Outcome of Anderson Hynes Pyeloplasty For Pelvi-ureteric Junction Obstruction

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ABSTRACT

Objective To *report the postoperative results of open Anderson Hynes pyeloplasty for pelvi-ureteric junction obstruction.*

Study design *Descriptive case series.*

Place & Duration of study *Surgical C Unit, Hayatabad Medical Complex Peshawar, from January 2020 to December 2021.*

Methodology *A total of 25 patients of either gender with unilateral hydronephrosis due to pelvi-ureteric junction obstruction were included. Patients with hydronephrosis due to vesico-ureteric reflux, obstruction secondary to external compression and redo pyeloplasty were excluded. These patients underwent open Anderson Hynes pyeloplasty. Postoperative outcome was recorded and analyzed using SPSS version 16.*

Results *The age of the patients was from 5-years to 35-years with the mean age of 22+5 year. There were 20 (80%) male and 5 (20%) female patients. Left side was involved in 17 (68%) patients. Presenting complaints were flank pain in 23 (92%), swelling in lumbar region in 5 (20%) and feeling of heaviness in the flank in 7 (28%) patients. Postoperative morbidity included pyrexia in 5 (20%), anastomotic urinary leak in 3 (12%) and urinoma formation in 2 (8%) patients. Re-stenosis of pelvi-ureteric anastomosis occurred in one (4%) patient who required redo surgery. The overall success rate was 96%.*

Conclusion *Open Anderson Hynes pyeloplasty resulted in good outcome in most of the patients with pelvi-ureteric obstruction.*

Key words *Anderson Hynes pyeloplasty, Dismembered pyeloplasty, Hydronephrosis.*

INTRODUCTION:

Aseptic dilatation of the pelvi-caliceal system is called hydronephrosis. Hydronephrosis is categorized into four grades. Grade1 resolves spontaneously in 50% patients while grades 2, 3 and 4 resolve in 36%, 16% and 3% cases, respectively.[1] The causes of hydronephrosis are divided into intrinsic and extrinsic types. In intrinsic type the most common pathology is an aperistaltic junction segment that results in obstruction at pelvi-ureteric junction (PUJ). A high insertion of ureter into pelvis may also results in obstruction to the flow of urine leading to hydronephrosis. Extrinsic causes include bands, kinking, and aberrant vessel. [2]

PUJ narrowing is the commonest congenital cause of hydronephrosis and accounts for 1/1250 live births.[3] Untreated hydronephrosis results in progressive impairment of renal function. Surgical intervention is indicated when renal function is less than 40%. Majority of the patients presents with grade 3 and 4 hydronephrosis.[4]

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Anderson Hynes dismembered pyeloplasty is a standard surgical procedure most often used to treat this condition.[5] This is considered as the gold standard technique for PUJ obstruction with a success rate of more than 90%.[6] Minimally invasive techniques like laparoscopic pyeloplasty and endopyelotomy are also being used to reduce the postoperative morbidity and early discharge from hospital.[7] Other procedures are Foley's VY plasty and endoscopic procedures including retrograde balloon dilatation etc. In general, these procedures do not produce results which are equivalent to Anderson Hynes pyeloplasty.[3]

Open Anderson Hynes pyeloplasty has an advantage over laparoscopic technique. In children, laparoscopic pyeloplasty is challenging and has a success rate of less than 95% even in best hands.[8] On the other hand, open Anderson Hynes pyeloplasty has a success rate of more than 95%. It is also advantageous in dealing with long strictures, presence of severe hydronephrosis and in presence of crossing aberrant vessels.[9] In developing countries, open Anderson Hynes pyeloplasty is still the preferred procedure for PUJ obstruction.[10] The purpose of this study was to document the postoperative outcome of open Anderson Hynes pyeloplasty.

METHODOLOGY:

This descriptive case series was conducted at Surgical C unit, Hayatabad Medical Complex Peshawar, from January 2020 to December 2021. Twenty-five patients were included. All patients of any age and gender with unilateral hydronephrosis without hydroureter on ultrasound and IVU were enrolled. Patients with uretero-hydronephrosis, vesicoureteric reflux, obstruction secondary to adhesions and external compression, redo pyeloplasty, ectopic and solitary kidney and patients with deranged renal profile, were excluded.

A detailed history was taken and physical examination performed. Baseline investigations like urinalysis, blood complete picture, blood sugar, blood urea and serum creatinine were done. Ultrasound scan and IVU were also performed in all cases while renal scan (DTPA) was done in selected cases. Informed written consent was taken. Approval of the study was obtained from Institution review board.

A Foley catheter was passed before surgery. Preoperative antibiotic (injection ceftriaxone intravenously) was given. Open Anderson Hynes pyeloplasty was performed through a subcostal incision. Pelvi-ureteric anastomosis was performed over a 6-Fr double J stent with polyglycolic suture. Drain was placed closed to the repair. Foley catheter was removed 24 to 48 hours after surgery. Drain was removed after 3-5 days when there was no or minimal drainage. Patients were followed up in the OPD for six months. Follow up visits were scheduled visit at 10th day, one, three and six months after surgery. At first visit wound was examined for infection. At second visit ultrasound scan was performed. After three months an IVU was advised. DJ stent was then removed in the operation theatre after confirming the patency of anastomosis.

Postoperative outcome was recorded on a predesigned form. Success of the procedure was assessed by documenting normal renal profile and IVU study. Data were entered and analyzed with SPSS version 16. Descriptive statistics were applied to present the results.

RESULTS:

In this study 25 patients were included. There were 20 (80%) males and 5 (20%) females, with male to female ratio of 4:1. The age range of the patients was from 5-years to 35-years with the mean age of 22+5 years. Left side was involved in 17 (68%) cases and right side in 8 (32%) patients. The presenting complaints included pain in the respective flank in 23 (92%) patients, mass in lumbar region in 5 (20%) and feeling of heaviness in flanks in 7 (28%) patients. Three (12%) patients also had hematuria. Details are given in table I. Fourteen (56%) patients had grade 3 and 11 (44%) grade 4 hydronephrosis.

Postoperative pyrexia and respiratory tract infection (RTI) were managed with antibiotics and chest physiotherapy. Anastomotic urine leakage settled down within five days. In 2 (8%) patients urinoma was picked on ultrasound scan one month after surgery and managed through ultrasound guided aspiration. Two (8%) patients had minor wound infection and were treated with antiseptic dressing. One (4%) patient developed restenosis of anastomotic site three months after the procedure. This patient was subjected to redo pyeloplasty. Details are given in table II. The mean operating time was 70 minutes and hospital stay was between 4-7 days. The overall success rate was 96%

DISCUSSION:

The goal of surgical intervention in pelvi-ureretic obstruction is to reconstruct a patent pelvi-ureteric junction. This helps in the improvement of symptoms and renal function. Anderson Hynes dismembered pyeloplasty is a commonly employed procedure to relieve the obstruction.[11] A watertight repair of pelvi-

Table I: Characteristics Clinical Features (n=25)

Variables	Features	No. of patients (n)	Percentage (%)
Gender	Male	20	80%
	Female	05	20%
Side involved	Left side	17	68%
	Right side	08	32%
Clinical Features	Lumbar pain	23	92%
	Heaviness in flanks	07	28%
	Mass in lumbar region	05	20%
	Recurrent UTI	05	20%
	Hematuria	03	12%
	Calculous at PUJ	07	28%

Table II: Postoperative Morbidity

Morbidity	No. of patients (n)	Percentage (%)
Postoperative Pyrexia	05	20%
RTI	04	16%
Anastomotic Urine Leakage	03	12%
Urinoma Formation	02	8%
Wound Infection	02	8%
Restenosis	01	4%

ureteric junction with excellent results is possible due to improvement in surgical techniques including suture material.[12] Minimally invasive procedures are commonly performed to encourage early mobility and decrease hospital stay, but at the same time, the operating time and postoperative complications are high as compared to open Anderson Hynes pyeloplasty.[13]

In developing countries, open Anderson Hynes pyeloplasty is still the most commonly practiced and preferred procedure due to non-availability of laparoscopic instruments and skilled surgeons.[8] Although PUJ obstruction occurs secondary to congenital reason, the time of presentation is variable. In our study, the minimum age was 5-years with a mean age of 22-years. Mumtaz et al reported an age range of 1 month to 25-years in their study of 30 cases.[14] Siddique et al reported 1-11 years range in their series of 50 cases.[11]

In current series majority of the patients were males (80%). Sahito RA had 83.3% males in their study.[7] Siddique et al reported 72% males in their series.[11] Hydronephrosis most commonly involves left kidney. Same was the finding in our series. In literature, the reported figure is 52% to 73.5% for left side hydronephrosis.[15,16] In our study calculous at PUJ was found in 7 (28%) patients. Odzebe et al reported 5.5% stones impacted at PUJ obstruction.[17]

Early postoperative complications in our series were of minor nature and managed easily. Late complications included urinoma formation and restenosis of pelvi-ureteric anastomosis. Siddique et al reported 4% (n=2) urinoma formation and 4% (n=2) restenosis.[11] These figures are almost comparable to our findings. Similar complications are reported in different studies.[17,18] Overall success rate in our study was 96% which is comparable to other reported series.

CONCLUSION:

Open dismembered Anderson Hynes pyeloplasty is a preferred procedure for pelvi-ureteric junction obstruction, with excellent success rate and minimal postoperative morbidity.

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