

## LAPAROSCOPIC TREATMENT OF REFLUXING SEGMENTAL MEGAURETER

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### ABSTRACT

We discuss the case of a 13-year old boy with urinary infection who was preoperatively diagnosed with left vesicoureteral reflux associated with paraurethral saccule. Laparoscopic Lich-Gregoir anti-reflux surgery was then proposed. Intraoperatively, we observed segmental megaureter that was successfully treated by the proposed technique without ureteral modeling, contrary to the rule that respects the 3-5 times ratio between the submucous path and the ureteral diameter.

**Key words:** ureter; congenital abnormalities; replantation; laparoscopy  
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### INTRODUCTION

The diagnosis of segmental megaureter in children is uncommon and, when treatment is required, there is no therapeutic standardization. We describe one case of primary refluxing segmental megaureter with episodes of acute pyelonephritis that was treated by laparoscopy. There was no available published work on the laparoscopic treatment of megaureter.

### CASE REPORT

A 13-year-old male patient was investigated due to an episode of acute left pyelonephritis. An ultrasound of the urinary tract showed signs suggestive of scar in the left renal parenchyma and dilation of the juxtavesical ureter on the same side. Voiding cystourethrography demonstrated a low grade left vesicoureteral reflux and an image compatible with left paraureteral saccule (Figure-1).

The proposed management was by Lich-Gregoir anti-reflux surgery through transperitoneal laparoscopic approach. We performed 4 punctures

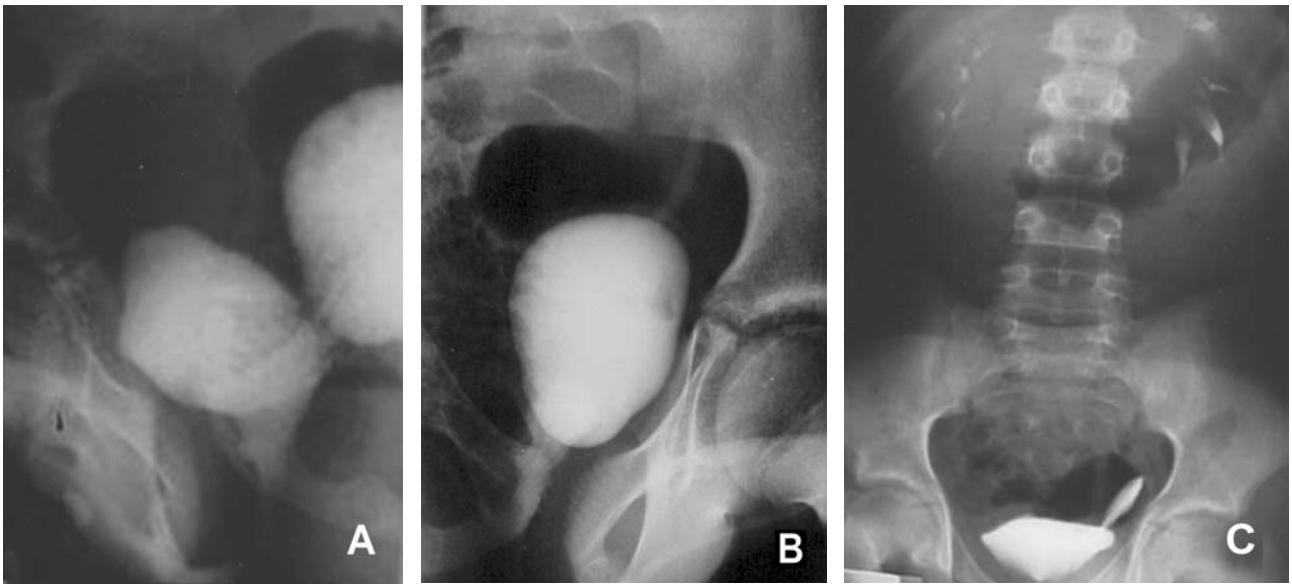
with 2 trocars measuring 10 mm and 2 trocars measuring 5 mm. During the procedure, we observed refluxing segmental megaureter instead of the paraureteral saccule as previously diagnosed.

Following ureteral dissection, we performed a long incision on the detrusor muscle and a wide lateral dissection of the bladder mucosa, and the entire dilated ureteral segment was placed in the submucous tunnel. Variable bladder fillings with saline solution made this dissection easier. The peritoneal cavity was drained by a Penrose drain for 24 hours and the vesical catheter was maintained for 48 hours. Surgical time was 180 minutes.

The patient remained asymptomatic and the control tests after 7 months demonstrated absence of vesicoureteral reflux and absence of dilation in the left kidney respectively on voiding cystourethrography and ultrasound (Figures-2 and 3).

### COMMENTS

In children, megaureter can be defined as an ureter whose diameter is larger than 7 mm. Currently,



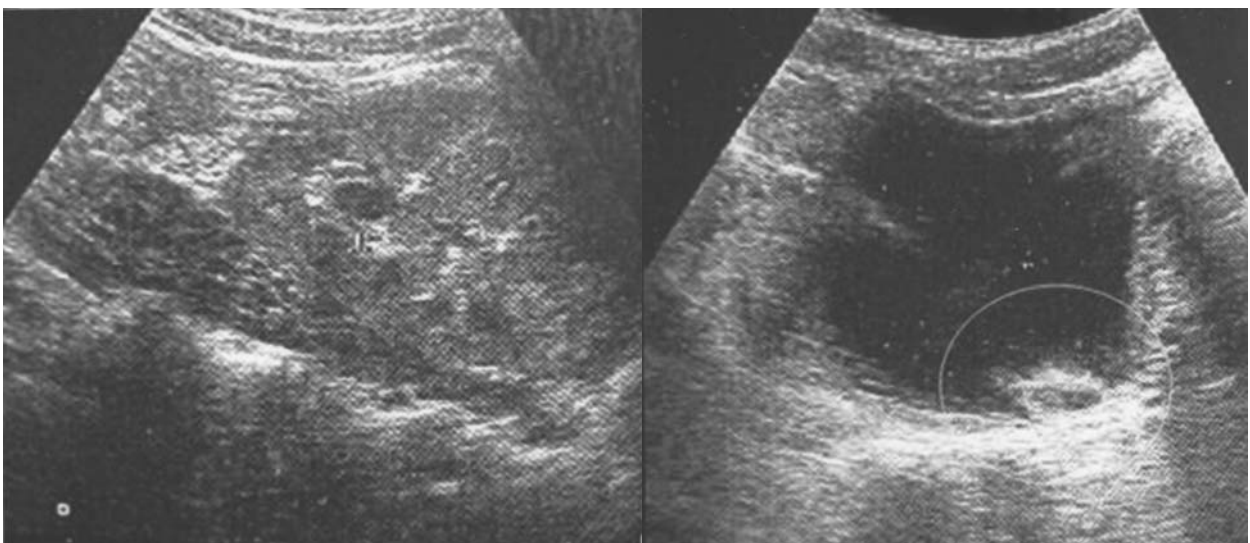
**Figure 1** – A) and B) Voiding cystourethrography showing diverticular image and left vesicoureteral reflux; C) Excretory urography revealing kidneys with good function and left distal ureter with slight dilation.

megaureter is thought to be related to 20% of urological anomalies diagnosed during the prenatal period (1).

The diagnosis of refluxing megaureter is usually established by ultrasound of the urinary tract that shows ureteral dilation and is complemented by void-

ing cystourethrography. In this case, the patient also underwent an excretory urography that showed dilation in the distal ureteral segment that was milder than the voiding cystourethrography had shown.

For a successful ureterovesical replantation of refluxing megaureter, ureteral modeling is required



**Figure 2** – Postoperative ultrasonography showing absence of dilation in left kidney and collapsed intravesical ureter.



**Figure 3** – Postoperative cystourethrography showing absence of vesicoureteral reflux.

in order to maintain the proper 3-5 ratio between the length of the submucous path and the ureteral diameter. Several authors had good results with the extravesical Lich-Gregoir technique for treating vesicoureteral reflux, with the well-established advantages of laparoscopy (2,3).

The intraoperative finding of segmental megaureter prompted the decision to implant the di-

lated ureteral segment in the submucous path. We have no knowledge of any other report of laparoscopic treatment for segmental megaureter that was performed as we did. Surprisingly, though the relationship between the ureteral diameter and the length of the submucous path was not maintained, the vesicoureteral reflux disappeared and the walls of the submucous ureter remained in contact, giving the impression on ultrasound of an empty ureterocele (Figure-2). Perhaps the elasticity in the dilated ureteral segment could explain the favorable result. It remains unknown if this method of minimally invasive treatment would be effective in cases of non-segmental megaureter. Other studies are required in order to question the validity of the diameter/length of submucous path ratio in anti-vesicoureteral reflux technique.

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