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Emergency Drainage of Upper Urinary Tract with a Double Catheter in the Hospital General de Grand Yoff of Dakar (HOGGY)

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Abstract

Goals: The goals are to assess the use of Double Jendo-prostheses in urinary obstructions in the Hospital General de Grand Yoff of Dakar (HOGGY). Patients and methods: This is a 4-year retrospective study (1st January 2009-31st December 2012). The study included all patients with obstruction of the upper urinary tract, and with a reversing type Double Jendo-prostheses. Findings: A total of 82 patients were chosen for this study, including 41 males. Patient's average age was 45 years. Kidney failure accounted for 11.5% of the causes of consultations. Lithiasic obstacles (34.2%) and tumours (21.5%) were the most recurrent. Catheter was successfully placed in 78% of cases, and highly contributed to improve renal function in 69% of cases. The frequently complications found in patients with Double J Catheters were back pain and urinary tract infections. Four cases of catheters calcifications were reported. Catheter was replaced in 62.2% of patients within an average period of 6.9 months. Conclusion: Double J Catheters remain important in the preservation of renal function in case of obstruction. Its use requires a mastery of these indications and a rigorous follow-up.

Keywords

Renal Failure, Drainage, Double J Stent

1. Introduction

Upper tract obstacles impede a normal flow of urine, likely to obstruct the good functioning of kidneys. Progresses in their care have involved endo urology ureteral prostheses for about two decades [1]-[3]. This tech-

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nique is really important in the management of emergency urinary obstructions [4]. The urinary drainage is impacted by several factors, including the quality of Double JJ catheters and drain duration of [5]. This requires an accurate and selective indication of the placement of Double J probes, based on a more or less accurate assessment of the risk-benefit ratio for the patient. We hereby report the experience of the Urology Service of the Grand Yoff General Hospital in Dakar on the emergency urinary drainage with Double J ureteral type.

2. Material and Methods

This retrospective, descriptive and analytical study includes a 4-year period (January 1st 2009-December 31st 2012. It included all patients with obstruction of the upper urinary tract who had a Double J type retrograde drainage trough endoprothese in the Urology Andrology Service of the **Grand Yoff General Hospital**. The parameters studied included: age, sex, and circumstances of discovery of the obstruction, results of paraclinical examinations contributing to the indication, intraoperative findings of the performance (success or failure of placement of Double JJ Catheter), duration, tolerance and scalable performance. Data collected were processed by means of Epi Info 3.5 software; the difference being statistically significant if $p < 0.05$.

3. Findings

82 patients were selected for the study. They included 41 men and 41 women, representing a sex ratio of 1. The mean age of patients was 45.37 years ± 15, ranging from 15 to 76 years. The most represented age group was 30 - 59 years old (**Figure 1**).

The most recurrently signs found were lumbar flank pains, accounting for 56 cases (30.7%) (**Table 1**).

Lab tests carried out: Creatinine was higher in 35.4% patients before operation. The mean value of Creatinine in patients with kidney failure was 70.6 mg/l. Urine culture (ECBU) was carried out in 34.1% (n = 28) of patients. It was positive in 10 patients; germs found were *Escherichia coli* (n = 4), *Morganella morgagni* (n = 2), *Klebsiella pneumoniae* (n = 1), *Klebsiella oxylara* (n = 1), *Enterobacter* (n = 1), *Staphylococcus aureus* (n = 1). The anomalies often found when analysing the images tests carried out in this study were dilation of the upper urinary tract (*UUT*) at the various stages. Dilatations were found in stage III (48.3%) trough echography of the urinary tract and (40.4%) trough the uro-TDM.

The obstacle author of the dilatation was evidenced in 76.6% (n = 36) of cases by means of uro-TDM, 41.9% (n = 26) with echography and 64.7% (n = 11) with IVU. Three cases of mutie kidney were found on Urographie Intra Veineuse IVU. No patient had renal scintigraphy. Stones were most recurrent obstructive: 27 cases (34.2%) with different topographies, and tumour causes included abdominal pelvic tumours in 17 cases (21.5%) (**Table 2**).

The operation took place under general anaesthesia. The Double J Catheter was successfully placed in 78% of cases. The tightened stenosis of the ureter or the meatus were the most recurrent causes of failure in 10 cases, that is 12.2%; not visualized meatuses in 11 cases, that is 13.4% (the causes of 7 cases were not reported, 2 cases were invaded by bladder tumour and 2 cases were not visualized by severe bleeding) and 1 case of too tortuous ureter. There is no statistical link between failures and lesion's side, but 61% of failures were found in bilateral lesion. The frequency of Double JJ Catheter failures placement were reported pre- or intra-operatively, in tumours with 9 cases, followed by stones in 8 cases and ureteral stenosis in 7 ones. The average operating time was 42.7 minutes. Intraoperative incidents found were: wrong way (n = 2). A sub mucosal peeling of the urethral meatus (n = 1) and a urethral perforation (n = 1) occurred during catheterization of the ureter sheathed by a cervical tumour.

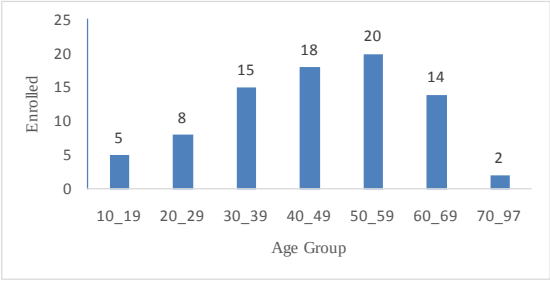

Figure 1. Distribution according to age groups.

Table 1. Distribution of the various circumstances of discovery.

	Enrolled	Percentage
Lumbar flank pain	56	30.7
Renal colic	26	14.3
TUBA	16	9
Renal failure	21	11.5
Abdominal echography	15	8.2
Fever	11	6
Hematuria	8	4.4
AEG	10	5.5
Other	4	2.2
Anuria/Oliguria	7	3.8
Oedematous syndrome	4	2.2
Recurrent urinary infections	2	1,1
Abdominal weight	2	1.1
Total	**182**	**100**

NB: Some patients had more than one reason for consultation.

Table 2. Distribution of operation indications.

	Enrolled (n)	Percentage (%)
Obstructive urolithiasis	27	34.2
Abdominal-pelvic tumour	17	21.5
SJPU	12	15.2
Urethral stricture	9	11.4
UHN viewed without obstacle	8	10.1
Retroperitoneal fibrosis	3	3.8
Others	3	3.8
Total	**79**	**100**

Concerning their development, postoperative effects were simple in 84% of cases with complications recorded in **Table 3**.

69% of patients scrutinized at a renal insufficiency stage with elevated serum **creatinine** had an improved serum **creatinine** after Double J Catheter. Germs found in patients with urinary infection on probe were *Pseudomonas aeruginosa* (n = 7), and two cases of *Klebsiella leukocyturia bacterial*. There is no significant link between the existence of urinary infection prior procedure and the occurrence of postoperative urinary infection (p = 0.30). After placing the Double J Catheter, 42.7% of patients received a causal diseases treatment. The probe was renewed in a total of 51 (62.2%), within an average of 6.9 months. Probes were left for a mean of 21.33 months; ranging from 2 to 208 months. The mean hospital stay of patients was two days, ranging from of 1 to 45 days. We could not find any death related to the placement of the Catheter.

4. Discussion

Various means of urinary drain, including ureteral stents, were developed in order to moderate the effects of an obstruction on the renal function. These probes are very important in the management of upper urinary obstructions; as observed in our study with 38.1% emergency drain. A study by Nouira *et al.* in Morocco shows that

Table 3. Distribution of postoperative complications found.

	Enrolled (n)	Percentage (%)
Lumbar pain	19	35.2
Urinary infection	12	22.2
Haematuria	6	11.1
Probe forgotten	5	9.3
Probe calcification	4	7.4
Catheter obstruction	2	3.7
Irrigative bladder disorders	2	3.7
Acute pyelonephritis	1	1.8
Sensation of probe (after ablation)	2	3.7
Catheter migration	1	1.8
Total	**54**	**100**

Double J endoscopic drainage is a credible alternative with little morbidity, and appropriate at very first intention [6]. The mean age in this study is 45.4 years, with huge representatives of the age group 30 - 59 years. Ramyill *et al.* [7] and Memon *et al.* [8] reported a 35 years average age. This might be due to the late discovery of obstructive pathologies [7]. The upper urinary tract is the same in both men and women. In this study the sex ratio is 1. The only difference might be due to causative pathologies, which are pelvic tumours invasion in women and nephrolithiasis diseases predominance in men.

The circumstances of the discovery of these obstructive uropathies are mainly back or side pain; and sometimes renal colic type. The same was found in our study and in Raymil *et al.*'s study [7]. This obstacle is the cause of the destruction of the renal parenchyma in 35.4% of patients in our study.

Most cases of diagnosis were facilitated by UUT imaging. Ultrasound alone might sufficiently set the indication by showing UUT dilation. In this study, a predominance of stage III (48.3%) of all ultrasound results was found. However ultrasound remains fewer insensitive in the search of aetiology [9].

In the obstructive pathologies found, the indications of the placement of Double J Catheters can be gathered into two main groups: obstructive and not obstructive. Obstructive pathologies were mainly stones in our series, *i.e.* 34.2% of all causes. Urolithiasis was among the main etiologies anuria found by Rakototiana *et al.* [10]. According to Haleblian *et al.* [11], a Double J Catheters drain has a double importance: obstruction relief and then preparation of the ureter to a later ureteroscopy. Non lithiasic obstructions were mainly tumour pathologies; and then malformation ones.

4.1. Intraoperative Results of the Placement of the Catheter

The success rate in our study was 78%. Rakotatiana *et al.* [10] reported a rate of 40%: it was only anuria. In this case the winding changes of ureter induced through neoplastic and locoregional invasion were mentioned as the main source of failure of the Double J Catheter placement. Other causes of failure found in our work were stenosis, in 40% of cases. It can be post inflammatory intrinsically, often related to schistosome pathology; which remains endemic in the sub region [12].

For the development of the placement of JJCatheters, the mainly expected results are the improvement of renal function that, assessed through the value of creatinine was found improved in 73.9% of patients admitted with kidney failure.

Although the placement of a Double J Catheters seems easier, its maintenance is likely to cause complications and discomfort. For Chambade *et al.* [1], Double J Catheters morbidity is important, but sometimes under-estimated by operators. If González *et al.* think that 80% of morbidity in patients with probe [13], Ringel *et al.* suggested its presence in one out of three of patients [14]. Jacques [4] had reported that this disease is primarily related to tolerance difficulties of these catheters; and till now, there is neither a specific treatment aimed at im-

proving the tolerance nor a perfect catheter. Current studies aimed at obtaining a type of drain likely to overcome this difficulty by meeting the criteria such as resistance to infection, to corrosion, and to encrustation especially in cases of long term drainage [15]. Several types of complications are currently observed.

4.2. Pain under Double J Catheters

Pain linked to long term JJ Catheters was reported by most authors [4] [16]. Its frequency in this study was lower than that reported by Irani *et al.* [17]. Pain in patients with Double J Catheters can range from a mere discomfort to renal colic, sometimes imposing its withdrawal [4].

4.3. Double J Catheters Infections

Postoperative infection is one of the present-day main concerns. In our study there was no link between prior positive urinalysis (urine culture) and the occurrence of postoperative infection. Ben *et al.* [18] reported that prophylactic antibiotics for 48 - 72 hours can delay the formation of biofilm which is not always accompanied by bacteriuria [19]. These findings were also confirmed by Haleblian and Farsi [11] [16]. Catheters infections can sometimes be terrific as pyelonephritis or even sepsis [16]. One of the prevention methods is ensure the sterility of urine before placing the probe, which is not always possible giving its emergency conditions.

4.4. Double J Catheters Incrustations

As for probe incrustations found in 4 of our patients, they are among the commonly reported by researchers [3] [16] [20] especially in patients with gallstone disease. Other risk factor for this kind of complications is long probe use. The said patients should be granted a closely follow-up and a reduction of the probe use time (6 - 8 weeks), in order to avoid this complication.

4.5. Irritative Bladder Disorders with JJ Catheters and Other Complications

Bladder irritations often reported by patients with ureteral catheters are due to the presence of a great distal tip of probe, which is sometimes too long, and therefore continuously irritates bladder mucosa [4]. For Farsi *et al.* [16], the improper size of a probe is likely to cause important discomforts. Continued irritation would also be a cause of hematuria found in 06 of our patients. Despite the complications reported, no death was related to the use of ureteral probe. The same findings were reported by Memon *et al.* [8].

4.6. Catheter Use Duration

The mean time before probe replacement was 06 months; higher than the safe line suggested by Faris *et al.* [16], which ranges from 06 to 08 weeks, suitable for pre or post-operative drainage for curative treatments. The mean duration suggested in patients with longer survival and likely to have the probe replaced several times is 06 months. A metal Catheters likely to be cheaper, which avoids recurrent hospitalizations for replacements with less impact on the patient's quality life, mainly with tumour pathology, seems better [13]. Several complications found are related to a too long probe use. The mean time of probe used in this study was 21.3 weeks; significantly higher than the one reported by Chambade *et al.*, which was 91.8 days [1]. This would be due to the ignorance of people, mostly illiterate and poor as to reduce regular postoperative follow-up or probe replacement. There is also the responsibility of the caregiver who does not always efficiently sensitize and alert patients about material they used. The too long duration of the probe in patients may also be due to the delay in scheduling its withdrawal, because of a demand higher than the hospital functional capabilities.

5. Conclusion

Double J type stents are currently very important in the treatment of obstructive diseases of upper urinary tracts. Although their endoscopicuse is still to be vulgarized in our context, there is a significant need for accessibility of this practice for populations. The success of the placement of the JJ Catheters, despite an unquestionable indication, is not always guaranteed. In any case the mastering of this important tool, the regular follow-up and observation of patients with their active contribution are a good alternative to prevent possible complications related to this treatment and make sure a good tolerance in patients.

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