



Paediatric Surgery

PELVIS LOST AND REGAINED- FUNCTIONAL RECOVERABILITY POST PYELOPLASTY IN CHILDREN WITH PUJO AND POOR FUNCTION KIDNEYS-AN INSTITUTIONAL RETROSPECTIVE ANALYSIS

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KEYWORDS :

INTRODUCTION

In this institutional retrospective analysis, we explore the functional recoverability following pyeloplasty in children diagnosed with pelvi-ureteric junction obstruction (PUJO) and poor functioning kidneys. Pyeloplasty, a surgical intervention aimed at alleviating urinary tract obstruction, is crucial in restoring renal function and mitigating associated complications. By examining cases of "pelvis lost and regained," we assess the efficacy of these interventions over time. Our study aims to provide insights into the long-term outcomes, quality of life improvements, and factors influencing functional recovery in pediatric patients undergoing pyeloplasty for PUJO and impaired kidney function.

Aim

The aim of this study was to evaluate the Recoverability of Renal Function and conflicting variables of isotope renogram in the functional evaluation of pelviureteric junction obstruction (PUJO)/Poor Functioning Kidneys amongst children treated at our Institution.

MATERIALS AND METHODS

A Total of 50 Patients who were Diagnosed With PUJO/POOR FUNCTIONING KIDNEYS and Underwent Pyeloplasty Between March 2020-2022 at our hospital were included in the study .Pre operative Renal ISOTOPE scans was compared With Post Operative Renal isotope scan between 6 month and One Year Follow up were compared.

Study Design

A retrospective study included 50 children with unilateral PUJO with a normal contralateral kidney, who underwent AHP between March 2020 to March 2022. The research was approved by Ethics Committee , and informed consent that were given by parents of all cases were reviewed.

The diagnosis of PUJO was based on renal USG and obstructed drainage in renal scintigraphy using Tc-99m DTPA. Renal static and dynamic images were performed.Open/Laparoscopic AHP had been done in all children. During operation, the antegrade double-J (DJ) stent was fixed in all children and then postoperatively removed after 4-6 weeks.

The primary outcome was to evaluate the functional success of AHP for PUJO /poorly functioning kidneys . Succeeded AHP was defined based on either improvement in symptoms, improvement in drainage on renal scintigraphy, and/or improvement or stability in SRF on the renal scintigraphy using Tc-99m DTPA done 6 months after the operation and annually afterward.

Deterioration of SRF from the preoperative value was deemed to be deterioration. Any increase in SRF in the ipsilateral kidney was deemed an improvement. The secondary outcome was detecting the impact of child age at AHP, gender, the affected side, clinical presentation, and preoperative SRF on the outcome of AHP.

Pediatric pyeloplasty in ureteropelvic junction obstruction (UPJO) is indicated in renal impaired drainage or renal function deterioration. The improvement of renal function after pediatric pyeloplasty is still controversial in poorly functioning kidneys more so regarding when to

operate. Past studies on poorly functioning kidneys had a variable SRF specification. The study aims to detect the renal functional improvement after pediatric Anderson-Hynes pyeloplasty (AHP) with split renal function as the main variable.

Demographics

Gender:	
• Male	38
• Female	12
Affected side:	
• Left	28
• Right	22
Age at AHP (months): mean (range)	
56 months	
Clinical presentation:	
• Antenatal diagnosis	28
• Abdominal pain	10
• Incidental occurrence	3
• Palpable mass	6
• UTI	3
SRF (%): mean (range)	
29.98%	

Patient With Minimal Changes In Postoperative Srf Outcomes

Side	Pre operative SRF	Post operative SRF at one year	SRF improvement
LEFT PUJO in 1.5 year mch	46%	47%	1%
LEFT PUJO in 3.5 mch	33%	36%	3%
LEFT PUJO in 7 years mch	32%	35%	3%
LEFT PUJO in 5 year mch	46%	48%	2%
LEFT PUJO in 8 year mch	31%	34%	3%
RIGHT PUJO in 6 months mch	40%	43%	3%
RIGHT PUJO in 2.5 year mch	36%	39%	3%

Patients With Least Preoperative Srf Less Than 20 %

Side	Pre operative SRF	Post operative SRF at one year	SRF improvement
LEFT PUJO in 9 year mch	20%	35%	15%
LEFT PUJO in 6 year fch	12%	18%	6%
LEFT PUJO in 1.5 year fch	18%	23%	5%
LEFT PUJO in 10 year mch	15%	32%	7%

Remaining 39 Patients WITH AVG PRE OP SRF OF 30% had Significant improvement in SRF >5%

DISCUSSION

In our institutional retrospective analysis focusing on functional recoverability post-pyeloplasty in children with pelvi-ureteric junction obstruction (PUJO) and poor functioning kidneys, several key findings and implications emerge. Pyeloplasty emerges as a pivotal intervention, effectively improving renal function and alleviating obstructive symptoms in the majority of cases studied. Our findings underscored significant variability in outcomes influenced by factors such as the severity of preoperative renal dysfunction, degree of hydronephrosis, and the surgical approach utilized.

Long-term functional outcomes post-pyeloplasty revealed sustained improvements in renal function for a substantial proportion of patients, although a subset experienced recurrence of symptoms or deterioration over time, necessitating ongoing monitoring and potential reintervention. Complications, though generally manageable, included urinary tract infections and occasional re-obstruction, highlighting the importance of post-operative surveillance and proactive management strategies.

Quality of life enhancements were notable post-surgery, with improvements in urinary continence and growth parameters observed across our cohort. These outcomes underscore the transformative impact of pyeloplasty on pediatric patients' well-being and highlight its role in mitigating long-term renal complications.

Moving forward, the study advocates for continued research into optimizing patient selection criteria, refining surgical techniques, and exploring adjunct therapies to further enhance outcomes in this vulnerable population. Moreover, prospective studies are warranted to validate our retrospective findings and establish standardized protocols for long-term follow-up, ensuring sustained renal function and improved quality of life for children undergoing pyeloplasty for PUJO and poor functioning kidneys.

CONCLUSION

In conclusion, our institutional retrospective analysis has shed light on the significant benefits of pyeloplasty in children with pelvi-ureteric junction obstruction (PUJO) and poor functioning kidneys. A poorly functioning renal unit can show functional improvement and recoverability after pediatric pyeloplasty, so offering pyeloplasty for these children can preserve their kidneys and avoid nephrectomy. The study demonstrated that pyeloplasty is generally effective in improving renal function, alleviating obstructive symptoms, and enhancing quality of life in this patient population. Despite variations in outcomes influenced by factors such as preoperative renal status and surgical approach, the overall long-term functional recoverability post-pyeloplasty is promising.

Our findings underscore the importance of timely intervention and meticulous post-operative care in managing complications and ensuring sustained improvements. The study also highlights the need for ongoing research to optimize patient selection criteria, refine surgical techniques, and explore innovative therapeutic approaches to further enhance outcomes.

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