

Ureteropelvic Junction Obstruction in Burkina Faso: Epidemiological, Diagnostic, and Therapeutic Aspects at the Yalgado Ouédraogo University Hospital

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Abstract

Introduction: Ureteropelvic Junction Obstruction (UPJO) is a common obstructive congenital uropathy. This study aimed to describe its epidemiological, diagnostic, and therapeutic aspects in a West African context. **Materials and Methods:** A cross-sectional retrospective study was conducted on 45 medical records of patients who underwent surgery for UPJO between January 2022 and December 2024 in the urology-andrology department of the Yalgado Ouédraogo University Hospital (CHU-YO). The studied variables included sociodemographic characteristics, clinical and paraclinical data, treatment modalities, and outcomes. A favorable postoperative outcome was defined as the complete resolution of symptoms combined with significant regression or normalization of pyelocaliceal dilation on follow-up renal ultrasound. **Results:** The prevalence of UPJO among surgical procedures was 3.47% (45/1296), with an annual incidence of 15 cases. The mean age was 37.6 ± 16.2 years, with a male-to-female ratio of 2.2. The majority of patients resided in rural areas (53.3%). Lumbar or abdominal pain was the main reason for consultation (86.6%). The obstruction was left-sided and unilateral in 71.1% of cases. Abdominopelvic Computed Tomography (CT) confirmed the diagnosis in all patients. Conservative treatment was predominant (91.1%), primarily via Anderson-Hynes pyeloplasty. After a median follow-up of 12 months, 91.1% of patients had a favorable outcome. **Conclusion:** UPJO is a significant urological condition at CHU-YO, primarily affecting young adult males. Diagnosis is often delayed, made at the symptomatic stage. Open pyeloplasty remains the therapeutic cornerstone in our setting with excellent results, highlighting the

need to strengthen antenatal diagnosis and access to minimally invasive techniques.

Keywords

Ureteropelvic Junction Obstruction, Hydronephrosis, Pyeloplasty, Anderson-Hynes

1. Introduction

Ureteropelvic Junction Obstruction (UPJO) is defined as a urodynamic impairment of the upper urinary tract drainage, leading to pyelocaliceal distension upstream of a functional or organic obstruction [1] [2]. It is one of the most common congenital uropathies, with a well-established male predominance and a predilection for the left kidney [3] [4].

While diagnosis is increasingly made during the prenatal period in developed countries, thanks to the widespread use of fetal ultrasound, it often remains delayed in resource-limited countries, where it reveals itself in adulthood through complications such as pain, urinary tract infections, or calculi [5] [6]. The therapeutic management aims to relieve the obstruction to preserve renal function. Pyeloplasty, whether open, laparoscopic, or robot-assisted, is the reference standard treatment [7].

In Burkina Faso, data on UPJO are scarce. A recent study conducted at Souro Sanou University Hospital reported a frequency of 1.38% among operated patients [8]. To update knowledge and identify current management challenges, this study aimed to describe the epidemiological, diagnostic, and therapeutic aspects of UPJO in the urology-andrology department of the Yalgado Ouédraogo University Hospital (CHU-YO).

2. Materials and Methods

An observational cross-sectional study with retrospective data collection was conducted over a three-year period, from January 1, 2022, to December 31, 2024, in the urology-andrology department of CHU-YO in Ouagadougou. The study population consisted of all patients who underwent surgery for UPJO during the study period and had an exploitable clinical record. Data were collected from clinical files, operative reports, and hospitalization registers using a standardized data collection form. The studied variables included sociodemographic characteristics, clinical and paraclinical data, treatment modalities, and outcomes.

A favorable postoperative outcome was defined as the complete resolution of symptoms combined with significant regression or normalization of pyelocaliceal dilation on follow-up renal ultrasound.

3. Results

Out of 1296 surgical procedures performed during the study period, 45 operated

cases of UPJO were identified, representing a prevalence of 3.47% and an average annual incidence of 15 cases. The highest number of cases ($n = 20$) was recorded in 2023. The mean age of the patients was 37.6 ± 16.2 years, with a range of 14 to 79 years. The age group [20 - 30[years represented 26.7% of patients (12). The distribution of patients by age group is illustrated in **Figure 1** below.

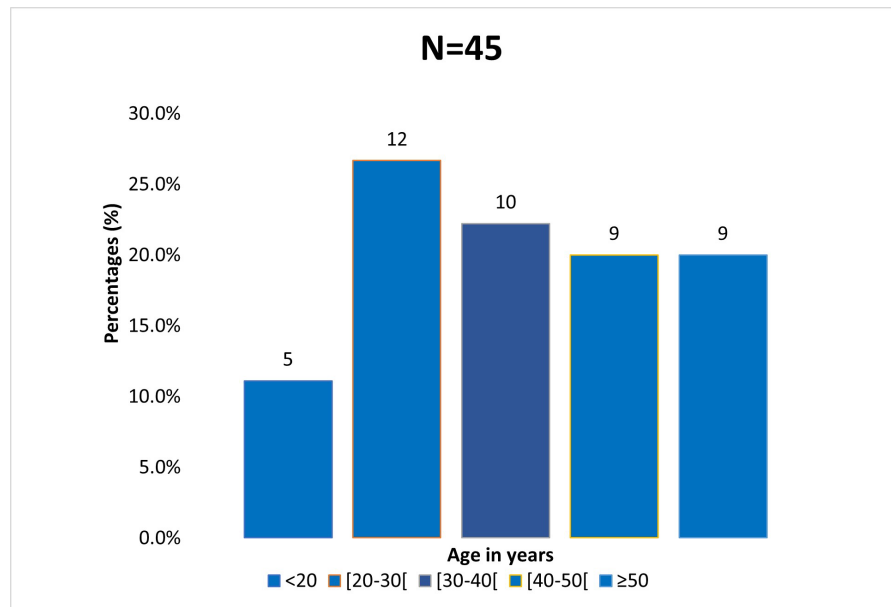


Figure 1. Distribution of patients by age group.

A male predominance was noted with 31 men and 14 women (sex ratio = 2.2). The majority of patients resided in rural areas (53.3%), and farmers represented the most affected profession (26.7%). The Mossi ethnicity was predominant (82.2%).

The circumstances of discovery were dominated by pain (flank, lumbar, or renal colic) in 86.6% of cases. The initial symptoms are summarized in **Table 1**.

Table 1. Circumstances of discovery of UPJO.

Initial Symptoms	Number (n = 45)	Percentage (%)
Lumbar or Abdominal Pain	39	86.6
Flank Pain	24	53.33
Renal Colic	10	22.22
Low Back Pain	5	11.11
Lumbar Mass	4	8.9
Renal Trauma	1	2.2
Incidental Discovery	1	2.2

The time to consultation was variable, with 24.4% of patients consulting more than 5 years after the onset of symptoms.

We found a left-sided predominance with 32 patients, representing 71.11% of the study sample. The obstruction was right-sided and unilateral in nine patients (20%) and bilateral in four patients (8.9%). These data are illustrated in **Figure 2**.

Renal ultrasound, performed in 39 patients (86.7%), showed pyelocaliceal dilation in all cases. Abdominopelvic CT scan, performed in all patients, confirmed the diagnosis of UPJO. According to the Cendron classification (a grading system for the severity of hydronephrosis), stages II (moderate dilation of the renal pelvis and calyces, 35.6%) and III (severe dilation with calyceal ballooning and parenchymal thinning, 46.7%) were the most frequent. Urine cytobacteriological examination was sterile in 68.9% of cases; when positive, *E. coli* was the predominant organism (20%). Each of the following organisms—*Klebsiella pneumoniae*, *Candida albicans*, *Enterococcus faecalis*, and *Staphylococcus aureus*—was isolated once. Serum creatinine was normal in all patients.

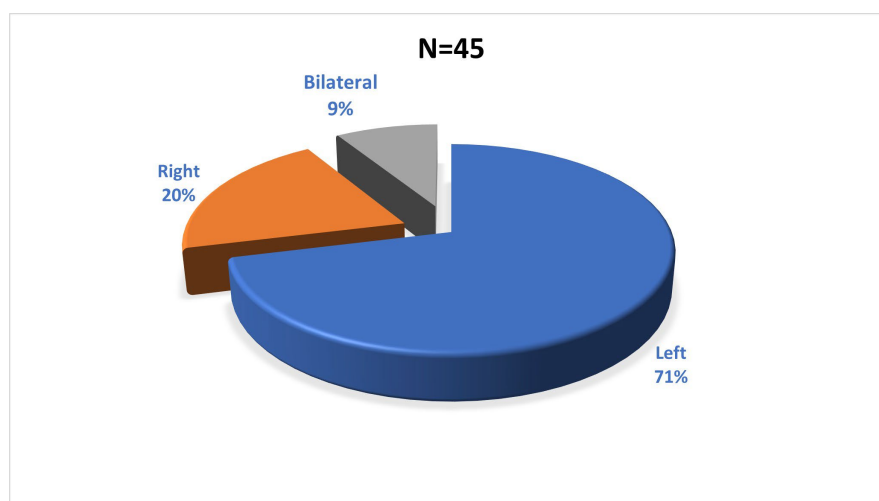


Figure 2. Distribution of patients according to the side of UPJO.

Eleven (11) patients presented with complications in our series, including 07 cases of pelvic calculi and 4 cases of renal parenchymal destruction.

The etiology of UPJO was evident in 02 cases: a lower polar vessel crossing and obstructing the ureteropelvic junction. In the remaining cases, the cause could not be formally identified.

Medical treatment based on analgesics was administered to 60% of patients due to pain. Fourteen patients (31.1%) received targeted antibiotic therapy based on the organism identified in the urine cytobacteriological examination. Thirty-one patients (68.9%) underwent temporizing treatment: 26 patients with ureteral JJ stenting and 05 patients with nephrostomy. The mean time to definitive surgery was 15 days, with a range of 01 to 45 days.

Definitive surgical treatment was conservative in 91.1% of cases (41 patients). Pyeloplasty alone was performed in 71.1% of cases ($n = 32$), using the Anderson-

Hynes technique. Nephrectomy was performed in 4 patients (8.9%) due to destroyed, non-functioning renal parenchyma. Associated procedures were necessary in 09 cases: lithotomy (15.6%, n = 7) and vascular uncrossing (4.4%, n = 2). **Table 2** lists the different procedures performed in open surgery.

Table 2. Distribution according to the type of surgical intervention.

Type of intervention	Number	Percentage (%)
Pyeloplasty alone	32	71.1
Pyeloplasty + lithotomy	7	15.6
Pyeloplasty + Vascular uncrossing	2	4.4
Nephrectomy	4	8.9

Immediate postoperative outcomes were straightforward for 91.1% of patients. Early complications (8.9%) included hematuria, pyelonephritis, and urinary leakage through the renal fossa drain for more than 10 days. The mean postoperative hospital stay was 12 days. After a median follow-up of 12 months, the outcome was favorable in 91.1% of patients (n = 41), with normalization of renal function and regression of pyelocaliceal dilation on ultrasound. Two patients (4.4%) managed by pyeloplasty presented late complications (one case of residual hydronephrosis and one case of pelvic calculus secondary to junction stenosis). We noted 39 successes out of 41 pyeloplasty cases, representing a success rate of 95.12%. Two patients who underwent nephrectomy were lost to follow-up. **Table 3** summarizes the therapeutic modalities and outcomes of the patients.

Table 3. Summary of therapeutic aspects and outcomes (n = 45).

Therapeutic Aspects and Outcomes	Number	Percentage (%)
Temporizing Treatment	31	68.9
JJ Stent Placement	26	57.8
Nephrostomy	5	11.1
Conservative Surgical Treatment	41	91.1
Pyeloplasty alone (Anderson-Hynes)	32	71.1
Pyeloplasty + Lithotomy	7	15.6
Pyeloplasty + vascular uncrossing	2	4.4
Nephrectomy	4	8.9
Postoperative Outcome at 12 months		
Favorable Outcome	41	91.1
Late Complications (pyeloplasty cases)	2	4.45
Lost to Follow-up (nephrectomy cases)	2	4.45

4. Discussion

This study, one of the first to focus specifically on operated UPJO in Burkina Faso, reveals a hospital prevalence of 3.47%, higher than that reported by O. D. Yé *et al.* (1.38%) at Souro Sanou University Hospital [8]. Although both centers have a comparable university hospital status, the observed difference in prevalence could be explained by a disparity in their respective catchment areas. CHU-YO, as the main national referral center located in the capital Ouagadougou, likely attracts a higher absolute number of patients and benefits from an influx from across the country, unlike an interior university hospital whose recruitment might be more regional. This centralization in Ouagadougou would thus lead to a higher overall volume of surgical activity, including a greater number of UPJO cases.

The profile of the typical patient in our series is a young male (37.6 years), residing in a rural area. This male predominance (sex ratio 2.2) is consistent with data from West African literature, such as that of Amadou I. in Mali (sex ratio 2.9) [3] and Kpatcha T.M. in Togo (sex ratio 2.6) [9]. The mean age at diagnosis is significantly higher than in Western countries, where antenatal screening is systematic [5] [10]. This late diagnosis in our context is explained by limited access to quality prenatal ultrasound and a lack of awareness of the pathology, leading to diagnostic delays, as evidenced by the long consultation times.

Clinically, pain was the main symptom (86.6%), a result similar to those of Kirakoya B. *et al.* (>90%) [11] and Ondongo Atipo A. M. (70.7%) [12] in sub-Saharan Africa. The predominance of left kidney involvement (71.1%) is a consistent epidemiological feature reported worldwide, without a consensus pathophysiological explanation [1] [4].

The paraclinical workup relied on the combination of ultrasound and CT scan, the latter being performed systematically, which is a strength of our current practice. The predominance of Cendron stages II and III (82.3%) reflects the late diagnosis, often made at the stage of complications (calculi in 15.6% of cases in our series).

Treatment was predominantly conservative (91.1%), with open Anderson-Hynes pyeloplasty as the gold standard. This choice is dictated by its proven efficacy and financial accessibility in our context, where laparoscopic surgery is not yet routine [7] [13]. The pyeloplasty success rate (95.12%) is comparable to international series, which report success rates of 90 to 95% [7] [14]. Nephrectomy was a rare procedure (8.9%), reserved for destroyed and non-functioning kidneys, a proportion lower than that of Tembely A. *et al.* (28.5%) [15], perhaps due to earlier management in our series or different decision-making criteria.

The limitations of this study are primarily its retrospective nature, a source of missing data and limited long-term follow-up for some patients. Furthermore, functional evaluation by renal scintigraphy was not systematically available. This limited our ability to precisely quantify the differential renal function. Consequently, the decision to perform a nephrectomy was based primarily on anatomical evidence of severe parenchymal destruction on CT scan and intraoperative

findings, rather than a precise functional threshold. The availability of scintigraphy might have allowed for a more nuanced selection of candidates for conservative versus ablative surgery.

5. Conclusion

This study confirms that UPJO is a significant urological pathology at CHU-YO, predominantly affecting young adult males. Diagnosis is still too often delayed, made in the presence of painful symptoms or a complication. Open pyeloplasty remains the cornerstone of treatment in our setting with excellent results. To improve management, it is imperative to strengthen the antenatal screening of congenital uropathies and to develop access to minimally invasive surgical techniques. Regular long-term follow-up of operated patients is also necessary.

Ethical Approval Statement

The research protocol was validated and accepted by the management of the CHU-YO, which granted us authorization for the study. Given the retrospective nature of the study, the requirement for individual patient consent was waived.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Abbreviations

CHU-YO:	Yalgado Ouédraogo University Hospital
UPJO:	Ureteropelvic Junction Obstruction
CT:	Computed Tomography
E. coli:	Escherichia coli