

# The Feasibility of Posterior Lumbotomy Incision in Pediatric Urology

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## Abstract

**Objective:** The objective of our study was to assess the feasibility of posterior lumbotomy incision in pediatric urologic cases admitted to Maiwand university hospital.

**Material and Methods:** We included 69 patients suffering from various types of upper urinary tract problems, admitted to Maiwand university hospital pediatric surgery ward from June 2018 to December 2019 and studied them retrospectively. In all cases we approached upper urinary tract through posterior lumbotomy incision. All patients characteristics were analyzed from hospital chart. Intraoperative and postoperative details were gathered from each case files. Data were collected regarding age, weight, gender, diagnosis, surgical procedure, intraoperative problems, postoperative pain, time of oral feeding, length of hospitalization and complications.

**Result:** The median age at the time of surgery was 7.7 years (range 1.5-16 years). There were 50 boys and 19 girls (male/female ratio 2.5:1). Median weight was 16.2kg (range 9-45 kg). Surgeries performed were pyeloplasty (left side 12 cases/17.4%; right side 8 cases/11.6%), nephrolithotomy (32 cases/46.3%), pyelolithotomy (13 cases/18.8%) and nephrectomy (4 cases/ 5.7%). Mean duration of surgery was 67 minutes (range 50-120 min). No intraoperative problems were encountered but minimal postoperative pain, relieving with one intravenous (IV) dose of paracetamol analgesic followed by oral paracetamol (syrup or tablets). After the initiation of oral feeding at the next day, in most of the patients (90%), they felt thirst in the coming night of operation and fed by plain water. In 2 patients (2.8%) we noticed incision related complication as wound infection.

**Conclusion:** Posterior lumbotomy incision is easy to perform with less bleeding, quick access and very safe in pediatric upper urinary tract surgeries.

**Keywords:** Feasibility; Pyeloplasty; Nephrolithotomy; Pyelolithotomy; Nephrectomy; Wound Infection

## Introduction

The dorsal lobotomy incision was first described by Simon in 1870 and later developed by Gil Verent [1]. In younger children this approach has been reported with good result but its universal acceptance is awaited [2-4]. Most of pediatric urologic conditions warrant safe approach, focusing on decreasing morbidity and getting better cosmetic result. To reach these two important facts, lumbotomy incision is the best option which is smaller and technically feasible to access. This report describes the author's experience with 69 patients suffering from different pediatric upper urinary tract surgical problems who had their operations performed through dorsal lumbotomy approach.

## Material and Methods

We included 69 patients suffering from various types of upper urinary tract problems, admitted to Maiwand university hospital pediatric surgery ward from June 2018 to December 2019 and studied them retrospectively. In all cases we approached upper urinary tract through posterior lumbotomy incision (Figure 1 & 2). All patients' characteristics were analyzed from hospital chart. Intraoperative and postoperative details were gathered from each case files. Data were collected regarding age, weight, gender, diagnosis, surgical procedure, intraoperative problems, postoperative pain, time of oral feeding, length of hospitalization and complications. All the patients were placed on operation table on their side with tip of the 12<sup>th</sup> rib over the break. The procedures were performed by the same surgeon. After rechecking the patient file, related investigations and parents' consent based on hospital

protocol, each individual patient was prepared for surgery. Patient was intubated and anesthetized using IV anesthetics (mostly Ketamine), analgesics (80% Pentazocine, 20% Nalbuphine) and muscular relaxants (Pancuronium) for adequate exposure to retroperitoneal space with no caudal block.

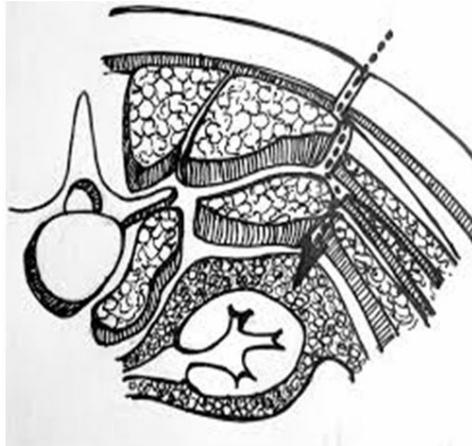


Figure 1: Depicting retroperitoneum

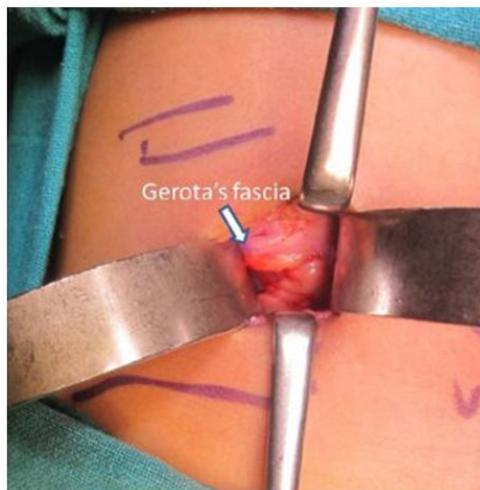


Figure 2: Depicting Gerota's fascia

By focusing on renal angle (Figure 3) and identifying landmarks, the 12<sup>th</sup> rib, vertebral column, erector spinae muscles and iliac crest (Figure 4), incision was made starting from erector spinae muscle and finishing 0.5cm below the 12th rib. The area was approached plan by plan parallel to incision except for Gerota's fascia which was opened vertically by preserving both subcostal and iliohypogastric nerves. With the help of assistant and using curved retractors we got access to retroperitoneal area.

## Result

The median age at the time of surgery was 7.7 years (range 1.5-16 years). There were 50 boys and 19 girls (male/female ratio 2.5:1). Median weight was 16.2kg (range 9-45 kg). The Table shows patients' diagnosis and study variables. All patients were treated with standard operative techniques for their problems using all the necessary instruments like surgical set, fine tip diathermy, deep retractors, drainage system for dilated renal pelvis in case of PUJ obstruction (Figure 5), suture materials for stay suture when needed, fine suture materials for accurate pyeloplasty and etc. None of the patients experienced anesthesia related complications except for few patients suffering respiratory difficulties in the post-operative period but recovered immediately with adequate measures and oxygen support. For intraoperative analgesia Pentazocine and for postoperative pain relief IV Paracetamol (IV Paracetamol on the first operative day and oral Paracetamol for two consecutive days) were used.

Mean duration of surgery was 74 minutes (range 50-120 min). Average time for Pyeloplasty (with 6 Fr infant feeding tube as a trans-anastomotic stent) was 95min. in patient where double-J (D-J stent) was used as trans-anastomotic stent during Pyeloplasty, duration was 86.5 min. Mean duration of surgery for Nephrolithotomy was 53.2 min, Pyelolithotomy 64 min and for Nephrectomy was 73.5 min respectively. For all patients Intravenous fluids were stopped after tolerating oral feeding and those who underwent Pyeloplasty with D-J stent were discharge earlier than those who had feeding tube as stent for Pyeloplasty. Mean duration of hospital stay was 3 days (2-8 days).

None of the patients were major postoperative complications, except for two patient suffered wound infection who were treated conservatively (Grade II as per clavien classification of surgical complications) [5]. Most of the patients required only one dose of IV analgesic followed by oral analgesics within 24-48 hours after the operation.

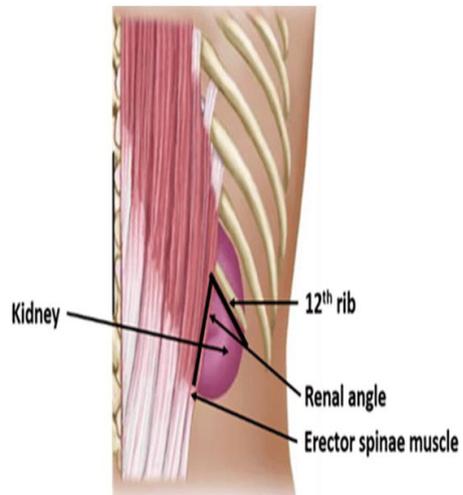


Figure 3: Depicting Renal angel



Figure 4: Depicting incision landmarks



Figure 5: Depicting cut through of an extremely dilated renal pelvis of a patient suffering from PUJO in Maiwand teaching hospital operation room

## Discussion

The choice of surgical incision can be judged based on its comfort and the safety it gives to the patient as well as allowing adequate surgical field access to the surgeon. Posterior lumbotomy incision was first described by Simon in 1870. The standard lumbar incision involves muscles cutting and cause more postoperative pain, its time consuming, leaving ugly scar in the anterior location and importantly causing muscles meekness due to neuropraxia. In contrast the lumbar approach involves no muscles cutting, provide good exposure, offers minimal postoperative pain and early recovery with small scar on the back. The lumbotomy approach in young children has been reported with good success [2-4,6-8]. The current study describes experience of posterior lumbotomy in 69 patients suffering from different upper urinary tract conditions. Nephrolithotomy was most-common surgery, followed by Pyelolithotomy, Pyeloplasty and Nephrectomy. However the initial description of this approach includes vertical incision [1]. We found transverse incision more suitable. Result of this study confirms the utility and safety of lumbotomy incision reported over the last two decades [9-13,6,14].

Oreland, *et al.* [6] reported on 41 pediatric patients having upper urinary tract surgery via this incision. By third day 64% of patients required no analgesia and 93% were tolerating a regular diet. Mean length of hospital stay was 5.6 days. Wisniewski, *et al.* [15] reported that their lumbotomy patients spent only 1/2 the time in hospital compared to flank incision. Gardener [11], Freiha, *et al.* [10] and Gittes, *et al.* [12] reached similar conclusions as well as asserting that these lumbotomy patients required lesser doses of analgesia and ambulated early compared to flank incisions. Novick [13] reported simultaneous bilateral nephrectomy in pretransplant patients and open renal biopsy using this incision. All his open biopsy patients were able to leave hospital next day. Pansadoro [14] concluded from his series of over 200 patients that “this is the incision of choice for stone surgery and pyeloplasty because it is easy to perform, has minimal operative trauma and postoperative morbidity and results in shorter hospitalization.

Postoperative recovery was very quick in these patients, oral feeding was initiated quickly and there was minimal postoperative pain; most patients were discharged by the third postoperative day.

## Research Analysis Chart

Surgical procedure	Diagnosis	Number of patients	Mean weight of patients in Kg	Mean time of surgery in minutes	Mean time of hospital stay in days	Type of analgesia (IV,Oral) (how often)
Pyeloplasty With Pediatric feeding tube as Nephroureterostomy (without D J stent) and perirenal drain	PUJO (Left side 12 Cases) (Right side 8 Cases)	12	16.25Kg	95	6.3	- Single IV dose of Paracetamol following surgery. until the starting of oral feeding (90%) - More than one dose (10%)
Pyeloplasty With DJ stent and perirenal drain	PUJO (Left side 12 Cases) (Right side 8 Cases)	8	25Kg	86.5	2.7	Following surgery one IV dose of paracetamol followed by oral analgesics after the start of oral feeding
Nephrolithotomy	Nephrolithiasis (Right side 26 Cases) (Left side 12 Cases) (Bilateral 7 Cases)	32	19Kg	53.2	3	- (85%) one IV dose - (15%) more than one dose
Pyelolithotomy	Nephrolithiasis (Right side 26 Cases) (Left side 12 Cases) (Bilateral 7 Cases)	13	21Kg	64	2	(95%) one IV dose
Nephrectomy	Pyonephrosis due to (Polycystic kidney 1 Case) (Nephrolithiasis 2 Cases) (Congenital obstruction 1 Case)	4	23Kg	73.5	2	One IV analgesic dose was enough until the start of oral feeding

Distribution of 69 patients with posterior Lumbotomy.

PUJO: Pelviureteric junction obstruction.

Figures: 1-4, depicting anatomic landmarks and incision site.

Figure: 5, depicting the cut through of an extremely dilated renal pelvis of a patient suffering from PUJO in Maiwand teaching hospital operation room.

## Conclusion

Posterior lumbotomy incision is feasible because it is easy to perform with less bleeding and quick access to upper urinary system. The current study reported 69 cases of upper urinary tract surgical conditions requiring surgical intervention. Our surgical approach was through posterior lumbotomy for all the cases and we noticed this incision suitable for giving excellent exposure, less post-operative pain, less bleeding, and early discharge from hospital. There were less incidences of wound infection and no incidences of neuropraxia on surgical scar as well as its surrounding area. We recommend this incision for all upper urinary tract surgeries.

## Conflict of Interest and Funding

None

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