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Pyeloureteral Junction Syndrome (PUJS): Epidemiological, Clinical, and Therapeutic Aspects at the BSS University Hospital in Kati (Mali)

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Abstract

Objective: The aim of our study was to examine the epidemiological, clinical, and therapeutic aspects of SJPU in the urology department at BSS University Hospital in Kai. **Method:** This was a descriptive cross-sectional study, with retrospective data collection between April 24, 2016, and March 20, 2020 (*i.e.*, 4 years); and prospective data collection between March 26 and October 1, 2022. We conducted this study over a period of 8 years and 6 months in our urology department at the Pr Bocar Sidy Sall University Hospital in Kati. **Results:** PUJS accounted for 3.3% of pathologies. The average age of patients was 23.3 years, with extremes of 8 and 53 years. Males accounted for 63.3% of cases, with a ratio of 1.72. The most common reason for consultation was lower back pain, accounting for 96.7% of cases. Urinalysis was positive in 66.7% of cases, and *E. coli* was found in 65% of urinary tract infections. The left side was the most affected in 56.7% of cases. Pyeloplasty was the most commonly performed procedure, accounting for 60% of cases. **Conclusion:** PUJS is the most common obstructive uropathy. Early diagnosis and treatment can prevent destruction of the renal parenchyma.

Keywords

Syndrome, Junction, Pyeloureteral, Pyeloplasty, Kati

1. Introduction

PUJS is an alteration in the transport of urine from the pyelon to the ureter, resulting in dilation of the pyelocaliceal cavities, which, if left untreated, leads to a risk of progressive impairment of the function of the affected kidney [1].

The PUJS is the most common congenital uropathy of the upper urinary tract [2].

Its annual incidence is estimated at 5 per 100,000 births [3].

The condition is very often diagnosed and treated prenatally in developed countries, whereas in developing countries it is diagnosed postnatally or even in adulthood [4].

The standard treatment for ureteropelvic junction syndrome is still based on the principles of resection-anastomosis, as set out by KUSS, ANDERSSON, and HYNES [5].

In Mali, this condition is not well known by medical staff, with little statistical data on its diagnosis and management.

We have initiated work to study the epidemiological, clinical, and therapeutic aspects of this condition in our department.

2. Patients and Methods

This was a descriptive cross-sectional study, with retrospective data collection between April 24, 2016, and March 20, 2020 (*i.e.*, 4 years); and prospective data between March 26 and October 1, 2022. We conducted this study over a period of 8 years and 6 months in our urology department at the Pr Bocar Sidy Sall University Hospital in Kati.

We included in our study all patients hospitalized and operated on in the department during the study periods for pyeloureteral junction syndrome.

We did not include any patients admitted to the department for any reason other than pyeloureteral junction syndrome, patients with unusable records for this anomaly, or patients who underwent surgery for pyeloureteral junction syndrome.

After a thorough physical examination, we requested certain additional tests for all patients, such as creatinine, urine culture + antibiogram, renal ultrasound, and uro-CT scan.

All patients underwent open surgery.

The parameters studied were: frequency, age, sex, reason for consultation, clinical and paraclinical signs, imaging, treatment, and postoperative outcomes.

The data were entered into Word 2016 and analyzed using SPSS version 21.0 after verification.

3. Results

During the study period, we collected 30 cases of pyeloureteral junction syndrome out of 897 urological pathologies, representing a hospital frequency of 3.3% and ranking fifth among pathologies (**Table 1**).

Table 1. Distribution of surgical procedures in the Urology Department according to pathology.

Urinary pathologies	Number of cases	Percentages (%)
Bladder tumor	335	37.3
BPH	305	34.0
Prostate cancer	75	8.4
Urethral stricture	35	3.9
Hydrocele	30	3.3
PUJS	**30**	**3.3**
Tumors of the upper urinary tract	11	1.2
Urethral trauma	11	1.2
Fournier's gangrene	10	1.1
Pyelonephritis	7	0.8
Silent kidney	6	0.7
IRO	6	0.7
Kidney cancer	5	0.6
Sexual ambiguity	5	0.6
Priapism	5	0.6
Others	21	2.3
Total	897	100.0

Others: testicular tumor (4), hernia (4), urethral valves (2), phimosis (2), genital prolapse (3), penile fractures (4), paraphimosis (2).

PUJS accounted for 3.3% of the department's surgical activities.

The average age was 23.3 years, ranging from 8 to 53 years. The most represented age group was 20 - 29, with a frequency of 33.3%.

Males accounted for 63.3% of cases, representing a ratio of 1.72.

The reason for consultation was lower back pain in 96.7% of cases in our study.

The left side was most commonly affected in 56.7% of cases, followed by the right side in 26.7% of cases (Table 2).

Table 2. Distribution according to the side affected.

Side affected	Number	Frequency (%)
Left	17	56.7
Right	8	26.7
Both sides	5	16.7
Total	30	100.0

Kidney function was impaired in 23.3% of our patients.

The urine culture was positive in 20 patients, or 66.7%. *E. coli* was the germ found in 65% of cases, followed by *K. pneumoniae* in 20% of urinary tract infections (Table 3).

Table 3. Distribution according to the presence of urinary tract infection.

Identified bacteria	Number	Percentage %
Escherichia coli	**13**	**65**
Klebsiella pneumoniae	4	20
Staphylococcus aureus	2	10
Proteus mirabilis	1	5
Total	20	100.0

Uro-CT scans showed thinning of the renal parenchyma in 33.3% of cases and laminated kidneys in 10% of cases.

We performed anastomotic pyeloplasty in 18 patients, or 60% of cases.

The average length of hospital stay was 5 days, ranging from 4 to 10 days.

4. Comments and Discussion

During our study, we collected 30 cases of pyeloureteral junction syndrome in the department, representing 3.3% of patients. This result differs from those of other authors in Mali, who found 21, 35, and 59 cases, respectively, in their studies [6] [7]. This frequency compared to other pathologies can be explained by the fact that pyeloureteral junction syndrome is a congenital pathology that is little known in our country.

The average age of our patients was 23.3 years, with extremes of 8 and 53 years. This result is lower than those of Coulibaly MT and Tembely A *et al.* [6] [7] in Mali, who found an average age of 26 and 29.3 years, respectively. However, it is higher than those of other authors, who found an average age of 3.8 ± 4.39 years and 4.9 years in their study [8] [9]. This difference in age can be explained by the fact that the latter studies were conducted in strictly pediatric settings.

Males were in the majority in our study, with a ratio of 1.72. A male predominance has also been reported in the literature [6]-[10]. These results differ from those of Jalloh M *et al.* [11] in Senegal, who found an equal ratio of 1, *i.e.*, 4M/4F.

Lower back pain was the reason for consultation in 96.7% of our patients. Jalloh M *et al.* [11] also found pain to be the reason for consultation in all their patients. In the literature, other authors have found painful symptoms in some of their patients, namely 40% and 35.6% in [7] [9] respectively. This high frequency can be explained by the absence of antenatal findings but also by delays in consultation. The clinical manifestations of pyeloureteral junction syndrome are very varied. They depend on the type of pyeloureteral junction, the degree of obstruction, and

the age of the subject.

In our study, the left kidney was most often affected, with a frequency of 56.7%. Jardak *et al.* [12] found the same results in 56.52% of their patients. This is similar to the findings of Zarfati A [13] and Sidibé S [14], a frequency of 59% and 66.7% respectively in their study. The right side was predominant in Jalloh M *et al.* (11) in 75% of cases.

In our study, 27% of patients had urinary disorders (pyuria and hematuria). Our results differ from those of Coulibaly D in Mali, who found a pyuria rate of 25% in their study [15].

Temporary kidney failure was found in 23.3% of cases. This result is similar to those of KPATCHA T.M. *et al.* [16], who found kidney failure in 20% of cases, while Galifer R. B *et al.* in France [9] found a frequency of 3.7% of temporary kidney failure. In the study by Tembely A *et al.*, impaired renal function affected 34.3% of patients. Our high frequency can be explained by the delay in consultation by our patients.

In our study, urine culture was positive in 66.7% of cases, and *E. coli* was the germ found in 65%. Our results are higher than those of Amadou I *et al.* in Mali, who found urinary tract infection in only 28.6% of their study [8].

Lumbotomy was the main approach in our study. Conservative surgery with Kuss Anderson pyeloplasty was performed in 60% of our patients. This result is comparable to that of Tembely A *et al.* in Mali [7], who performed pyeloplasty on 51.1% of patients.

Nephrectomy was performed in 40% of our patients, a result that is far superior to that of Galifer R B *et al.* in France [9], who obtained a frequency of 5.9%. Kpatcha *et al.* performed the Kuss Anderson technique in 68% of cases, with 8% undergoing nephrectomy. This high frequency of nephrectomy in our patients is justified by the destruction of the renal parenchyma due to the delay in consultation by our patients. This high rate of nephrectomy in our series is mainly due to a lack of awareness of the disease among the general population and general practitioners. The latter (general practitioners) begin to treat patients medically over a long period of time without referring them to urologists in a timely manner. Only the diagnostic and therapeutic management of this disease can prevent the destruction of the renal parenchyma in our countries.

The average length of hospital stay was 5 days, ranging from 4 to 14 days. DANJOU P *et al.* [17] found an average length of stay of 3 days in their study. Delays in discharge from hospital were due in most cases to parietal suppuration. This significant difference can be explained by the fact that all our patients underwent lumbotomy, while those in the study by DANJON P *et al.* [17] underwent laparoscopic surgery.

We noted pain relief and improved renal function and pyelocaliceal cavity morphology in all cases where conservative surgery was performed (60%).

The limitations of our study were the small sample size, the fact that it was a single-center study, and that all our patients underwent open surgery.

5. Conclusions

PUJS remains the most common obstructive uropathy in our department, and diagnosis is still made radiologically.

Abdominal-pelvic ultrasound plays an important role in guiding diagnosis, showing hydronephrosis in every case, but CT URO is the gold standard for confirming diagnosis in our countries.

Open surgery still has its place in our countries, despite advances in minimally invasive surgery (laparoscopic surgery). This surgery can preserve or restore renal function when the diagnosis is made early, although this often comes at the cost of parietal complications (parietal suppuration).

The development of imaging techniques in our countries can enable early diagnosis and guide the management of pyeloureteral junction syndrome.

The management of pyeloureteral junction syndrome has changed completely in recent years with the development of minimally invasive urological surgery techniques (endourology and conventional and robot-assisted laparoscopic surgery). The implementation of these techniques and the training of urologists in our developing countries allow patients to be treated under optimal conditions, with reduced morbidity and shorter hospital stays.

Conflicts of Interest

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

References

[1] Koff, S.A., Hayden, L.J., Cirulli, C. and Shore, R. (1986) Pathophysiology of Ureteropelvic Junction Obstruction: Experimental and Clinical Observations. *Journal of Urology*, **136**, 336-338. https://doi.org/10.1016/s0022-5347(17)44859-2

[2] Hashim, H. and Woodhouse, C.R. (2012) Obstruction of the Ureteropelvic Junction. *European Association of Urology*, **13**, 2.

[3] Sampaio, F.J.B. (1998) Vascular Anatomy at the Ureteropelvic Junction. *Urologic Clinics of North America*, **25**, 251-258. https://doi.org/10.1016/s0094-0143(05)70012-4

[4] Bauer, S.B. (1998) Anomalies of the Kidney and Uretero-Pelvic Junction. In: Walsh, P.C., Retik, A.B. and Vaughan, E.D., Eds., *Campbell's Urology*, 7th Edition, WB Saunders, 1709-1755.

[5] Anderson, J.C. and Hynes, W. (1949) Retrocaval Ureter: A Case Diagnosed Pre-Operatively and Treated Successfully by a Plastic Operation. *British Journal of Urology*, **21**, 209-214. https://doi.org/10.1111/j.1464-410x.1949.tb10773.x

[6] Coulibaly, M.T., Diallo, S., Kassogue, A., Diarra, A., Cisse, D., Berthe, H.J.G. and Guisse, S. (2020) Pyelo-Ureterale Service D'urologie du Chu Gabriel Toure Au Mali. *Annales de L' universite Marien Ngouabi*, **20**, 1-2.

[7] Tembely, A., Kassogué, A., Berthé, H. and Ouattara, Z. (2016) Clinical and Therapeutic Aspects of Pyeloureteral Junction Anomalies at the Point G University Hospital. *Pan African Medical Journal*, **23**, Article No. 256. https://doi.org/10.11604/pamj.2016.23.256.6950

[8] Amadou, I., Coulibaly, Y., Coulibaly, O.M., Keita, M., Coulibaly, M.T., Coulibaly, Y.,

et al. (2018) Pyeloureteral Junction Syndrome: Clinical and Therapeutic Aspects at the Gabriel Toure University Hospital. *Health Sciences and Disease*, **19**, 69-72.

[9] Galifer, R.B., Veyrac, C. and Faurous, P. (2001) Congenital Anomalies of the Ureteropelvic Junction in Children. Multicenter Study of 985 Observations in 883 Children. *Annals of Urology*, **21**, 241-249.

[10] Nouira, F., Oueld Med Shaier, Y., Ben Ahmed, Y., Ghorbel, S., Khemakhem, R., Charieg, A., *et al.* (2011) Anomaly of the Pyeloureteral Junction Diagnosed Prenatally: Surgical or Medical Treatment? *Journal of Pediatrics and Child Care*, **24**, 229-235. https://doi.org/10.1016/j.jpp.2011.05.005

[11] Jalloh, M., Sow, T., Ndoye, M., Mbodji, M.M., Diallo, T.A., Diagne, S., *et al.* (2023) Retrograde Laser Endopyelotomy for Ureteropelvic Junction Syndrome: Initial Experience at the Idrissa Pouye General Hospital in Dakar. *African Urology*, **3**, 146-150. https://doi.org/10.36303/auj.0089

[12] Jardak, I., Ben Abdallah, A.K., Hamza, F., Zitouni, H., Maaloul, M., Amouri, W., *et al.* (2020) Pyeloureteral Junction Syndrome: Morphological or Functional Imaging? *Médecine Nucléaire*, **44**, 112. https://doi.org/10.1016/j.mednuc.2020.01.025

[13] Zarfati, A., Mele, E., Villani, M.F., Capozza, N. and Castagnetti, M. (2023) Pyelo-Ureteral Junction Obstruction in Poorly Functioning Kidneys: Does Conservative Management Play a Role in Pediatric Patients? *Frontiers in Pediatrics*, **11**, Article ID: 1108170. https://doi.org/10.3389/fped.2023.1108170

[14] Sidibé, S., Kouyaté, M., Diallo, K.D., Sanata, S. and Coulibaly, Y. (2022) Management of Pyeloureteral Junction Syndrome in the Pediatric Surgery Department of the Mali Hospital in Bamako. *EAS Journal of Medicine and Surgery*, **4**, 251-253. https://doi.org/10.36349/easjms.2022.v04i11.005

[15] Coulibaly, D. (2008) Pyeloureteral Junction Syndrome in the Urology Department of Point G Hospital. Medical Thesis.

[16] Kpatcha, T.M., Tengue, K., Botcho, G., Sikpa, K.H., Leloua, E.A., Anoukoum, T. and Attipou, K. (2014) Pyeloureteral Junction Syndrome in Adults at Sylvanus Olympio University Hospital: Diagnostic and Therapeutic Aspects. *Journal de la Recherche Scientifique de l'Université de Lomé* (*Togo*), **16**, 411-416.

[17] Danjou, P., *et al.* (1995) Pyeloureteral Junction Syndrome Treated by Laparoscopic Surgery. *Progress in Urology*, **5**, 946-950.