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Ureteropelvic junction obstruction in children by polar vessels: Is laparoscopic vascular hitching procedure a good solution? Single center experience on 35 consecutive patients

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Purpose: We report the results of laparoscopic vascular hitching (LVH) in a series of children with ureteropelvic junction obstruction (UPJO) owing to aberrant lower polar crossing vessels (CV). Our aim is to confirm if LVH associated with intraoperative diuretic test (DT) represents a good procedure to treat extrinsic-UPJO by CV. In order to confirm the relief of the obstruction we suggest performing an intraoperative DT.

Materials & Methods: In our department from 2006 to 2014, 120 patients were treated for both extrinsic and intrinsic-UPJO. 85 (30 females, 55 males) presented an intrinsic obstruction and underwent dismembered pyeloplasty (AHDP), 61 open, 16 laparoscopic, 8 retroperitoneoscopic. 35 (23 males, 12 females) were studied for a suspected extrinsic-UPJO: 30 were treated with LVH (modified Hellström Vascular Hitch). Intraoperative-DT was performed in all patients before and after vessels transpositions confirming the UPJO and eventual relief after the procedure. We included in the study only patients with suspicion of vascular extrinsic-UPJO. Average age at surgery was 7.5 years. Symptoms of presentation were recurrent abdominal/flank pain and hematuria. All patients presented ultrasound (US) detection of hydronephrosis. Preoperative diagnostic studies included: US/Doppler scan, MAG3 renogram, urography, functional magnetic resonance-urography (fMRU) and CT-scan.

Results: 28 out 35 patients had a correct pre-operative diagnosis; the remaining needed an intraoperative diagnosis confirmation. Of the 35 patients treated for suspect CV, all had an intraoperative-DT: 30 patients underwent LVH (positive-DT), 3 patients (negative-DT) underwent laparoscopic-AHDP for intrinsic-UPJO; 2 with positive-DT and non-obstructive CV had no surgical treatment. Median operating time was of 95 min with a mean hospital stay of 4 days. At 12-84 months follow-up, 29 patients remained symptoms-free, one needed after two years laparoscopic-AHDP.

Conclusions: According to our experience, LVH associated with intraoperative-DT may be considered a safe procedure to treat extrinsic-UPJO by CV in carefully selected patients. In particular, the very low incidence of relapse suggests that in suspicion of extrinsic-UPJO performing intraoperative-DT after CV transposition allows to exclude intrinsic UPJO confirming that LVH procedure has relieved the pelvic obstruction, precluding the need for AHDP.

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The significance of Pax2 expression in the ureter epithelium of children with vesicoureteric reflux

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Vesicoureteral reflux (VUR) is the retrograde passage of urine from the bladder to the urinary tract; this leads to renal scarring and end-stage renal disease in children. Pax2 is a nuclear transcription factor that is involved in urinary system development. We measured the expression of Pax2 in the ureters of 47 patients with VUR. The messenger RNA expression and the protein level of Pax2 were significantly increased in patients with VUR, suggesting a correlation with VUR. Further studies demonstrated that Pax2 was hypomethylated, and Dnmt3a messenger RNA expression was significantly lower than in the control group. We speculate that the low level of Dnmt2a might decrease PAX2 gene methylation and up-regulate the Pax2 protein. The high level of Pax2 might be related to cellular apoptosis and functional lesions in ureters. In conclusion, our results revealed that the level of Pax2 was correlated with VUR.

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