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Review Article

Tolerance of jj ureteral endoprostheses using USSQ questionnaires in the urology department of the General Reference Hospital of Niamey

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Abstract:

Introduction:

The concept of endoscopic placement of ureteral probe was described in 1967 by Zimskind. Few studies have evaluated the impact of "double J" type ureteral endoprostheses on the quality of life of patients.

The aim of this study is to assess through a retrospective study the impact of “double J” type ureteral endoprostheses (EU) on the quality of life of patients at the General Referral Hospital (*Hôpital Général de Référence*) of Niamey using the USSQ questionnaire (Ureteric Stent Symptom Questionnaire).

Objective: To assess the tolerance of ureteral endoprostheses jj probe (SU) using the USSQ questionnaire (ureteral stents symptom questionnaire) translated into French in 2010.

Patients and Method: This was a descriptive study with prospective data collection conducted at the General Reference Hospital of Niamey on the evaluation of the tolerance of double J probe ureteral endoprostheses in patients operated on in the urology department on the period from July 2019 to December 2021 (30 months) and involving 55 patients.

The variables studied are: age, sex, clinical and therapeutic aspect. The following parameters were studied through the USSQ self-questionnaire to assess: Urinary problems, pain, general condition, impact on sexuality professional impact other problems.

Data were analyzed using Epi info version (3.4.5) software dated July 30, 2012 (Microsoft Office Excel 2007).

Results:

In this study, the placement of the jj probe concerned 55 patients among 64 patients operated for ureteral obstruction (a rate of 85.94%) and an average implantation duration of 31 days. The average age of patients was 35.81 years with ranging from 5 to 80 years. Etiologies

were dominated by lithiasic (73%) and malformative (22%) pathology. Urinary symptoms including pollakiuria, urgency, leakage of urine by urgency and the feeling of incomplete emptying of the bladder accounted for 45% respectively; 55%; 15% and 25% of patients. Hematuria represents 10%, lumbar pain represents 45%, and 54.5% of patients who had this lumbar pain used analgesics. In this study, 60% of patients had difficulty performing heavy physical activities, 70% were satisfied with their social life. 65% of patients had an active sexual life, of which 38.47% urinary tract infection account for 20% of patients. 80% of patients were satisfied with the jj probe in the improvement of symptoms related to their pathology.

Conclusion:

The morbidity of the jj probe is significant and sometimes underestimated, the urologist must assess the impact in terms of the symptoms caused but also on the quality of life. The results of this study confirmed that the duration of implantation should be as short as possible in order to improve patient tolerance. This implies organizing rapid etiological management of these patients.

Key words: Tolerance, ureteral endoprosthesis, jj probe, USSQ questionnaire, HGR (*Hôpital Général de Référence*), Niamey.

1. Introduction

For the first time, in 1967, Zimskind and his collaborator used silicone ureteral splints to relieve ureteral obstruction by cystoscopy [1]. Since then, their use to prevent or circumvent an obstacle in the ureter has become widespread and now represents one of the most frequent urological interventions. The morbidity of ureteral endoprostheses (jj probe) is dominated by tolerance phenomena.

In 2003, Joshi et al stated that indwelling ureteral stents had a significant impact on health-related quality of life, hence the development and validation of a questionnaire in English, the ureteric stent symptom questionnaire (USSQ), which assesses the tolerance of JJ probes [2]. This questionnaire was translated and validated in French in 2010 by Puichaud et al. He asserted that the USSQ questionnaire is a validated tool and is internationally recognized for providing reproducible and measurable criteria on the tolerance of ureteral stents [3].

The placement of double J (SU) ureteral probe is very common in urology, for multiple indications. However, these probes can cause adverse effects or complications, which can strongly influence the quality of life of patients [1]. The most frequently reported symptoms are pollakiuria, pelvic pain, lumbar pain related to reflux of bladder urine and hematuria [2]. The question of ED tolerance is a major issue, as evidenced by the many studies on this subject [3].

The aim of this work is to assess through a retrospective study the impact of “double J” type ureteral endoprostheses (EU) on the quality of life of patients at the General Referral Hospital of Niamey using the USSQ questionnaire (Ureteric Stent Symptom Questionnaire).

2. Materials and Methods:

This was a descriptive study with prospective data collection conducted at the General Referral Hospital of Niamey on the evaluation of the tolerance of double J probe ureteral endoprostheses in patients operated on in the urology department on the period from July 2019 to December 2021, (30 months) and involving 55 patients.

The variables studied are: age, sex, clinical and therapeutic aspect. The following parameters were studied through the USSQ self-questionnaire to assess: urinary problems, pain, general condition, impact on sexuality Professional impact other problems.

Data were analyzed using Epi info version (3.4.5) software dated July 30, 2012 (Microsoft Office Excel 2007).

3. Results:

3.1. Frequency of probe jj placement

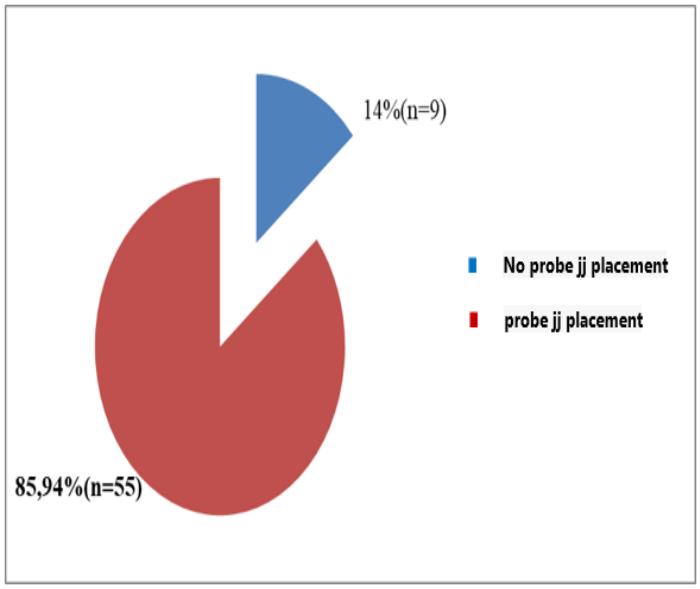

Figure 1: Frequency of probe jj placement at the General Referral Hospital of Niamey

During the period of this study, 55 cases of probe jj placement were identified on 64 patients operated on for ureteral obstruction, i.e. a frequency of 85.94% of cases.

3.2. Duration of probe jj implantation

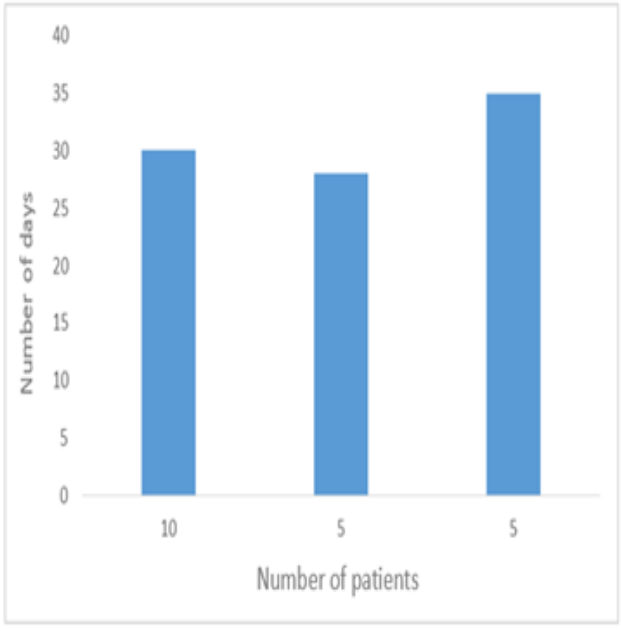

Figure 1: Distribution of probe jj implantation time

3.3. Urological emergencies and socio-demographic variables

3.3. 1.Age

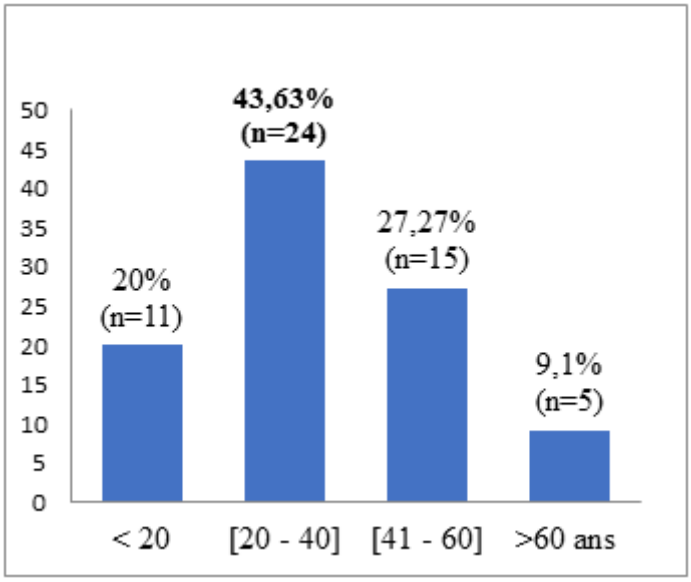

Figure 2: Distribution of patients according to age groups

The most affected age group was that of 20-40 years, i.e. 43.63% (n = 24) of cases with extremes ranging from 5 to 80 years. The average age of the patients was 35.81 years. The median is 37 years with a standard deviation of 17.29.

3.3.2 Sex

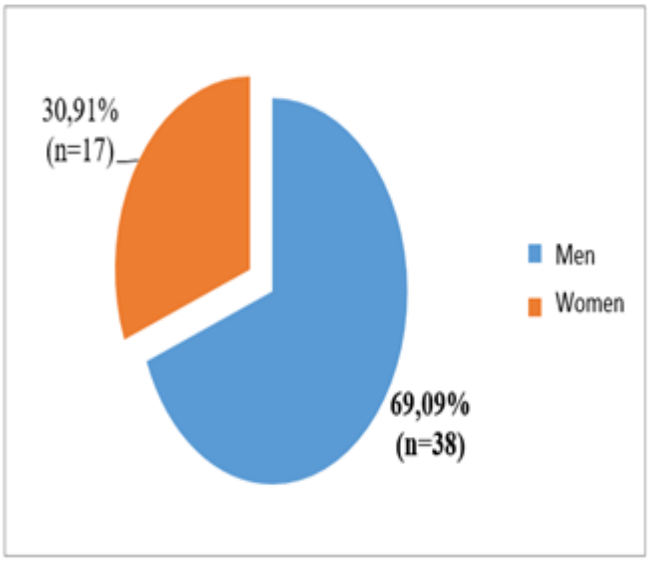

Figure 3: Distribution of patients by gender

The male sex was the most represented, 69.09% (n = 38). The sex ratio (M/F) is 2.23.

3.4. Clinical and therapeutic aspects

3.4.1 Clinical aspects

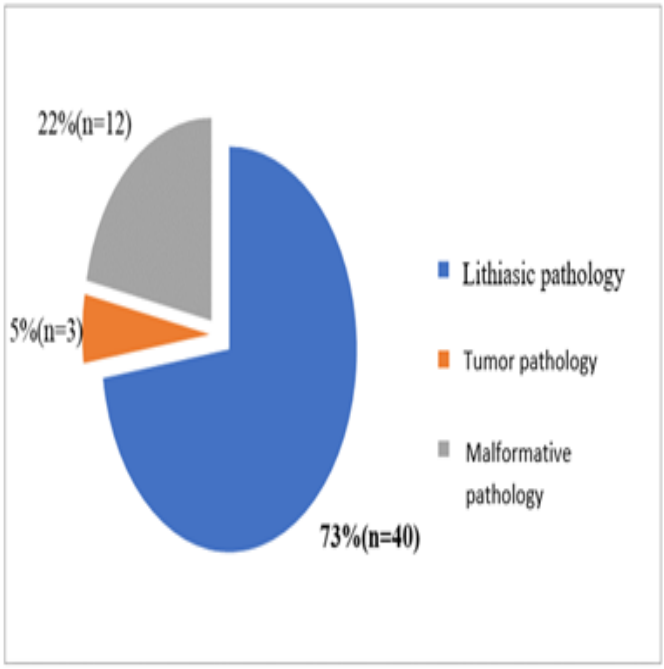

Figure 4: Distribution of patients according to diagnoses

The lithiasic pathology was the most represented 73% (n=40) of the cases.

3.4.2. Urinary symptoms

3.4.2.1 Daytime diurnal

Table: Distribution of patients according to frequency of daytime urination

Frequency of urination	**Number (effective)**	**Percentage (%)**
Every hour	2	10
Every 2 hours	**10**	**50**
Every 3 hours	5	25,00
Every 4 hours	3	15
Total	20	100,00

Daytime urination every 2 hours was the most represented with 50% (n=10) cases.

3.4.2.2. Nocturnal urination

Table: Distribution of patients according to the frequency of nocturnal urination.

Number of times	**Number (effective)**	**Percentage (%)**
None	1	5
Once	5	25,00
2 times	**8**	**40**
3 times	5	25,00
4 times or more	1	5
Total	20	100,00

Patients having 2 voids per night were the most represented 40% (n = 8) of cases.

3.4.2.3. Urgency

Table: Distribution of patients according to urgency

Response based on urgency	**Number (effective)**	**Percentage (%)**
Never	**11**	**55,0**
Most of the time	3	15,0
Sometimes	4	20,0
Rarely	1	5,0
Always	1	5,0
Total	20	100

Patients who had never had an emergency were the most represented 55% (n = 11) of cases.

3.4.2.4. Urinary incontinence

All patients said they never had urinary incontinence, i.e. a rate of 100% (n=20) of cases.

3.4.2.5. Sensation of incomplete emptying of the bladder

Table: Distribution of patients according to the feeling of incomplete emptying of the bladder

Sensation of incomplete emptying of the bladder	Number (effective)	Percentage (%)
Never	**15**	**75**
Sometimes	4	20
Most of the time	1	5
Total	20	100

Patients claiming never to have a feeling of incomplete emptying of the bladder were the most represented 75% (n=13) of cases.

3.4.2.6. Urinary burning

Table: Distribution of patients according to the presence of burning while voiding.

Answer	Number (effective)	Percentage (%)
Never	**15**	**75**
Rarely	1	5
Sometimes	4	20
Total	20	100

The most represented patients were those who never presented burning during urination, ie 75% (n=15) of cases.

3.4.2.7. Hematuria

Table: Distribution of patients according to haematuria.

Answer	Number (effective)	Percentage (%)
Never	18	90
Rarely	1	5
All the time	1	5
Total	20	100

The most represented patients were those who never had hematuria, i.e. 90% (n=18) of cases.

3.4.2.8. Importance of urinary disorders

Table: Distribution of patients according to the importance of urinary disorders

Response according to the degree of urinary disorders for patients.	Number (effective)	Percentage (%)
A lot	1	5
Moderately	7	35
None	12	60
Total	20	100,0

The most represented patients were those who said that overall urinary symptoms were not at all a problem for them, i.e. 60% (n=12) of cases.

3.4.3. Pain

3.4.3.1 Pain or discomfort related to jj probe

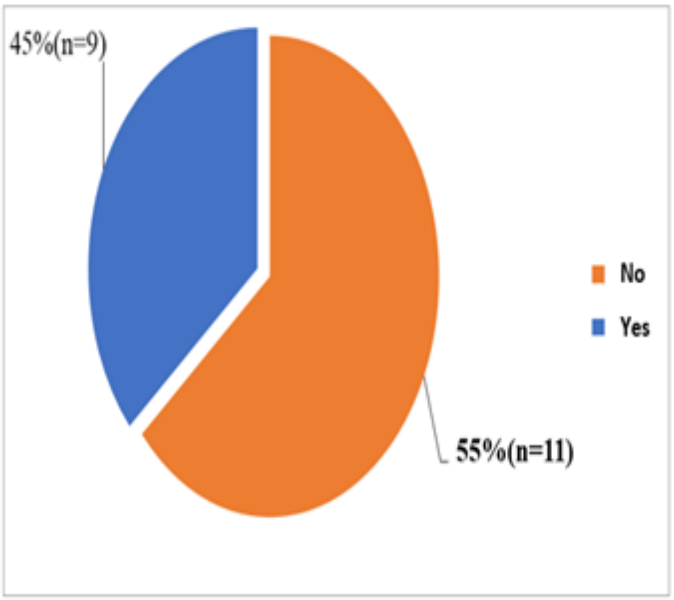

Figure 5: Distribution of patients according to pain or gene related to the jj probe

The most represented patients were those who had no pain or discomfort after placement of the jj probe 55% (n=11) of cases.

3.4.3.2 Localization of pain

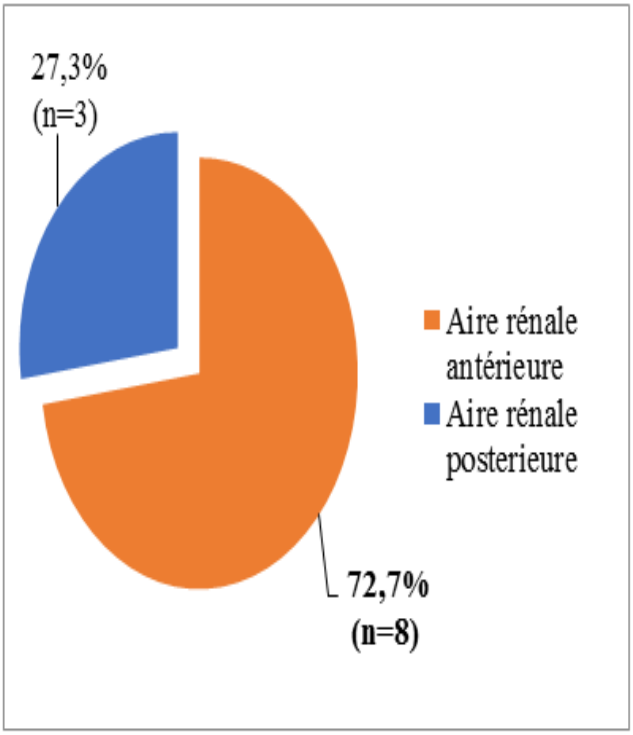

Figure 6: Distribution of patients according to location of pain

Localization of pain in the anterior renal area was the most represented with 72.7% (n=8) of patients suffering from pain after the placement of the jj probe.

3.4.3.3 Pain intensity according to the numerical scale

Table: Distribution of patients according to pain intensity

The intensity of pain on a numerical scale from 0 to 10	Number (effective)	Percentage (%)
1	2	18,20
2	2	18,20
3	5	45,50
5	2	18,20
7	0	0
8	0	0
9	0	0
10	0	0
Total	11	100

Patients with pain whose intensity was on average 3/10 (mild pain) were the most represented 45.50% (n=5) of cases.

3.4.3.4 Impact of pain on activities

Table: Distribution of patients according to the impact of pain on activities.

Answer	Number (effective)	Percentage (%)
I feel pain during moderate activities	2	18,20
I feel pain or discomfort when I make significant efforts	**6**	**54,55**
No pain or discomfort during activities	2	18,20
Total	11	100,00

Patients with pain or discomfort during major efforts were the most represented 54.55% (n=6).

3.4.3.5. Pain or discomfort in the kidneys related to the jj probe during urination

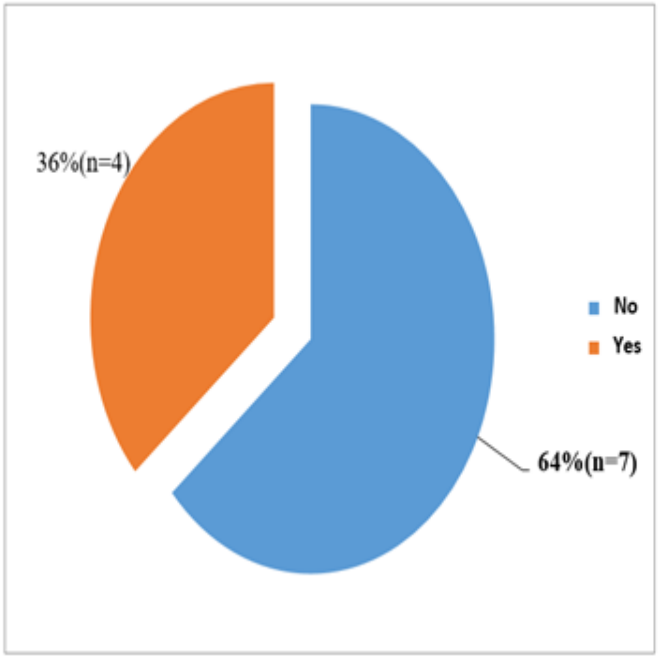

Figure 7: Distribution of patients according to the presence of pain or discomfort in the kidneys during urination

The most represented patients were those who had no pain or discomfort during urination 64% (n=7) of the cases who presented pain related to the jj probe.

3.5. Condition

3.5.1. Difficulty performing moderate physical activities

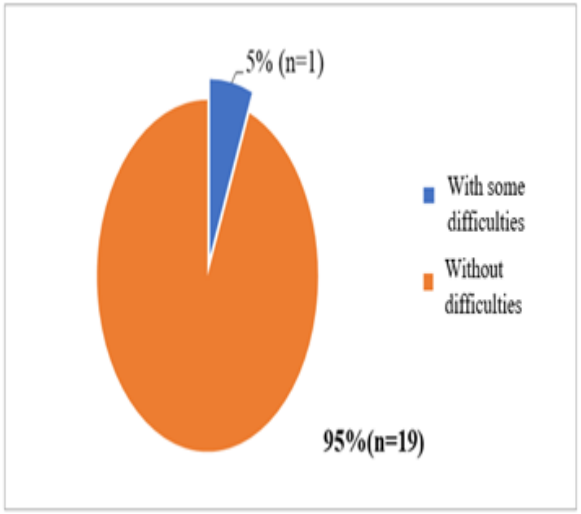

Figure 8: Distribution of patients performing moderate physical activities according to the existence of difficulties

The most represented patients were those who had no difficulty performing moderate physical activities 95% (n=19) of cases.

3.5.2 Reduction in patients' daily activities

Table: Distribution of patients according to the interval of days that the symptoms related to the JJ probe caused them to reduce daily activities

Interval of days	Number (effective)	Percentage (%)
[10, 15]	9	45
[16, 20]	**11**	**55**

Patients forced to reduce daily activities due to jj probe-related symptoms accounted for 55% (n=11) of cases.

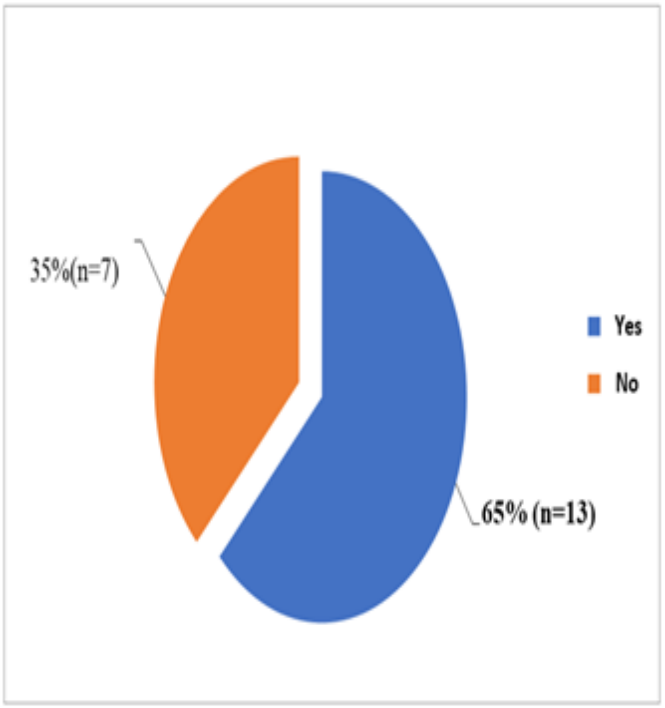

Figure 9: Distribution of patients according to the existence of sexual activity after the insertion of the jj probe

The most represented patients were those who had sexual activities with 65% (n=13) of cases.

3.6 Sexual activity

3.6.1 Sexual activity after probe jj placement

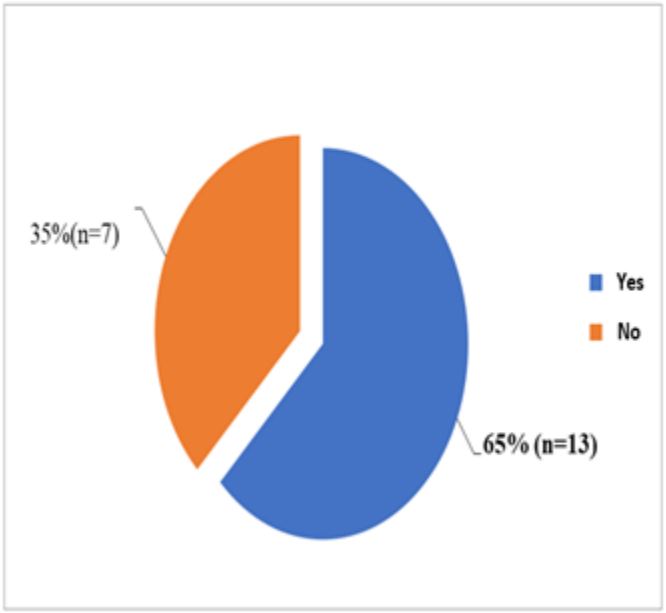

Figure 10: Distribution of patients according to the existence of sexual activity after the jj probe placement

The most represented patients were those who had sexual activities with 65% (n=13) of cases.

3.6.2 Absence of sexual activity

All of the patients who were not sexually active reported that they did not have an active sex life.

3.7. Other issues

3.7.1 Urinary tract infection

Table: Distribution of patients according to the number of appearance of symptoms evoking a urinary tract infection

Answer	**Number (effective)**	**Percentage (%)**
Never	**16**	**80**
Sometimes	3	15
Rarely	1	5%
Total	20	100

Patients who did not develop symptoms suggestive of a urinary tract infection accounted for 80% (n=16) of cases.

3.8. Therapeutic aspects

3.8.1 Taking analgesics

Table: Distribution of patients according to the frequency of taking analgesics

Response according to analgesic intake	**Number (effective)**	**Percentage (%)**
Never	5	45,5
Most of the time	2	18,2
Sometimes	4	36,4
Total	11	100

The most represented patients were those who had never taken analgesics for pain 45.5% (n=5) of patients with pain related to the jj probe.

3.8.2 Use of antibiotics

Table: Distribution of patients according to the use of antibiotics after placement of the JJ probe

Answer	Number (effective)	Percentage (%)
Two cures	1	5
None	**16**	**80**
One cure	3	15
Total	20	100,0

The most represented patients were those who had not used antibiotics at all with 80% (n=16) of cases.

Discussion:

Probe tolerance jj probe and Sociodemographic variables

In this study, the placement of the jj probe represented 85.94% of all patients operated on for ureteral obstruction.

The average age of our patients was 35.81 years with extremes ranging from 5 to 80 years. The most represented age group was that of 20 to 40 years with 43.63% of patients.

Our result is lower than those of Boureima et al [4], Mohammed et al [5] and Zakou et al [6] who respectively noted an average age of 39.7 years; 39.9 years and 4 9.9 years.

The sex ratio was 2.23 with a male predominance. This male predominance was found by Boureima [4] with a sex ratio of 2.1, however Zakou et al [6] found a sex ratio of 0.47 with a female predominance.

In this study, the most common pathology leading to the rise of a jj probe was urolithiasis with 73% of cases. Our result is superior to those of Boureima et al [5] , Ouédraogo, B in Burkina Faso [16] and Damien Chambade et al [8] who found respectively 67.5% and 69.3% of cases of lithiasic pathology leading to to the placement of a JJ probe. This shows that urolithiasis remains the main indication for the jj probe.

Probe tolerance and clinical aspects

Results of this study showed that the average lead implantation time is 31 days, same trend reported by Rajendra PR et al who found 29.56 days. This is lower than those of Damien CHAMBADE et al [8] who found 91.8 days.

In our series, 45% of our patients had at least one daytime micturition every 2 hours (pollakiuria) and 40% had at least two nocturnal urinations (nocturia). Our result is lower than those of Joshi [7] and Damien Chambade et al [8] who found that 76% of patients with daytime voiding every two hours and 58% of cases with two nocturnal rises. This pollakiuria can be explained by the irritation of the bladder by the jj probe but also by an important water boil to prevent the formation of stones and the formation of clots in the event of bleeding.

In our series, 55% of patients did not present with urgency, unlike Leibovici et al [9] and Damien Chambade et al [8] who respectively obtained 55% and 78% of cases of urgency.

In our series, 15% of patients had urinary leakage due to urgency. Our result is lower than that of Sheng-Wei Lee et al [10] who found 25% of cases of urge incontinence.

25% of our patients had a feeling of incomplete emptying of the bladder. Our result is lower than that of Sheng-Wei Lee et al [10] who obtained 76% of cases of incomplete emptying of the bladder.

In our study, 45% of patients presented pain or discomfort in the lumbar region, with the location in the anterior renal area being the most represented with 72.7% of cases. Our result is superior to those of Mohamed et al [4], Ouedraogo, B[98], Dan Leibovici et al [9] who obtained respectively 10.9%, 11.11% and 32% of

cases of lumbar pain and lower than that of Joshi [7] who found 60% of cases of lumbar pain.

Pain intensity 3/10 on a numerical scale of (0 to 10) was the most represented with 45.5% of patients. Our result is similar to that of Bonniol [11] who obtained an intensity of 3/10 and lower than that of Ahmet Camtosum [12] who obtained an intensity of 7/10 in 72.1% of patients who presented with pain. lumbar.

Lumbar pain occurs in 36% of patients during urination. Our result is lower than that of Damien Chambade [8] and Benrabah, R et al [96] who obtained respectively 49% and 66.6% of the cases.

In our series, 95% of patients could perform light physical activities without difficulty. Our result is higher than that of Ahmet Camtosum et al [12] who found 40.3%.

Patients who had difficulty performing heavy physical activities accounted for 60%. Our result is lower than that of Ahmet Camtosum et al [12] who found 79.2%.

70% of our patients were satisfied with their social life. Our result is clearly superior to that of Ahmet Camtosum et al [12] who found a 29.2% satisfaction rate.

In our study, 65% of patients had sexual activity after the placement of the jj probe and 35% of patients had no active sex life.

Among the 65% of patients who had sexual activity 38.47% of them had pain during intercourse. Our result is higher than that of Joshi et al [86] who found 35% of cases of pain during intercourse and lower than that of Leibovici et al [9] who found 62.6%.

This pain has a significant impact on the sexual life of our patients.

According to our study, more than 80% of our patients were satisfied with the jj probe in improving the symptoms related to their pathology and were in favor of using the jj probe if the situation arises.

Certain consequences can be anticipated with the implantation of a foreign body in the urinary tract. They can also cause complications such as migration, calcification, fragmentation, stone formation, hematuria, urinary tract infection…[97]

In this study, hematuria and urinary tract infection were complications: migration, encrustation and calcification were not found.

Patients who had gross hematuria accounted for 10%. Our result is lower than those of Dan Leibovici et al [9] and Alexis Puichaud et al [13] AND Benrabah, R et al [14] who found respectively 42% and 50% and 53.3% of cases of hematuria macroscopic. 60% of patients said that urinary symptoms were not a problem for them at all.

On the other hand, Rajendra PR [15] and Mohamed [5] found respectively as a complication. : Migration of the probe 26.32% and 10%, encrustation 10.52% and 10% while Ndoye, M et a [17] in Senegal had 4.87% calcification as a complication.

Probe tolerance and therapeutic aspects

The taking of analgesics concerned 54.5% of the patients who had pain. Our result is similar to that of Damien Chambade [8] who found 55% and lower than that of Joshi et al [7] who obtained 70% of cases of analgesic use.

In our study, 20% of patients reported at least one episode of urinary tract infection that led to the use of at least one course of antibiotics. Our result is superior to that of Mohammed et al [5] who found 10.9% of cases of urinary tract infection.

Conclusion:

The morbidity of the jj probe is significant and sometimes underestimated. Our study confirms that the duration of implantation should be as short as possible in order to improve patient tolerance. This implies organizing rapid etiological management of these patients.

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