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## **AN INTEGRATED WORK-UP TO UNDERSTAND THE CLINICAL MEANING OF POOR DRAINAGE AFTER PEDIATRIC PYELOPLASTY**

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### **BACKGROUND-AIM**

To postoperatively recognize when the kidney remains truly obstructed after pyeloplasty in children with residual dilatation of the collecting system and poor drainage on diuretic renography

### **METHODS**

We performed a retrospective research of children with obstructive hydronephrosis submitted to pyeloplasty in the last 5 years in our hospital and we analyzed our integrated work-up in those patients with residual severe dilatation and poor drainage on diuretic renography after surgery. Postoperative investigation included clinical evaluation, renal ultrasound, MAG3 diuretic renography and an endoscopic revision (in selected case of delayed renal drainage). Diuretic renography was performed using a well-defined protocol (according to the European guidelines) and diuretic response was assessed drawing renal regions of interest (ROIs) to calculate half-time clearance and output efficiency in 10 minutes; a diuretic  $T/2 > 20$  minutes after furosemide injection, combined with an output efficiency in 10 minutes less than 30%, was classified as obstruction pattern. Cortical ROIs analysis were also achieved to calculate the time-activity curve of the drainage on basal renogram. If an obstructive pattern was detected, a balloon catheter inserted endoscopically was used to verify the real presence of stenosis, followed by a balloon dilatation in case of obstruction evidence.

### **RESULTS**

Out of 278 children undergone pyeloplasty (193 male, 85 female; mean age 28 months), 11 (4%) patients showed insufficient diuretic response (calculating  $T/2$  clearance and output efficiency) on renography after surgery. A severe residual dilatation was observed on ultrasound scan in all 11 pts and 4 out of 11 pts (36%) had a functional impairment detected by pre and postoperative renal scintigraphy. Cortical ROIs analysis confirmed a delayed transit in 10/11 patients (92%) and a moderate reduced drainage in one case (8%). All 11 pts were submitted to endoscopic revision: in 9/11 (82%) pts no mechanical stenosis was observed (included the non-obstructed stasis revealed by cortical ROIs analysis) while in 2/11 (18%) pts a true obstruction was detected and treated with balloon dilatation. No complications occurred during or shortly after the endoscopic procedure (mean follow-up was 7 months, range 3 - 18 months).

### **CONCLUSION**

Our results confirm diuretic renography is a valuable method in postoperative evaluation of children undergone pyeloplasty, showing a non-obstructive pattern in the most of patients (96%) and an insufficient drainage in the two children with confirmed persistent stenosis. Just in restricted cases poor drainage couldn't mean obstruction because this test could be influenced by factors which may or may not reflect a persistent stenosis (as poor renal function or large capacity reservoir of the collecting system). As demonstrated by our experience, pediatric management in postoperative follow-up is still safe and feasible by an integrated work-up based on nuclear medicine physicians and urologists collaboration.