

## Surgical Management of Uretero-Pelvic Junction Obstruction UPJO: Sikasso Experience

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**Introduction:** The purpose of this study was to assess our experience in the surgical management of UPJO.

**Method and Method:** This was a descriptive retrospective study conducted in our department between January 2020 and March 2022. The diagnosis of UPJO was based on ultrasound and CT scan findings. The main reasons for consultation are: Abdomino-lumbar pain and renal colic. Seventeen patients were operated including 12 pyeloplasty according to Anderson-Hynes and 5 nephrectomy.

**Results:** A total of 18 UPJO cases were admitted. Average age: 21.40 ± 11.60 (0.30-37 years). Average duration of intervention: 65.88 ± 7.54 (55-75mn). No complications were reported during these procedures and 2 cases of lower polar vessels were detected. The immediate and short-term surgical follow-up was favourable. They were swaddled with retroperitoneal urinoma in one patient and parietal suppuration in another. The result of pyeloplasty according to Anderson Hynes was considered satisfactory overall.

**Conclusions:** Pyeloplasty according to Anderson Hynes remains the reference technique in our socio-economic context. This is because of its simplicity and efficiency; but also the possibility of help it offers in the confirmation of the etiological diagnosis and in the management of complications.

**Keywords :** Pyeloreteral junction syndrome, pyeloplasty, malformation, nephrectomy.

## Introduction

Pyeloureteral junction syndrome is a malformative pathology of the upper urinary tract that is frequently encountered in children regardless of gender (Bentani et al., 2012). It is characterized by the obstruction of the urinary flow between the renal pelvis and the ureter resulting in dilation and an increase in pressure in the pyelocalical space. The structural anomaly responsible for the blockage can be functional, intrinsic organic or extrinsic. This pathology, whose non-specific clinical manifestations and its progressive, insidious evolutionary nature, make it lead inexorably to renal destruction (Khan et al., 2014). In Western countries with the improvement of the quality of antenatal imaging and a health policy facilitating access to care, the diagnosis of SJPU is mainly antenatal while it is postnatal and often late in our context (Strother & Mucksavage, 2016; Tan & Smith, 2004; Dias et al., 2012). Open pyeloplasty according to

Anderson Hynes has long been considered the gold standard in the PEC (surgical management) of UPJO (Anderson & Hynes, 1949). But, in the last two decades with the development of minimally invasive techniques and their proven effectiveness, we are now witnessing a reversal of the trend (Moalic et al., 2006; Singh et al., 2010).

The objective of this study was to assess our surgical management of PUJO.

## Materials and Methods

This was a descriptive retrospective study conducted in the urology department of Sikasso Hospital during the period from January 2020 to March 2022.

All patients admitted and operated for UPJO with available records were included in this study. Hospitalization and operative report records were used to collect data. The diagnosis of UPJO was made on the basis of the results of ultrasonographic and scannographic examinations. The main reasons for consultation are: Abdomino-lumbar pain 27.8%; renal colic 16.7% etc. The Society of Fetal Urology (SFU) classification is used to estimate the degree of kidney damage (Fernbach et al., 1993). Five patients accounting for 27.77% of patient were grade IV (Table I). Creatinine was normal in all our patients except one patient where it was slightly elevated. Cytobacteriological examination of urine found E Coli in 2 patients or 11.11% of the entire workforce.

### The types of surgical interventions were

Nephrectomy in 5 patients and 12 cases of pyeloplasty according to Anderson-Hynes technique have been performed under general anesthesia through subcostal lumbotomy, retroperitoneal approach and placement of a compartment drain for 2-3 days. Pyeloplasty has always been performed on a bypass with Double J stent in adults, a nephrostomy stent in children. It was associated with the removal of polar vessels in 2 cases. (Table II).

Tramadol and paracetamol have been used routinely to treat postoperative pain. The overall result was evaluated with 3-6 months of hindsight according to the following criteria: Absence of complications and intraoperative incident, the mean operative time. The length of hospital stay; the mean time of daily activities resumption and post-operative complications rate.

### The result of pyeloplasty was judged

Good : Decrease in pain symptomatology, degree of dilation; improving the secretion delay and the permeability of ureteropelvic canal.

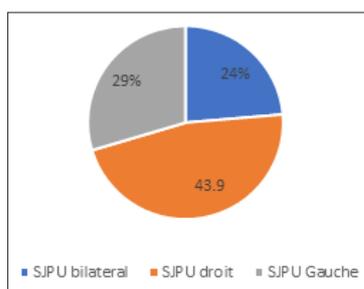
Bad : no decrease in dilation, no improvement in renal secretion delay or in ureteropelvic permeability.

Data analysis was performed by SPSS 20.

### Results

17 cases of UPJO were operated on out of a total of 18 cases collected.

Average age =  $21.40 \pm 11.60$  (0.30-37 years). Men were the most affected with a sex ratio: 1.25/1 and pathology was predominant on the right side or 44% (Figure I).

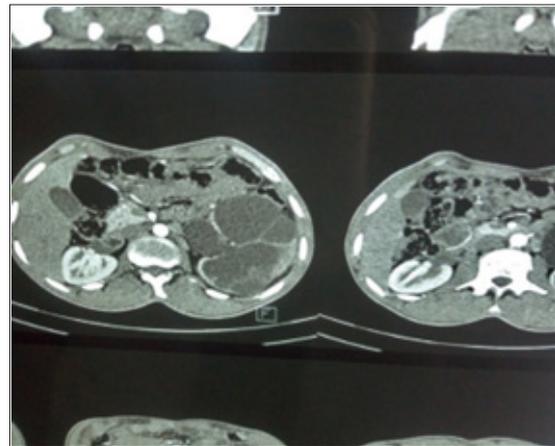


**Figure 1:** Distribution PUJO cases according localisation

### The circumstances of discovery of the disease include

Only one case of UPJO have been discovery by prenatal ultrasound; Almost all the others patients seek for consultation because of different types of pain namely: renal colic, diffuse abdominal pain; Physical signs such as lumbar contact, costolumbar percussion pain and preoperative complications were noted.

The mean duration of disease was  $168.41 \pm 114.30$  (24-420 months). Complications related to the evolution of the disease include: Severe hydronephrosis with thinning of the parenchyma (Figure II); Pyonephrosis; renal lithiasis.



**Figure II:** Coronal section TDM image of Grade IV left side PUJO

17 patients received surgical management. Mean operative time  $65.88 \pm 7.54$  (55-75 mn). Totally, we performed 5 nephrectomy accounting for 29.41% of UPJO; twelve pyeloplasty: 7 pyeloplasty on Double J stent bypass and 5 pyeloplasty on Nephrostomy stent bypass. No complications or incidents were reported during these interventions. The intraoperative findings and etiological diagnosis are as follows: Upper insertion of the ureter on the pelvis, stenosis and hypoplasia of the junction zone, crossing of the ureter with the polar vessels (Table III) (Figure II). The immediate and short-term surgical follow-up was favourable. They were swaddled with one retroperitoneal urinoma and one case of parietal suppuration.



**Figure III:** Intra operative image of PUJO showing dilated pelvic and crossing polar vessels

Mean duration of resumption of intestinal transit = 19.65 ±12.04 (10-48 hours)

Average length of hospital stay = 11.53 ±4.26 (7-23 days).

The result of pyeloplasty was considered good in 15 patients accounting for 83.33% success rate.

UPJO Complication and SFU Classification	Effect if	%	
Hydronephrosis+Destruction of renal parenchyma	G4	4	22,22%
Hydronephrosis with partial renal destruction	G3	10	55,55%
Hydronephrosis limited to the pelvic	G1	1	5,55%
Hydronephrosis + Total parenchyma destruction + IU	G4	1	5,55%
Pyonephrosis with partial destruction of kidney	G3	1	5,55%
Lithiasis +Hydronephrosis without any parenchyma	G3	1	5,55%
Total		18	100%

**Table I :** Summary of preoperative complications

Technique PC	Effectifs	%
Nephrectomy + Controlateral Rising of double J catheter	1	5,6
Pyeloplasty Anderson-H on double J bypass+Section of polar vessels	2	11,6
Néphrectomie	4	23,5
Pyelolithotomy+Pyeloplastie Anderson-H on double J catheter bypass	1	5,6
Pyeloplastie Anderson-Hynes on double J catheter bypass	4	23,52
Pyeloplasty Anderson-H on Nephrostomy catheter bypass	5	29,40
Total	17	100

**Table II :** Distribution of patients according surgical management modalities

Aetiology and peroperative founding	Effectifs	%
Hight insertion of ureter on the pelvic	4	23,5
Position and normal aspect of PUJ	2	11,7
Stenosis + hypoplasia of PUJ area	9	52,9
Hight insertion of ureter on the pelvic +polar vessels	2	11,7
Total	17	100,0

**Table III :** Distribution of patients according etiology

### Comments and Discussion

UPJO is the most common urological malformation with an incidence of 1 per 100,000 births. We were able to collect a total of 18 cases of UPJO during 25 months of activities, a hospital prevalence of 0.70%. This malformative pathology is much more common in men both in our series and in others. But, unlike Western countries (Belmont et al., 2021) where the disease is detected in the antenatal period, the majority of our patients were adults who presented for repeated episodic pain with signs of complication such as lumbar contact and some degree of morphological and functional damage to the kidney. Through this observation, we believe that it is necessary to promote the regular monitoring of pregnancies and ensure the continuous training on ultrasonographic examination to facilitate the antenatal detection of this pathology.

This study sufficiently proves that serum creatinine does not reflect the level of renal damage. Knowing that renal syntigraphy is the reference means to assess kidneys separate function, we were obliged in our context to take nephrectomy

decision only when we found Pyonephrosis or a significant renal dilation with parenchyma destruction and increased secretion delay.

According to the results of histological and autopsy studies, different types of structural abnormalities can be the cause of obstruction of pyeloureteral flow (Veyrac, 2004). Our intraoperative findings corroborate the literature where the recognized abnormalities are among others: the abnormal arrangement of muscle layers and the insertion of collagen between muscle fibres thus causing a defect in transmission of peristaltic waves emitted by pacemakers located at the pelvis; the high insertion of the ureter on the pelvic; crossing of the proximal ureter with lower polar vessels or the presence of an internal pyeloureteral valve. UPJO surgery includes several open techniques of pyeloplasty including foleyY-V technique of pyeloplasty, culp flap pyeloplasty. Among them, we choosed the pyeloplasty according Anderson-Hynes technique which has long been considered as the gold standard This choice was based on the fact that it is a radical technique, allowing the

excision of the pathologic area with the possibility of sending specimens to the histopathological examination, to prune the redundant pelvis and to proceed in ureteropelvic anastomosis as decline as possible. Moreover, in addition to having made possible to find excellent results both in our series and in others (Kpatcha et al., 2014). It has the advantage of having a short duration of intervention, hospital stay duration and resumption of activities quite long, compared to laparoscopic pyeloplasty (Brandao et al., 2015). It also made it possible to highlight two polar vessels associated with significant fibrosis, we had difficulty identifying, through uro CT, the aberrant vessels associated with this pathology. This highlights the need for MRI, which has been proven to play a role in detecting aberrant vessels (Little et al., 2008; Pavicevic et al., 2015) With their minimally invasive characteristics, laparoscopic pyeloplasty is not only comparable to the classic Anderson-Hynes technique from the point of view of effectiveness but also has advantages in terms of reducing postoperative pain or resuming daily activities. The development and promotion of this innovative procedure in our countries seems to be difficult knowing that it takes a long training period to be operational in a context of health care resources insufficiency and the scarcity of this pathology.

### Conclusion

Pyeloplasty according to Anderson-Hynes remains the reference technique in the surgical management of UPJO. Its result depends first of all on a good technical mastery and that it is carried out in an optimal time. It not only ensures a radical and physiological correction of the disease; but also to confirm the etiological diagnosis and proceed in associated abnormalities management. The only serious alternative to this technique is laparoscopic pyeloplasty. But it must be recognized that its development might be difficult in our countries where political and health authorities, who have a vision focused mainly on public health, see the promotion of innovative techniques as a luxury.

**Conflict of Interest:** The authors declare no conflict of interest.

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