeloplasty with direct pyelo-ureteral anastomosis for retrocaval ureter

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Retrocaval ureter (RU) is a congenital venous anomaly due to an uncommon inferior vena cava (IVC) course and consequent entrapment and obstruction of the right ureter. It is caused by non-regression of the subcardinal vein forming the post-renal IVC segment, from the 4th to 7th weeks of pregnancy.

According to the literature, RU has a very low prevalence, which was found to be around 0.13%. The Bateson and Atkinson classification based on preoperative imaging identifies two types of RU: S-shape also called "fishhook sign" (type I) in which the obstructive syndrome is due to a intrinsic anomaly in the development of the retrocaval segment of the ureter requiring surgical resection and Sickle shape (type II) in which the obstruction is due to extrinsic compression of a normal ureter in its retrocaval portion, and for which the plasty is possible without resection. When the patient is symptomatic (flank pain, hematuria, or urinary infection) with a preserved renal function, a surgical correction is mandatory for ureteral uncrossing and continuity restoration.

We accomplished a robot-assisted right RU correction with direct pyelo-ureteral anastomosis in a 31-year-old Caucasian girl presenting with right flank pain.

The patient was first placed in a lithotomic position, therefore a right ureteral catheter was placed below the obstruction. Subsequently, the patient was placed in left flank decubitus. Robotic surgery was performed by an experienced robotic surgeon, using DaVinci Xi platform, in 3 arms configuration, with intraperitoneal approach according to the following surgical steps: incision of the right paracolic gutter along the Told line, medialization of the ascending colon and duodenum, opening of Gerota's fascia, identification and dissection of the right ureter and inferior vena cava; retrograde injection of Indocyanine green trough the ureteral catheter; identification of the retrocaval tract of the right ureter using Firefly mode; completion of the dissection of the right ureter; resection of the retrocaval stenotic tract; spatulation of the proximal ureter, placement of JJ ureteral stent, pyelo-ureteral anastomosis using two semicontinuous 5/0 running suture, leak test through infusion of carmine indigo via bladder catheter with verification of absence of urinary leakage, reperitonealization, placement of periureteral drainage.

Overall operative and console time were 150 and 90 minutes, respectively. Estimated blood loss was <50 ml. No intra-operative or post-operative complication was observed and the patient was discharged

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on the 5th postoperative day. The JJ stent was removed 30 days after surgery. Follow up at 60 days after surgery demonstrated a complete resolution of symptoms and reduction of the hydronephrosis.

Robot-assisted RU correction is a feasible and safe surgical procedure for surgeons with previous experience in robotic renal surgery. Due to its rarity and wide interindividual variety, intraoperative study with indocyanine green can be useful to carefully identify and evaluate the length of the obstructed tract of RU to adapt reconstructive surgery to each case.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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ETHICS APPROVAL STATEMENT

The ethical approval was not required.

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