

## LAPAROSCOPIC NEPHRECTOMY IN CHILDREN: A CASE REPORT AND REVIEW OF OUR EXPERIENCE

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### ABSTRACT

Laparoscopic approaches are fast becoming popular for pediatric urology problems. Here we report a case of ectopic ureter managed laparoscopically. Also our experience with laparoscopic nephrectomy in children is reviewed. A 11 month old boy was referred with UTI and recurrent left epididymo orchitis. Antenatally he was diagnosed to have left multicystic kidney. Ultrasound postnatally confirmed dysplastic left kidney with poor function on DTPA scan. An MCU revealed reflux in to the ectopic ureter. Laparoscopic transperitoneal left

nephroureterectomy was performed. At the same sitting right orchidopexy was also performed. The child recovered well and is devoid of UTIs. Laparoscopy can be a very useful tool to remove distal ureter as low as possible without another incision. It reduces hospital stay and hastens patient recovery. All the six patients who underwent laparoscopic nephrectomy last year have performed well. Our results are comparable to those published in the literature.

**Key words:** Urinary tract infection, child, laparoscopy, nephrectomy, case reports.

### INTRODUCTION

Laparoscopy has become the mainstay of treatment for many conditions in adult surgery and urology. However it was a bit slow to develop in pediatric surgery and pediatric urology. With the availability of expertise and equipments, more centres worldwide have started using the laparoscopic approach for the management of pediatric urological problems [1].

The advantages of laparoscopy in children include reduced pain, reduced hospital stay and quick recovery which in turn reduce complications and help them return to school soon. However pediatric laparoscopy is not without its limitations. Limited space available inside the pediatric abdominal cavity can result in difficulty with manipulation of instruments and dissection. Laparoscopic renal surgery was initially performed via retroperitoneal route. However the lack of landmarks and limitation in space made training in this approach [2,3] difficult. Transperitoneal approach has now become more popular for laparoscopic renal surgery. In this article we present a challenging case managed in our unit and discuss our experience of laparoscopic nephrectomy in children, at SRMC.

### CASE REPORT

A eleven month old baby boy was referred with recurrent urinary infections, recurrent epididymo orchitis and failure to thrive. He was the second child of a consanguineous marriage, diagnosed antenatally to have left multicystic dysplastic kidney. The other gross abnormality noted at the time of birth was absence of nipples (athelia) and right undescended testis (Figure 1a and 1b). In view of this a karyotyping was done which was found to be normal.

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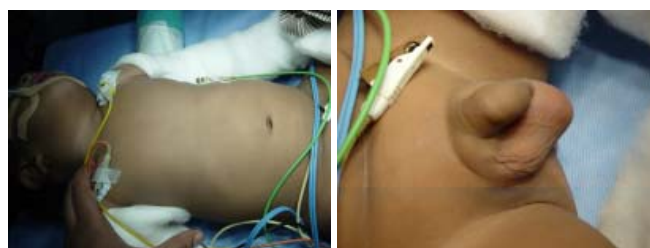
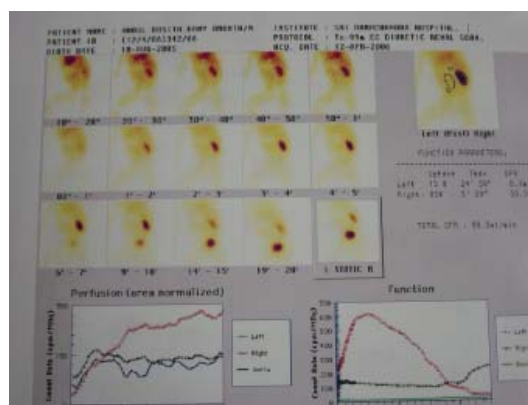


Fig. 1a

Fig. 1b

**Figure 1.** a) Eleven month old boy with dysplastic left kidney, ectopic ureter. Clinical examination revealed absent nipples (athelia) b) Same patient having right undescended testis

There were no other dysmorphic features or other systemic abnormality. Examination of the scrotum revealed absence of right testis, the left testis was enlarged and tender due to epididymo orchitis. Hematology and Biochemistry examination were within normal limits. Ultrasound abdomen revealed a normal right kidney and dysplastic left kidney with its dilated ureter running ectopically up to the bladder neck. Renal nuclear scan revealed very poor function in the dysplastic left kidney (Figure 2). Voiding cystourethrogram revealed a bladder diverticulum and reflux into the dilated ectopic left ureter. The contrast from the dilated ureter was also seen refluxing into the vas deference



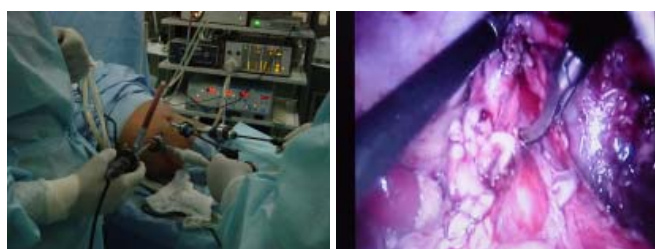
**Figure 2.** DTPA renal scan showing poor function in the left kidney



**Figure 3.** Voiding cystourethrogram showing reflux into the ectopic left ureter and vas. Bladder diverticulum is also noted

making it more prone for epididymo orchitis (Figure 3). In view of these findings it was decided to remove the dysplastic left kidney, ectopic left ureter and also perform a right orchidopexy. It would have normally required three different incisions for all the three steps. With the availability of pediatric laparoscopy, it was decided to combine all three via the laparoscopic approach.

Pneumoperitoneum was established via 10mm umbilical port, inserted by open Hassan's technique. Two further 5 mm ports were placed above and below the umbilical port (Figure 4). After mobilising the left colon, the left kidney was dissected and vessels were clipped. The ureter was traced as low as possible and resected at the level of the bladder neck. The right testis which was located at the level of deep ring was mobilised and brought down with the assistance of laparoscopy. The resected kidney specimen along with the ectopic ureter was removed via the umbilical port. Histology confirmed dysplasia. The patient was advised to continue prophylactic antibiotics. At one year follow up he was free of urinary infections or epididymo orchitis. The testis brought down laparoscopically was felt in the right place in the scrotum.



**Figure 4.** Laparoscopic nephrectomy in progress. Umbilical 10mm port has been inserted via open Hassan's technique. Two further ports have been placed.

A retrospective analysis was performed to identify the children who underwent laparoscopic nephrectomy in our unit over the last one year. Table 1 summarizes the different age groups, indications, and the outcome. The operating time for laparoscopic nephrectomy has declined dramatically with the learning curve and is at the moment comparable to that of open nephrectomy (2 hours). No complications were encountered in any of these patients.

**Table 1**

Laparoscopic Nephrectomy in Children; A review of cases performed at the Pediatric Urology Unit, SRMC during the year 2006

No	Age/sex	Diagnosis	Procedure
1	11 yr; boy	PUV, Valve bladder + Non functioning kidney	Lap nephrectomy + Ureterocystoplasty
2	14 yr; girl	PUJ obstruction + Non functioning kidney	Lap nephrectomy
3	5 yr; boy	PUJ obstruction + Non functioning kidney	Lap nephrectomy
4	12 yr; boy	PUJ obstruction + Non functioning kidney	Lap nephrectomy
5	11 month; boy	Ectopic Ureter + Multicystic kidney + undescended testis	Lap nephrectomy + Lap Orchidopexy
6	10 yr; girl	Multicystic Dysplastic Kidney	Lap nephrectomy

## DISCUSSION

Children with urinary infection have to be carefully evaluated as up to 50% of these children can have underlying renal abnormality. Vesicoureteric reflux is the commonest cause of childhood urinary infection [1]. Abnormalities like ectopic ureter should be suspected in the presence of recurrent epididymo orchitis in a boy or constant wetting in a girl. Often multicystic dysplastic kidney is associated with ectopic ureter.

Our case depicts a text book description of ureteric bud developmental anomaly where, the abnormally developed ureteric bud, leads to ectopic insertion of ureter and recurrent epididymo orchitis [2-4]. Due to abnormal induction of nephrogenesis, ectopic ureter is often associated with dysplastic or non functional kidney on that side. Laparoscopic nephroureterectomy results in cure of the symptoms in such patients.

In our institute apart from diagnostic laparoscopy, laparoscopic orchidopexy, laparoscopic varicocele ligation, laparoscopic pyeloplasty and laparoscopic nephrectomy are being performed. Open Hassan's technique is always used to avoid any possible damage to viscera by blind insertion of the Veres needle. Transperitoneal approach is preferred as the land marks are better within the peritoneum and space constraint seen with retroperitoneal approach is not there.

Although the operative time was slightly higher at the beginning (3.5 hours), with the learning curve, the current

operative time for laparoscopic nephrectomy has approached that of open nephrectomy (2hours). Post operative recovery is excellent and the cost is not higher as the hospital stay is reduced significantly compared to open surgery.

A review of literature showed that our results are comparable to those reported in the literature [2-6]. With the increasing awareness of patients and physicians about 'key hole surgery' it is essential that we are able to offer the best available treatment for our patients. The reported case and the other cases of laparoscopic nephrectomy show that pediatric laparoscopy can be successfully performed despite the young age and SRMC has taken a lead in this direction at the right time.

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