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Role of Double J Stenting after Uncomplicated Ureterorenoscopy for < 1 Centimeter Ureteral Stones: A Randomised Control Trial

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Abstract: - Urolithiasis is the most common urological disorder and the management is primarily surgical. Ureterorenoscopy(URS) and intracorporeal lithotripsy(ICL) is by far the most common procedure done for ureteral stones. Most of the patients are put on a double J (DJ) stent following the procedure. DJ stent has its own complications and stent related symptoms. This randomized control trial was aimed to assess the outcome of patients with stone less than 1 cm who undergo URS and ICL with and without a postoperative DJ stent. 100 cases were included in the study and randomized into 2 groups based on presence and absence of postoperative DJ stent. Subjects were assessed for abdominal pain, irritative lower urinary tract symptoms and total leucocyte count after 2 weeks. There was no significant difference in pain and total leucocyte count among the two groups but irritative lower urinary tract symptoms were significantly lower for the group without a DJ stent. So DJ stent may be judiciously avoided in selected patients after an uncomplicated ureterorenoscopy.

Keywords:- *Stent, Lithotripsy, Ureterorenoscopy*

I. INTRODUCTION

Urolithiasis is a disease known since older ages. The incidence is rising all over the world. The site of stone disease has shifted from lower to upper tract and the increased prevalence in men is slowly diasapperaing[1]. Due to the advances in imaging and minimal invasive techniques the diagnosis and management of urolithiasis has become less cumbersome.

For ureteral stones medical expulsion therapy, extracorporeal shock wave lithotripsy (ESWL) and ureteroscopy are currently the most commonly employed treatment modalities. Larger stones may require ureterolithotomy. There is a debatable role of routine placement of DJ stents after URS. The main proponents of DJ stenting are the prevention of obstruction and colic due to ureteric oedema[2]. Also DJ stents may help in the passage of residual stone fragments and may prevent delayed formation of ureteric stricture. On the same hand DJ stent is associated with significant morbidity in the form of stent symptoms. Stent symptoms are mainly irritative voiding and stent related pain. Also it leads to increase in operative time and cost and a need for second procedure for stent removal. Other complications such as migration, infection, pyelonephritis, forgotten stent, breakage, encrustation, and stone formation are not uncommon[3].

II. OBJECTIVES

To assess the outcome among patients with ureteral stone less than 1cm who undergo URS with or without DJ stent in terms of pain, irritative lower urinary tract symptoms and total leucocyte count over a period of 2 weeks.

III. METHODOLOGY

A total of 100 patients who underwent ureterorenoscopy (URS) with lithotripsy for ureteral calculi <1cm from Urology department of Medical college, Thiruvananthapuram during the period of one year from 12 february 2018 to 12 february 2019 were included in the study. Patients with sizeable residual stones, recent urinary tract infection within one month, solitary kidney, deranged renal function test and complications like significant bleeding or perforation during the procedure were excluded from the study. Patients were consecutively randomized to two groups: alternating as one with a stent and other without a stent. All patients underwent URS and pneumatic lithotripsy under spinal anesthesia and were discharged on 3rd postoperative day. All patients were given tamsulosin for 2 weeks after the procedure. Patients were reassessed after 2 weeks for abdominal pain, total leucocyte count and irritative lower urinary tract symptoms like frequency, urgency and nocturia. The stented group patients had their stents removed after 2 weeks cystoscopically.

Statistical analyses were performed with the Statistical Package for Social Sciences software. Continuous variables were analyzed with the Student t test, and categorical

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variables with chi-square. Statistical significance was assigned at P value of < 0.05.

IV. RESULTS

Table 1 shows the categorical variables between the two groups and table 2 shows the continuous variables. Total leucocyte count and pain were similar in the two groups. Irritative symptoms were significantly higher for the stented group with 20 patients (40%) having it whereas in the group without the DJ stent only 9 patients(18%) had significant irritative LUTS. The p value was 0.015, thus attaining a statistical significance.

V. DISCUSSION

A myriad of studies are available regarding the advantages and disadvantages of DJ stent after ureterorenoscopy procedures. Still routine stent placement is a common procedure after URS. The main reason behind stenting is to prevent obstructive symptoms and stricture after URS due to mucosal inflammation and edema. This mainly occurs in impacted stones[4,5,6]. Ureteral stents have definitely proven to prevent stricture by soft dilatation of the ureter. Now with the availability of smaller ureteroscopes and better techniques for vision and fragmentation the need of stent placement for patients with smaller stones and uncomplicated procedure is in question.

Cheung et al compared stone-free rates and complications among the patients who had and who did not have ureteral stent placement after uncomplicated URS. They concluded that postoperative ureteral stent placement is not necessary after uncomplicated ureteroscopic lithotripsy, and the omission of the ureteral stent reduces the incidence of stent-related irritative symptoms[7].

In another study Chen et al compared renal function recovery and pain among the patients after URS with and without DJ stent. They concluded that uncomplicated ureteroscopic electrohydraulic lithotripsy patients without ureteral stenting tend to have similar renal function recovery and satisfactory pain reduction with less irritative symptoms compared to those treated with a ureteral stent[8].

Moreover unnecessary stenting adds to the cost of the procedure and need for a second procedure which could have been selectively avoided.

VI. CONCLUSION

We suggest a selective approach to stent placement after uncomplicated URS. Stent can be avoided in patients with good renal function who has stone less than <1cm and undergoes an uncomplicated URS without significant bleeding.

		stent				Total		χ^2	df	p
		Present		Absent						
		N	%	N	%	N	%			
Duration of symptoms in months	<= 2	38	76	29	58	67	67	3.664	1	0.056
	>2	12	24	21	42	33	33			
Gender	Male	26	52	35	70	61	61	3.405	1	0.065
	Female	24	48	15	30	39	39			
Hematuria	Present	0	0	18	36	18	18	21.951	1	<0.001
	Absent	50	100	32	64	82	82			
lithuria	Present	7	14	0	0	7	7	7.527	1	0.006
	Absent	43	86	50	100	93	93			
LUTS	Present	6	12	24	48	30	30	15.429	1	<0.001
	Absent	44	88	26	52	70	70			
PAIN	Present	42	84	33	66	75	75	4.320	1	0.038
	Absent	8	16	17	34	25	25			
Diabetes	Present	10	20	11	22	21	21	0.060	1	0.806
	Absent	40	80	39	78	79	79			
previous stenting	Present	7	14	15	30	22	22	3.730	1	0.053
	Absent	43	86	35	70	78	78			
Pain after 2 weeks	Present	11	22	10	20	21	21	0.060	1	0.806
	Absent	39	78	40	80	79	79			
irritative symptoms after 2 weeks	Present	20	40	9	18	29	29	5.877	1	0.015
	Absent	30	60	41	82	71	71			
radioopaque	Present	50	100	38	76	88	88	13.636	1	<0.001
	Absent	0	0	12	24	12	12			

Table 1:- Distribution of Categorical Variables

	Stent				p
	Present (n=50)		Absent (n=50)		
	mean	sd	mean	sd	
AGE	48.72	13.915	37.52	11.874	0.000
Duration of pain in months	1.82	0.8	3.02	4.255	0.053
stone size	6.56	0.993	5.92	1.441	0.011
Duration of procedure in minutes	47.6	8.283	37.2	7.9	0.000
Creatinine before procedure	1.06	0.2399	1.156	0.4734	0.204
Total leucocyte count after 2 weeks	6.86	0.99	6.48	2.033	0.238

Table 1:- Distribution of Continuous Variables

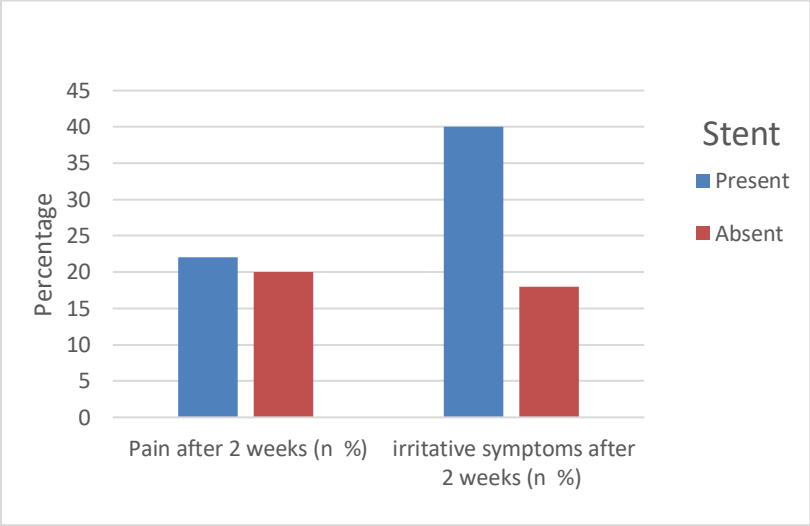

Fig 1:- Outcome from the Study

➢ *Budget*: No additional expenditure was incurred from anyone for the purpose of our study

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