Open Dismembered Pyeloplasty for Ureteropelvic Junction Obstruction in Ectopic Kidneys: A Case Series from a Tertiary Hospital in Eastern India

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Abstract:

Background: Pelvic and crossed renal ectopia are rare anomalies that can be complicated by pelvi-ureteric junction obstruction (PUJO). Surgical reconstruction is challenging because of aberrant anatomy. Anderson–Hynes dismembered pyeloplasty remains the gold standard for PUJO repair. We report outcomes of open pyeloplasty in ectopic kidneys from a single tertiary center. **Methods:** Five consecutive adult patients with ectopic kidneys and PUJO underwent open Anderson–Hynes dismembered pyeloplasty at Calcutta National Medical College between December 2023 and August 2025. Diagnosis was confirmed by ultrasonography (USG), contrast-enhanced CT urography, and Tc-99m DTPA diuretic renography. Patients were followed with clinical evaluation, serum creatinine, urinalysis, renography at 6 and 12 months, and ultrasound semiannually. Primary outcome was functional improvement on DTPA; secondary outcomes were hydronephrosis regression and need for re-intervention. **Results:** Median age was 28 years (range 18–42). Three patients had left pelvic kidneys, one right pelvic, and one left crossed ectopic kidney. Four presented with abdominal pain, one was incidental. Aberrant vessels were present in 3/5 cases. Four patients (80%) demonstrated functional improvement on DTPA; hydronephrosis improved in only two (40%). One patient (20%) with a left pelvic kidney developed recurrent pain and UTI, representing functional failure, and required postoperative double-J stenting. No major complications were recorded. **Conclusions:** Open dismembered pyeloplasty is effective in ectopic kidneys with PUJO, providing functional improvement in most cases. Radiologic hydronephrosis resolution is less consistent, and some patients may require secondary intervention. Careful preoperative imaging and vigilant follow-up with diuretic renography are essential.

Keywords: Ectopic kidney; Pelvi-ureteric junction obstruction; Open dismembered pyeloplasty; Anderson–Hynes pyeloplasty; Pelvic kidney; Crossed renal ectopia; Diuretic renography; Surgical outcomes

Introduction

Renal ectopia is a congenital anomaly caused by failure of the kidney to ascend from the pelvic region to its normal lumbar position during embryogenesis. Normally, the kidneys ascend between the 6th and 9th week of gestation, rotating medially and receiving sequential arterial supply as they migrate. Arrest of ascent leads to pelvic ectopia, while abnormal lateral migration can cause crossed ectopia, sometimes with fusion [1,2].

The reported incidence of ectopic kidneys is approximately 1 in 900 autopsies and 1 in 2,200–3,000 clinical imaging studies [3,4]. Crossed ectopia is less common, with an estimated incidence of 1 in 7,000–10,000 births [5]. There is a slight male predominance and left-sided ectopia is more frequently observed [6].

Although some ectopic kidneys are asymptomatic and incidentally detected, they are predisposed to complications including hydronephrosis, vesicoureteric reflux, recurrent urinary tract infections, nephrolithiasis, hypertension, and in rare cases, malignant transformation [7–9]. The most frequent obstructive complication is ureteropelvic junction obstruction (UPJO), which occurs in 22–37% of ectopic kidneys [10]. This is attributed to high ureteral insertion, anomalous vasculature, abnormal renal pelvis orientation, and tortuous ureteral course [11].

Management of UPJO in ectopic kidneys is particularly challenging due to aberrant vascular supply, distorted calyceal anatomy, and the short ureter. Several techniques have been described, including dismembered Anderson–Hynes pyeloplasty (open, laparoscopic, robotic), Foley Y–V pyeloplasty, pyeloureterostomy, and even auto transplantation in select cases [12–14]. Among these, dismembered pyeloplasty remains the gold-standard procedure, with success rates exceeding 90% in anatomically normal kidneys [15]. Herein, we report our institutional experience with five adult patients with ectopic kidneys who underwent open dismembered pyeloplasty for UPJO. We detail perioperative findings, functional and radiologic outcomes, and place our results in context with the available literature.

Methods

This was a retrospective case series of five consecutive patients with ectopic kidneys undergoing open dismembered pyeloplasty at Calcutta National Medical College between December 2023 and August 2025. Inclusion criteria: adults (≥18 years) with pelvic or crossed ectopic kidney and PUJO confirmed by imaging and renography. Exclusion criteria: prior surgery on the same kidney or follow-up <6

months.

Preoperative evaluation included ultrasonography (USG), contrast enhanced CT KUB with urographic phase, and Tc-99m DTPA diuretic renography. Surgical technique: All patients underwent open Anderson–Hynes dismembered pyeloplasty. Patients were placed supine; incision was infra-umbilical midline (n=4) or Pfannenstiel (n=1). The obstructed UPJ was excised, ureter spatulated, and anastomosed to a dependent portion of the renal pelvis using 4-0/5-0 polyglactin sutures. Double-J stents were placed intraoperatively in 4/5 patients, while one patient required postoperative stenting for failure. Closed-suction drains were placed in all patients.

Perioperative care: IV antibiotics were given perioperatively; drains and catheters were removed as appropriate. DJ stents were removed at 6 weeks.

Follow-up: Clinical evaluation, CBC, urinalysis, and serum creatinine were performed at each visit; DTPA renogram at 6 and 12 months; USG semiannually. Outcomes: Functional success was defined as improved drainage/split function on DTPA; radiologic success as reduced hydronephrosis; failure as needed for secondary intervention.

Results

Median age was 28 (18–42). Three patients had left pelvic ectopia, one right pelvic, and one left crossed ectopia. Four presented with abdominal pain; one was incidental. Aberrant vessels encountered on 3/5. No intraoperative complications.

Functional outcomes: 4/5 (80%) improved on DTPA. Radiologic hydronephrosis improved in 2/5 (40%). Failure: 1/5 (20%) required postoperative stenting due to persistent obstruction. No major perioperative complications were recorded.

Pt.	Age (y)	Side & type	Presentation	Stent	Functional outcome	Hydronephrosis outcome	Final status
1	18	Left pelvic	Abdominal pain	Intra-op	Improved	Stable	Symptom-free
2	24	Right pelvic	Abdominal pain	Intra-op	Improved	Improved	Symptom-free
3	28	Left pelvic	Abdominal pain	Intra-op	Improved	Improved	Symptom-free
4	32	Left crossed	Incidental	Intra-op	Improved	Stable	Asymptomatic
5	42	Left pelvic	Pain + UTI	Post-op (failure)	Failed → improved after ste	Stable	Symptom-free after stent

Table 1: Per-patient Characteristics and Outcomes

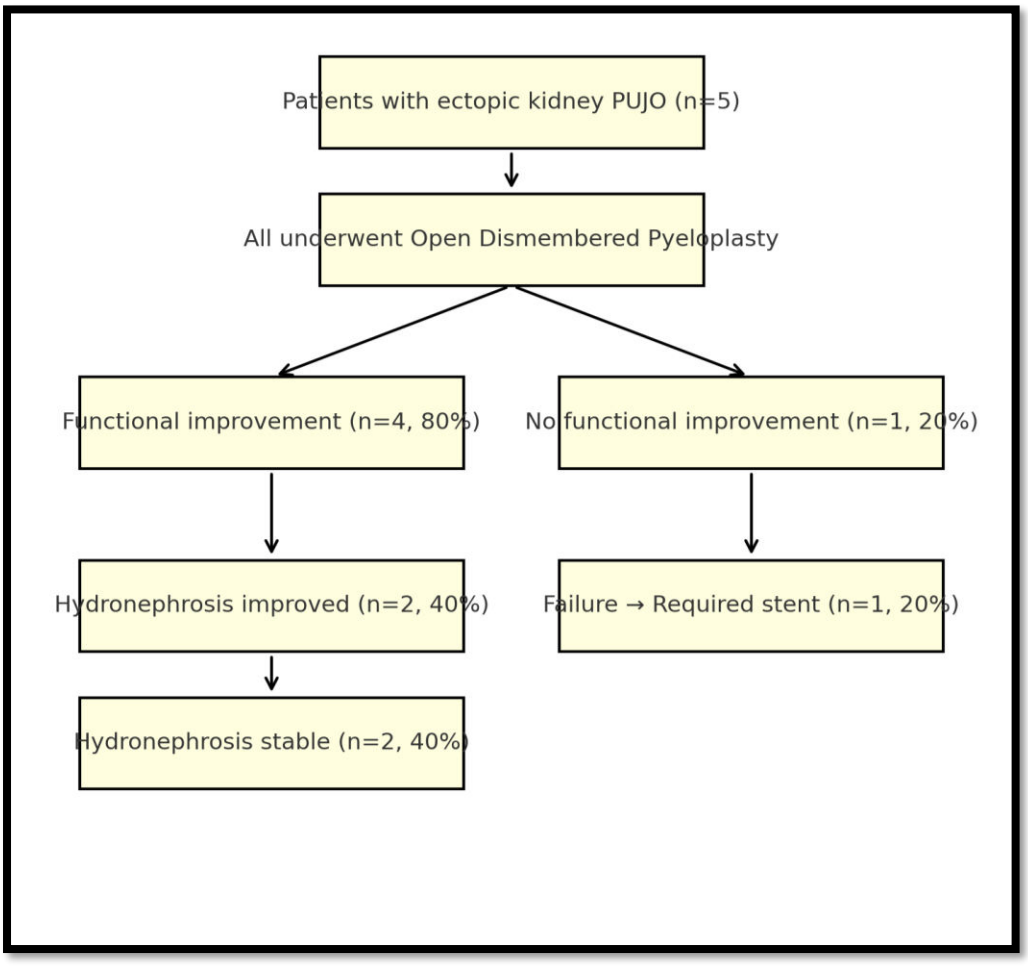

Figure 1: Patient Flowchart

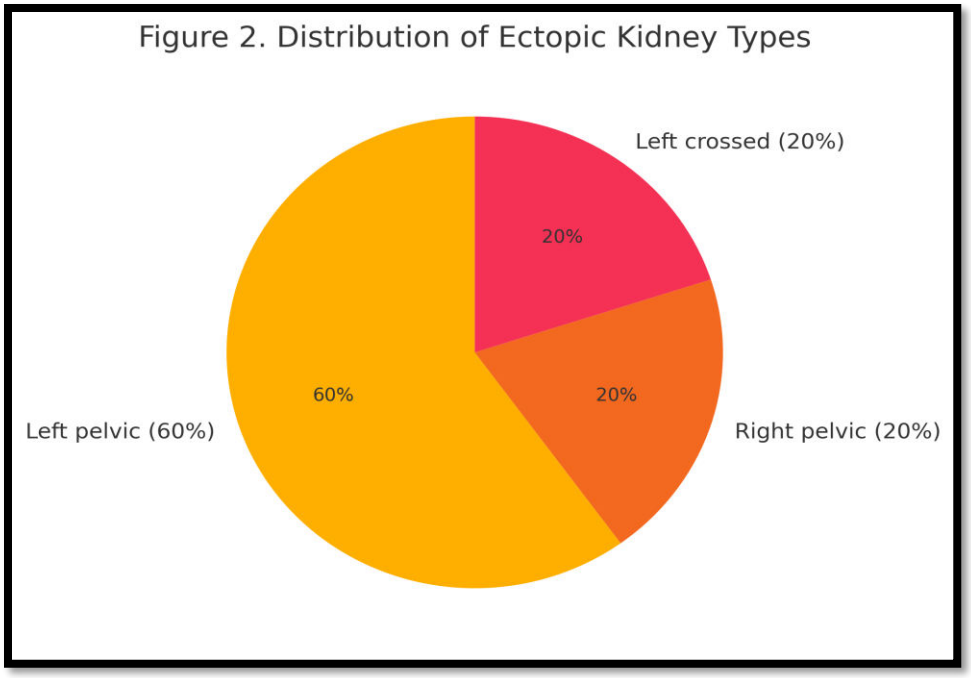

Figure 2. Distribution of ectopic kidney types

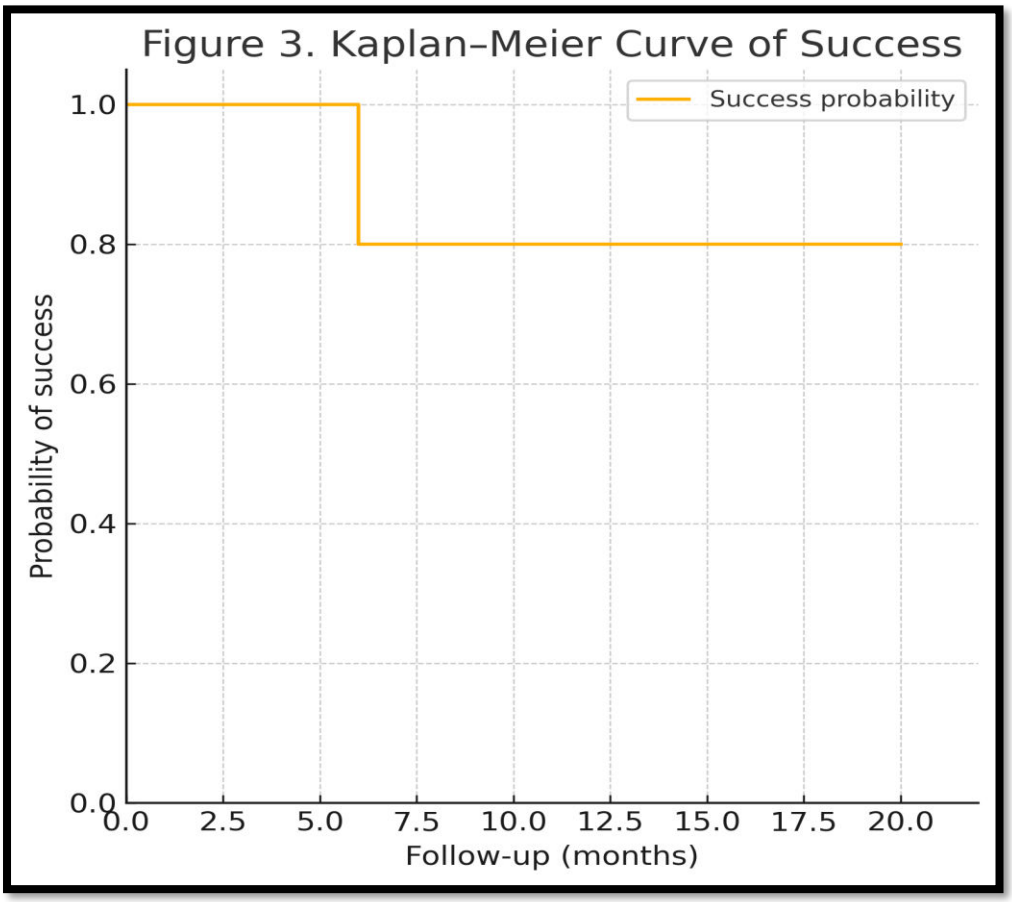

Figure 3: Kaplan–Meier curve of success

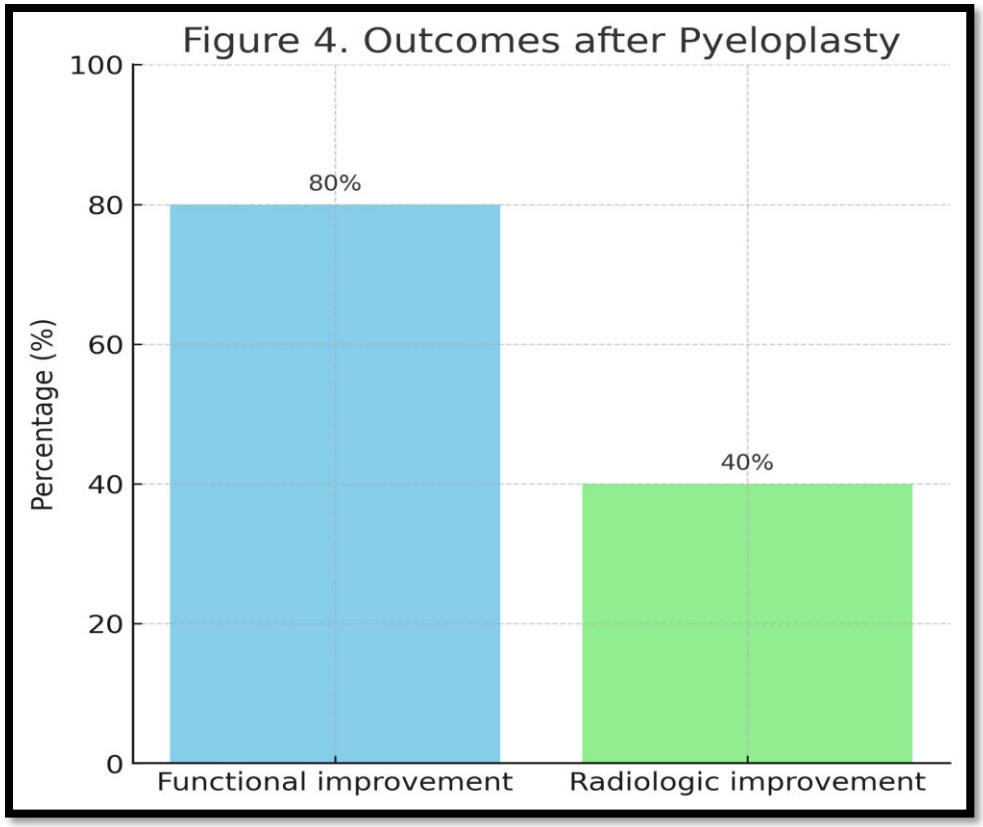

Figure 4: Outcomes after pyeloplasty (functional vs radiologic improvement)

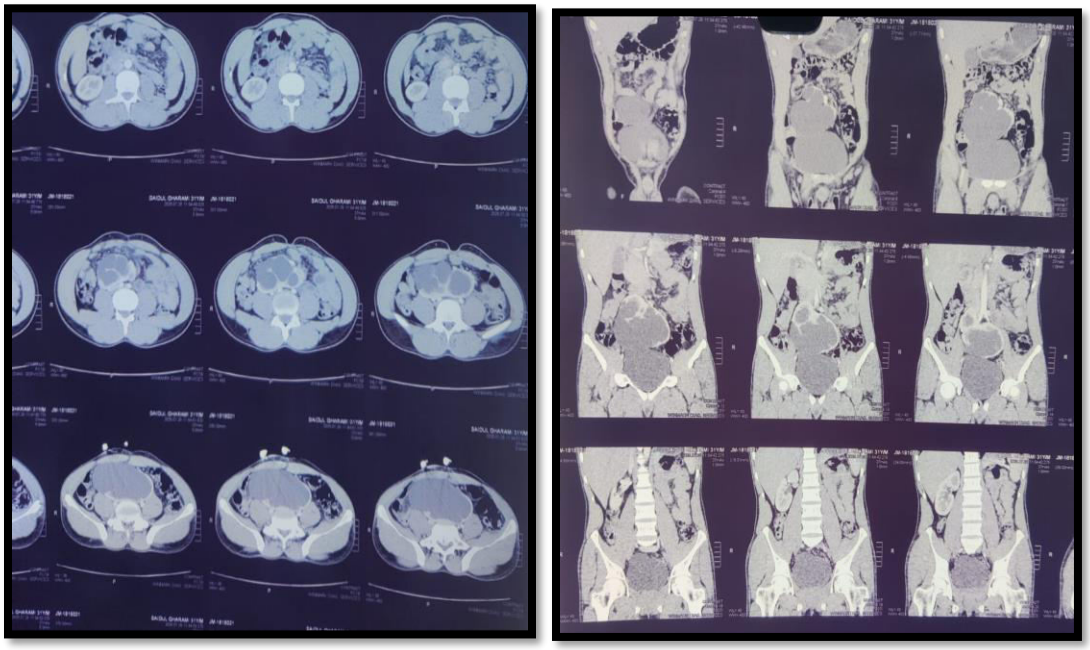

Figure 5: Contrast enhanced CT scan showing hydronephrotic left ectopic pelvic kidney

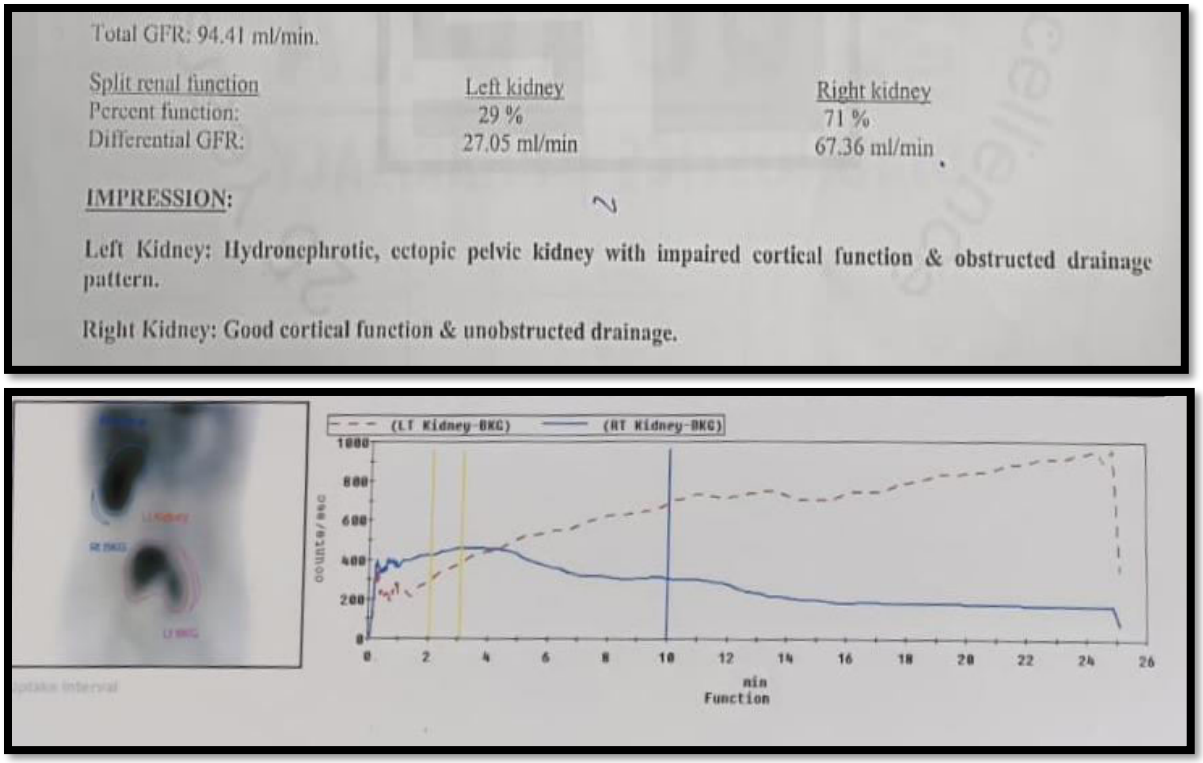

Figure 6: Pre-pyeloplasty DTPA Renogram of Patient 1(left ectopic pelvic kidney)showing Type 2 (obstructed) curve on left side

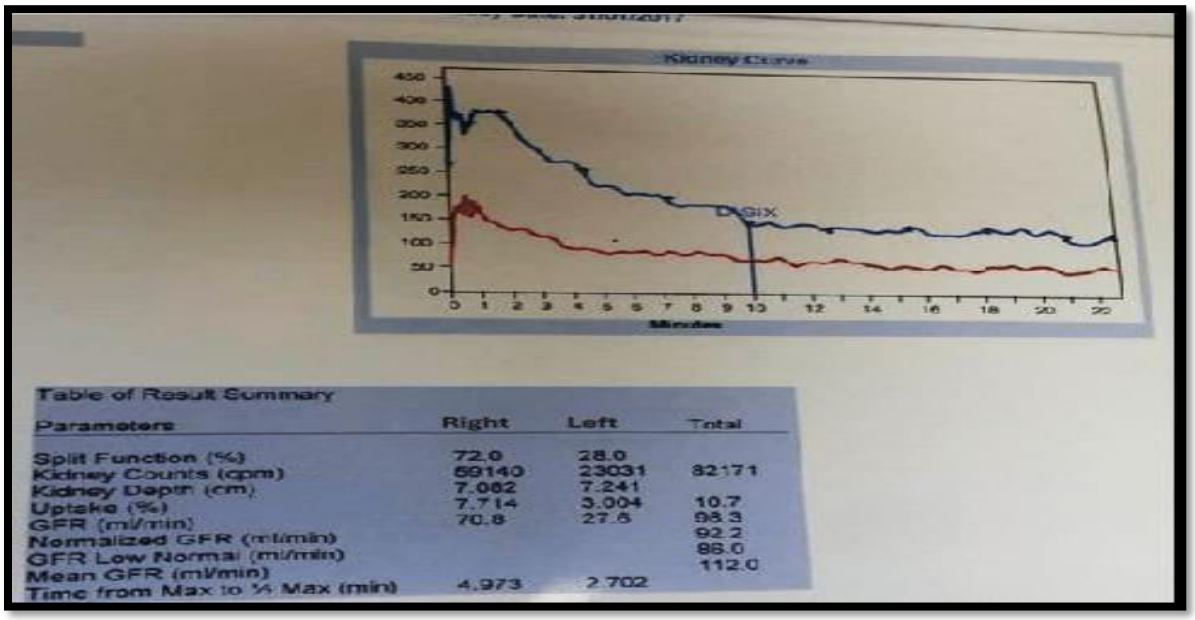

Figure 7: post-pyeloplasty DTPA Renogram of Patient 1(left ectopic pelvic kidney) showing Type 1(non-obstructed) curve on left side with slight improvement in renal function

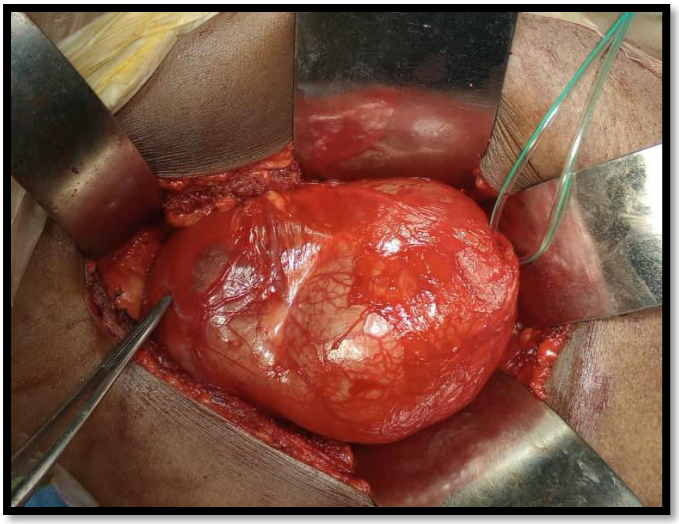

Figure 8: Hydronephrotic pelvic ectopic kidney with hugely dilated pelvis

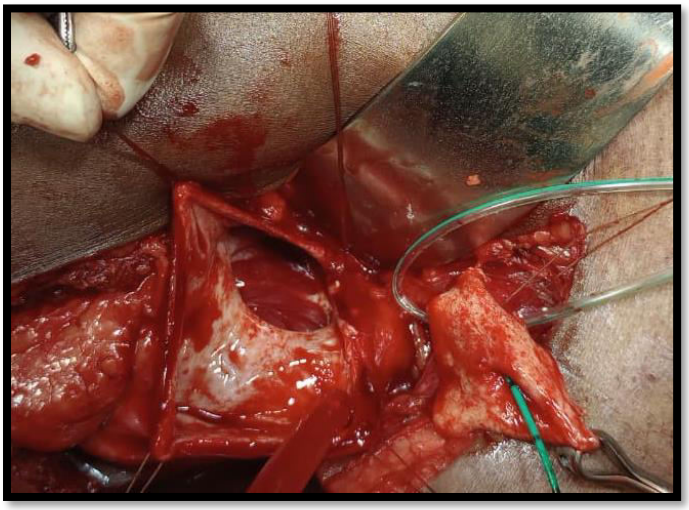

Figure 9: Pelvis dismembered and ureter spatulated

Figure 10: Post ureteropelvic anastomosis

Discussion

UPJO in ectopic kidneys poses technical challenges due to anomalous anatomy. In our five-patient series, outcomes were comparable to published reports. Helmy et al. analyzed 43 pediatric ectopic kidneys treated with open pyeloplasty and found a radiographic and symptomatic success rate of 82.6% [16]. In adults, Kumar et al. reported a 94.1% success rate in 17 anomalous kidneys (horseshoe or ectopic) after pyeloplasty [17], while Razavi et al. observed 100% radiographic success and 88% symptomatic improvement in 10 robotic pyeloplasties [18]. However, Elbaset et al. demonstrated lower functional recovery (69%) in adults with anomalies compared to matched normal kidneys [19].

Minimally invasive approaches are increasingly utilized. Kumar et al. reported shorter hospital stays with robotic (3.3–4.2 days) compared to open repair (6.5 days) [17]. Meta-analysis of 17 studies found robotic pyeloplasty yielded shorter operative times, reduced hospitalization, fewer complications, and higher success than laparoscopy [20]. Still, open surgery remains valuable in settings with aberrant vasculature or limited resources.

Long-term outcomes are favorable but variable. Helmy et al. reported redo pyeloplasty in 4/38 and nephrectomy in 3/38 [16]. Kumar observed one salvage ureterocalicostomy after open pyeloplasty [17]. In our series, one patient required secondary DJ stenting. Persistent dilation is common despite successful repair, and functional recovery may lag [16, 19].

Overall, pyeloplasty in ectopic kidneys—whether open, laparoscopic, or robotic—achieves success rates of 80–95%. Our series highlights open dismembered pyeloplasty as a safe, effective option with high functional improvement.

Conclusion

Open Anderson–Hynes dismembered pyeloplasty is effective for PUJO in ectopic kidneys. Functional success is high (80%), though radiologic improvement is less consistent. Secondary procedures may be required. Careful imaging, patient counselling, and structured follow-up with renography are key.

Conflict of interest: nil

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Author's Contribution:
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Conflict of interest: No Conflict of interest is found elsewhere considering this work. **Source of Funding:** There was no financial support concerning this work. **3**

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