OSTRUZIONE PIELO-URETERALE DA VASI POLARI ANOMALI
«HITCHING TECHNIQUE»

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1949 Hellstrom: trasposition polar vessels extrinsic obstruction without resection of the pelvis

1974 Belloli
- C. Pesce, L. Musi et al. Dept Ped. Surgery, Vicenza, Italy
- Ureterovascular Hydronephrosis in Children: Is Pyeloplasty Always Necessary?
- European Urology 36, No.1, 1999
  - Over a 25-year period, we treated 111 patients
  - Intraoperative diuretic test
  - 61 patients judged to have only vascular pyeloureteral junction obstruction underwent vessel transposition
  - Surgical success was achieved in 98% of the patients

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Transposition of lower pole vessels (LPV) is increasingly used for correction of intermittent PUJ OBSTRUCTION since the development of laparoscopy.
• Two techniques

– 1. vessels suspension

– 2. pelvis transposition (Pyelo-Pyelic sleeve Chapman) Chiarenza Vicenza

European Urology 36, No.1, 1999


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Criteria

- Age of the patient
- Poor history of antenatal dilatation
- Ultrasound:
  - intermittent dilatation
  - Poor caliceal dilatation
- Angio MRI positive
THE SCINTIGRAPHIC DIAGNOSIS OF OBSTRUCTION

“OBSTRUCTION = IMPAIRED URINE DRAINAGE”

• Differential Renal Function < 45 %
• Ascending Drainage Curve
• Lacking Efficacy Of The Diuretic Test
• T½ > 20 Mins
• Radiotracer Decrease After 10 Mins In Upright Position > 20%

Gordon, 1998

NOT UNIVERSALLY ACCEPTED PARAMETERS
PUJ OBSTRUCTION POLAR VESSELS
INTRAOPERATIVE SELECTION

Criteria

• Normal aspect of PUJ

• Presence of anterior polar vessel compressive

• Empting of pelvis and passage of urine in ureter after vessel transposition (diuretic test)
OPERATORY ROOM SET-UP AND TROCARS POSITION

• Supine
• Semilateral decubit
• Urinary catheter
• Naso gastric tube
• Pneumoperitoneum 5-10 mm Hg

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OPERATIVE TECNIQUE

PUJ OBSTRUCTION BY POLAR VESSELS LAPAROSCOPIC PYELO-PYELIC SLEEVE
PYELO-PYELIC SLEEVE
SURGICAL STEPS

• LAPAROSCOPIC LATERAL TRANSPERITONEAL APPROACH (BEHIND, THROUGH MESOCOLON)

• DISSECTION OF PUJ
  – DISSECTION OF POLAR VESSELS
  – CONTROL OF PASSAGE OF URINE THROUGH JUNCTION (DIURETIC TEST)

• VASCULAR TRANSPOSITION AT THE ANTERIOR PART OF THE PELVIS WITH PLICATION BY 2 OR 4 STICHES (NISSEN LIKE)

• DRAINAGE BY INTERNAL STENT?
PYELO-PYELIC SLEEVE
STEP 1,2 - OPENING PARIETAL PERITONEUM AND LOCALIZING RENAL POLAR VESSELS -

OPENING PARIETAL PERITONEUM AND GEROTA FASCIA

LOCALIZATION POLAR VESSELS
PYELO-PYELIC SLEEVE
STEP 4 - LASIX TEST -
PYELO-PYELIC SLEEVE
STEP 5,6 - RELOCATION OF VESSELS AND PYELO PYELIC SLEEVE

PYELO URETERAL JUNCTION OBSTRUCTION BY POLAR VESSELS

LAPAROSCOPIC PYELO-PYELIC SLEEVE

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RESULTS
• Intrinsic stenosis or PUJ
• Polar vessel lesions
• Polar vessels stricture
• Urine Leakage (drainage)
• Failure to vessel transposition (little pelvis, calicectasy)
PUJ OBSTRUCTION POLAR VESSELS
ALTERNATIVE SOLUTIONS

• Intrinsic stenosis or PUJ

• Diamond-like Pyeloplasty
  • AH Pyeloplasty

• Small pelvis- Calicectasy (failure to vessel transposition)

• Pexis of the pelvis to psoas muscle
PUJ OBSTRUCTION POLAR VESSELS
ASSOCIATION OF INTRINSIC STENOSIS

PUJO
LAPAROSCOPIC
"DIAMOND LIKE"
PYELOPLASTY

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PEXIS OF THE PELVIS TO PSOAS MUSCLE
RIGHT SIDE
PUJ OBSTRUCTION BY LOWER POLAR VESSELS

PEXIS OF RENAL PELVIS TO PSOAS MUSCLE

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La causa più frequente (11-79%) 
Incidenza: 40-50% nell’età adulta;  
– 11-15% in età pediatrica;  
– 58% in età adolescenziale;  
Lato sinistro più colpito (Sx:Dx=2:1) 
Bilaterale: 10-30% dei casi  
Vasi arteriosi con origine dall’aorta, dall’arteria iliaca o venosi con origine dalla vena cava inferiore  
Incrociano il GPU prevalentemente anteriormente


Laparoscopic vessels transposition

Experience of Vicenza
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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Abstract

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 AND 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, 15 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 vessel 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 include: US/doppler scan, MAG3 renogram, urography, functional magnetic resonance urography (fMRU) and CT scan.

RESULTS: 28 out 35 patients had a correct preoperative diagnosis, and the remaining needed an intraoperative diagnosis confirmation. All 35 patients had an intraoperative-DT: 30 patients underwent LVH (positive-DT); 3 patients (negative-DT) underwent laparoscopic-AHDP for intrinsic-UPJO, two with positive-DT and nonobstructive CV, had no surgical treatment. Median operating time was 95 min, mean hospital stay was 4 days. At 12-34 months follow-up 29 patients remained symptom-free, one needed after two years a laparoscopic-AHDP.

CONCLUSIONS: According 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 suggest that in suspicion of extrinsic-UPJO, performing intraoperative-DT after CV transposition allows to exclude intrinsic-UPJO confirming that the LVH-procedure has relieved the pelvic obstruction, precluding the need for AHDP.
PATIENTS

- 35 (47) patients
- 23 males and 12 females
- Average age was 7.5 years (min 2, max 17)
- 30/35) Laparoscopic vessels transposition.
- 2 uretero-pyelo-plasty
- 3 no treatment

Chiarenza SF, Bleve C, Fasoli L, Battaglino F, Bucci V, Novek S, Zolpi E.

Laparoscopic transposition of lower pole crossing vessels (vascular hitch) in children with pelviureteric junction obstruction.

Esposito C, Bleve C, Escolino M, Caione P, Gerocarni Nappo S, Farina A, Caprio MG, Cerulo M, La Manna A, Chiarenza SF.
• 65/65 Intraoperative Diuretic Test
• 58/65 patients laparoscopic mobilization of the lower pole vessels, relocation into the anterior wall of the pelvis.
• 5 pyeloplasty
• 3 no treatment (no clear obstruction)
RESULTS

• No intra-operative complications
• Mean operating time 95 min (range 45-125);
• Mean hospital stay was 4 days (range 2-6).
FOLLOW-UP

- Mean 4 year (range 1-12 year) clinical signs, ULTRASOUND, MAG3
- All patients symptom free except one, with flank pain and recurrent pelvic dilatation, who had a successful AHDP two years after Hellstrom operation.
- 1 RELAPSE
Laparoscopic vascular relocation is a safe and effective technique in carefully selected patients with secondary PUJO due to polar vessels.

This procedure obviates disrupting an intrinsically normal PU junction, where the pelvic anatomy is unfavorable for resection and anterior reanastomosis of the ureter and the pelvis. Limits of this laparoscopic procedure may be connected to the presence of pre-existing fibrosis of the junction, not evident intraoperatively.
THANKS FOR YOUR ATTENTION

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