

Experience with Indwelling

Pages with reference to book, From 147 To 149

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Abstract

J.J stents provide free drainage from the kidney to the bladder, reduce or eliminate urine leakage and provide stenting of the ureter. They were used in a total of 200 cases. In 158 to prevent ureteric obstruction before extracorporeal shock wave lithotripsy (ESWL), in 25 to bypass obstruction and In 12 as an adjunct to complicated upper urinary tract surgery. Majority (97%) of the stents were placed endoscopically under local anaesthesia (71.5%). In all the cases stents were successful to provide free drainage. No mortality was attributable to the use of stents but certain complications were encountered. Encrustation of the stents occurred in 21 (10.5%) and migration in 11(5.5%) cases. Stents were removed easily under local anaesthesia by cystoscope. "J" stents thus provide an effective means to reduce complications and enhance effectiveness specially of ESWL therapy (JPMA 43: 147, 1993).

Introduction

J.J stent is a hollow tube with a hook or "J" on either end. The J's on either end of the stent are formed in opposite directions so that the upper "j" can hook into the renal pelvis or lower calyx and the lower "J" into the bladder. The "J's" thus prevent the upward or downward migration of the stent. The use of these indwelling prosthetic stents for the internal drainage of the upper urinary tract has now become an essential part of the Urologist's armamentarium¹. "J.J" stents are made from silicone and polyurethane. Ideal stents are those which are easy to insert, remove or replace. They are of high precision manufacture with a uniform diameter and good flow characteristics. They are biologically inert and chemically stable in the urinary tract and radio opaque. Once placed they should remain in their fixed position^{2,3}. Use of "J.J" stents is a routine in urological practice. The main indications of their placement are before ESWL as prophylaxis for obstruction due to stone debris⁴, benign and malignant strictures⁵, obstructions due to stones⁶ ureteric injury⁷, prophylaxis following surgery⁸ and acute hydronephrosis of pregnancy¹⁰. This paper describes the use and experience of "J.J" stents placement in Pakistani patient population with urological ailments.

Patients and Methods

"J.J" stents (Figure 1)

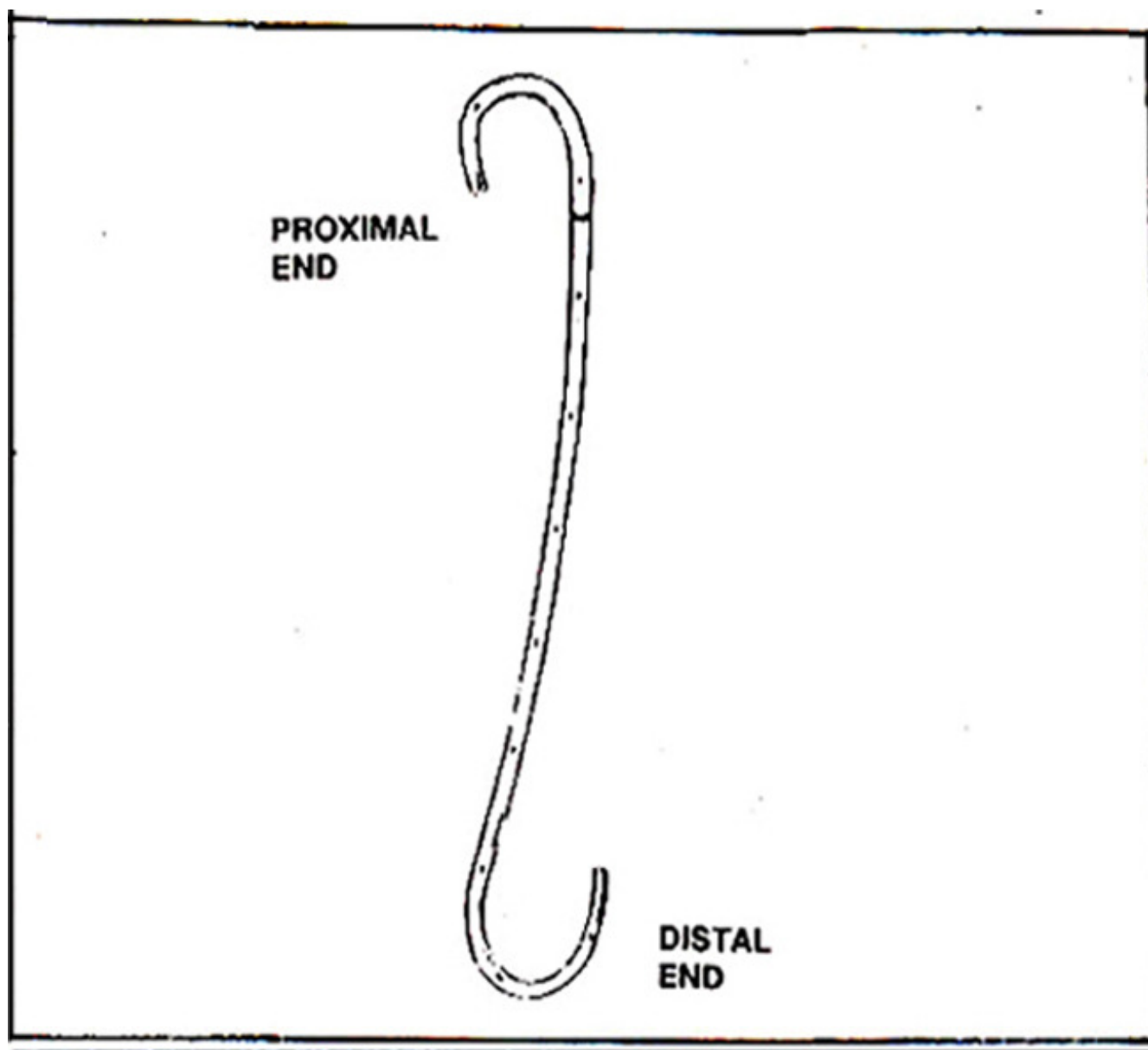


Figure 1. J J stent.

were placed in 200 patients with various urological problems. One hundred and sixty-three silicone and 37 polyurethane stents were used whose sizes varied from 4 to 8 Fr. Placement was done in local anaesthesia in 143 cases, general anaesthesia 26 and analgesia in 31 cases. Stents were placed under fluoroscopic control cystoscopically¹⁰ in 190 cases, percutaneously¹¹ in 4 and by open surgery¹² in 6 cases. They were removed endoscopically under local anaesthesia in 177 cases and by open surgery in 23 cases.

Results

Indwelling ureteric stents were inserted in 200 patients (140 were men and 60 women) whose ages ranged from 20-71 years (mean age 30 years). The pathological conditions involved are shown in Table I.

Table I. Indication for insertion of 200 Double "J" Stents.

Indication	No. of cases	Percentage of Total
(A) Prophylaxis group		
Pre-ESWL	150	75.0
After Laser Lithotripsy	8	4.0
After Uretero Renoscopy (URS)	4	2.0
After dormia extraction	3	1.5
(B) Obstructed group		
Pelviureteric junction obstruction	11	5.5
Acute stone management	6	3.0
Post-traumatic stricture	4	2.0
Tuberculous stricture		2
Retroperitoneal fibrosis	1	0.5
Acute hydronephrosis of pregnancy	1	0.5
(C) Open Surgery group		
Pyelolithotomy	2	1.0
Ureterolithotomy	2	1.0
Pyeloplasty	1	0.5
(D) Miscellaneous group		
Ureteric fistula	4	2.0
Ureteric trauma	1	0.5

Patients were divided into four groups. Majority of the patients were in group A [160 (83%)], where stents were placed as prophylaxis to prevent obstruction either due to stone debris after ESWL or obstruction due to oedema or damage post-surgery. The second largest group was B with 25 cases (2.5%) where stents were placed to relieve obstruction. This was followed by open surgery group C and group D (ureteric trauma and fistula) with 5 cases (2.5%) each.

Table II. Stent functional efficacy.

Indications	Success rate (%)	Failure rate(%)
(A) Prophylaxis group		
No. of cases 165	94	6
(B) Obstructed group		
No. of cases 25	99	1
(C) Open Surgery group		
No. of cases 5	100	-
(D) Miscellaneous group		
No. of cases 5	100	-

Table II shows the functional efficacy and effectiveness of 'J' stents. In group A, "J" stents prevented

obstruction in 94% of the cases. In only 6% cases, stents were unable to provide free drainage and these were all in the ESWL group (Table I). In the rest of the groups B, C and D there was maximal success rate.

TABLE III. Duration of indwelling of Stents.

Months	No. of patients	% of Total
0-3 Months	56	28
3-6 Months	98	48
More than 6 months	46	24

Table III shows duration of stent indwelling. In majority of cases (76%), the period was up to 6 months. Complications associated with stents were seen in 30(15%) cases. In 21 (10.5%) cases there was encrustation and stone formation in stents, in 11 (5.5%) there was migration of stents, bladder mucosa erosion in 11 (5.5%) and breakage of stents in 9(4.5%) cases (Figure 2).

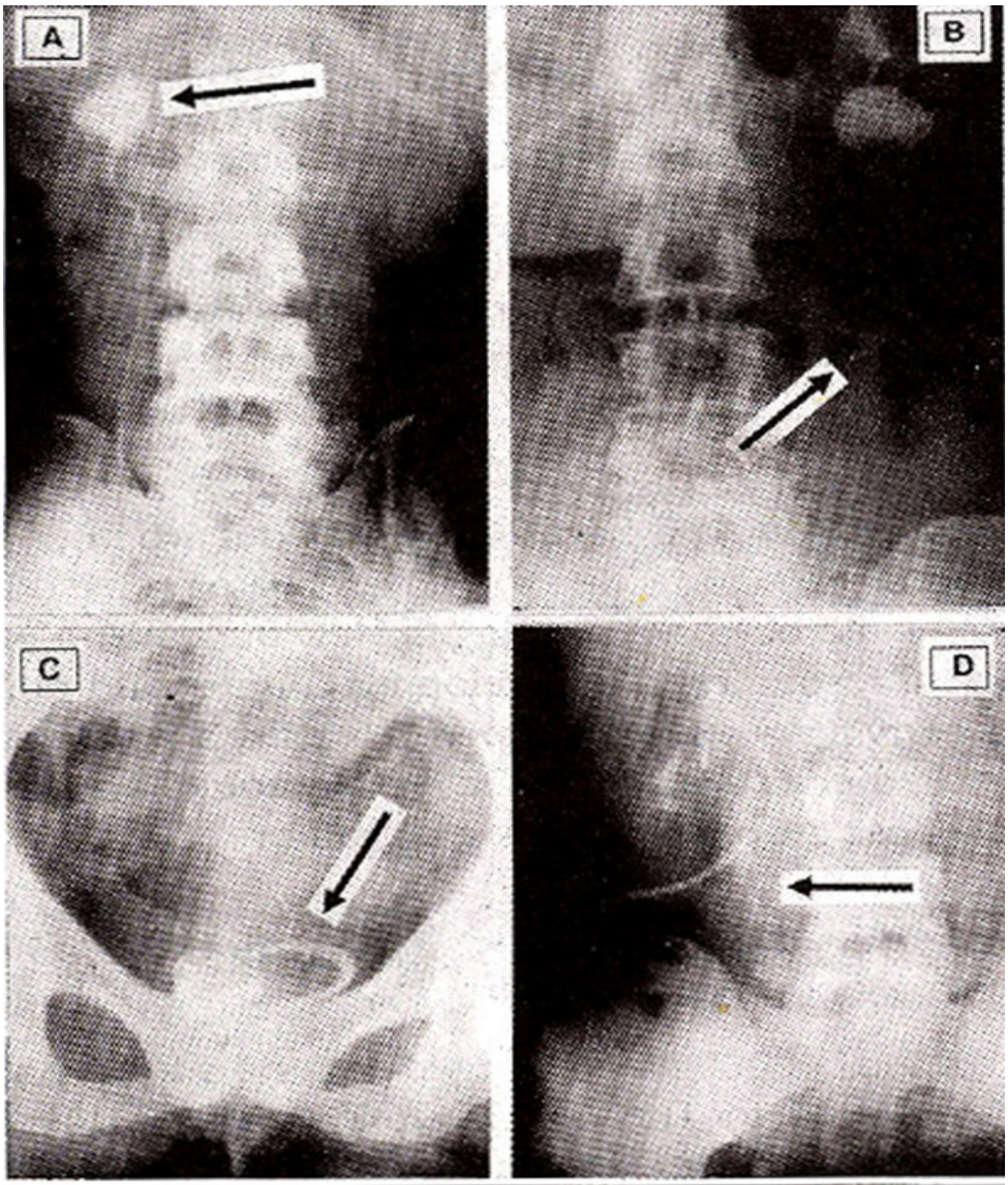


Figure 2. J J stents complications.

These complications were related to the duration of indwelling and type of stent used (Tables IV and V).

Table IV. Relations of complication and type of Stent.

Complications	No. of Stents	Type of Stents	
		Silicone No.	Polyurethane No.
Encrustation	21	19	2
Migration	11	11	0
Breakage	9	9	0
Bladder mucosa erosion	9	1	8

Table V. Relationship of complications and duration of indwelling.

Duration	Encrustation No. of pts.	Migration No. of pts.	Breakage No. of pts.	B.M. Erosion No. of pts.
0-3 Months	1	5	0	4
3-6 Months	9	2	3	3
6-9 Months	11	4	5	2
9-12 Months	-	-	1	-

Encrustation, migration and breakage was found in silicone and bladder mucosa erosion with polyurethane stents.

Discussion

Our practice of stenting has reduced post-ESWL obstruction and complications to less than 10%. Indeed patients who were burdened with nephrostomy tubes, externalised stents from the flank and drainage bags on with a ureteral catheter taped to a Foley's Catheter and connected to various collection devices are now a rarity. The value of ureteral stenting is further highlighted when one considers the fact that for 85% of patients with renal and ureteral stents the treatment of choice is ESWL¹³. We share this favourable prophylactic stenting experience with a number of investigators^{14,15}. Same is the experience in other indications where stents provided a pathway for drainage of urine across obstructed ureter on ureteral segment¹⁶ and prevented leakage of urine into retro-peritoneal space following open surgery. Stents also provided a pathway for the growth of urothelium to bridge a defect and prevent formation of a tight stricture during healing phase after surgery¹⁷. Complications associated with the use of these stents are basically mechanical in nature related to stent material and are augmented by the duration of the indwelling period¹⁸. In our experience encrustation occurred mostly in those patients who had soft silicone stents which remained indwelling for longer periods. Polyurethane stents fared better in similar circumstances. Perhaps efficient drainage through and around these is a protective factor. Breakage of stents was more common in, the soft silicone stents and tended to break as time of indwelling increased. Migration too was a problem of silicone stents. Polyurethane stents though hard causing bladder mucosal damage were relatively free from these complications. Putting complications into perspective 0-3 months period involves migration and bladder mucosa erosion there after all complication increased with duration. of indwelling. Ideal period of stent placement is 3 months¹ though in our series they remained in place for much longer durations, not for want of further management but patients' inability to return. It would be

worthwhile to restate "J.J" stents cause so little irritation that the patient and urologist can forget its presence. It is for this reason, that we explain quite carefully to our patients that they have an indwelling stent that must be removed. Nevertheless compliance is low in our population as patients are relieved of their symptoms. Our experience with "J.J" stents has been a favourable one considering the pattern of indications for their use in our population and the complications encountered.

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