

# EFFECTIVENESS OF DOUBLE-J STENTING FOR HYDRONEPHROSIS DUE TO PREGNANCY: A SINGLE CENTRE EXPERIENCE

Azra A Ghani<sup>1</sup>, Bilal Ahmad<sup>2</sup>

<sup>1,2</sup> Department of Urology, Lady Reading Hospital, Peshawar-Pakistan.

**Address for Correspondence:**

**Dr. Bilal Ahmad**

Department of Urology, Lady Reading Hospital, Peshawar-Pakistan.

Email: drbilal09@gmail.com

Date Received:

May 31, 2017

Date Revised:

November 12, 2017

Date Accepted:

November 20, 2017

## ABSTRACT

**Objective:** To determine the effectiveness of double-J stenting for hydronephrosis during pregnancy.

**Methodology:** This study was conducted at the Department of Urology, Lady Reading Hospital, Peshawar. Study design was observational and the duration of the study was 2 years from January 2015 to December 2016 in which a total of 50 patients were observed. Women with antenatal hydronephrosis (grade 2 or above), before 32 completed weeks of gestation and 20-40 years of age were included. All women were subjected to double-J stent insertion under local anesthesia by single experience surgeon. After insertion of the stents, all women were kept in the ward for further evaluation and discharged if stable on 2<sup>nd</sup> post operative day. All women were regularly followed up and a check ultrasound were done at the end of 1<sup>st</sup> month of treatment to determine the effectiveness in terms of improvement in at least 2 grades of hydronephrosis from baseline.

**Results:** Mean age was 28 ±4.16 years. On presentation, 23(46%) patients had grade 2 hydronephrosis, 17(34%) had grade 3 hydronephrosis and 10(20%) had grade 4 hydronephrosis. The effectiveness of double-J stenting for hydronephrosis during pregnancy was 72%.

**Conclusion:** Double-J ureteral stenting is an effective method in treating hydronephrosis during pregnancy.

**Key Words:** Effectiveness, Double J stenting, Hydronephrosis, Pregnancy

This article may be cited as: Ghani AA, Ahmad B. Effectiveness of double-J stenting for hydronephrosis due to pregnancy: A single centre experience. *J Postgrad Med Inst* 2017; 31(4): 361-4.

## INTRODUCTION

Dilatation effect of the progesterone and mechanical compression of the enlarging uterus result in hydronephrosis of pregnancy<sup>1</sup>. In most of the pregnancies, hydronephrosis is considered as a "normal" finding of pregnancy. It is more frequently observed on the right side and can be demonstrated by ultrasound beginning from the second trimester and it may be present until the 12<sup>th</sup> postpartum week<sup>2</sup>.

Although hydronephrosis of pregnancy can be present in up to 80% of the pregnancies, the management options are not clearly defined<sup>3</sup>. The treatment options of hydronephrosis due to pregnancy mainly depend on the coexisting stone disease, pyelonephritis, and renal disease<sup>4</sup>. However, the management option and its consequences in the absence of a coexisting disease state are not clear<sup>5</sup>. The insertion of double-J stent was found more effective than conservative therapy alone<sup>6</sup>. However, it has been suggested that the conservative treatment is the first choice depending on the complica-

tions and discomfort related to the surgical treatment. In addition, in most of the studies neither the degree of hydronephrosis nor the severity of the discomfort was thoroughly assessed<sup>7</sup>. The use of double-J ureteral stents are not free of complications and are inserted routinely in patients presenting with ureteral obstruction.

Stents can cause lower abdominal pain, lower urinary tract symptoms, fever and hematuria. Furthermore, these indwelling stents can migrate, break, form encrustations over them or can even be forgotten in the patient<sup>8</sup>. In one study, out of all pregnant women presenting with hydronephrosis, 40% have other co existing renal diseases. 47% of the women had complete resolution of hydronephrosis on follow up before the delivery. Stent encrustation (10%), stent migration (10%) and stent irritation (17%) were reported as complications<sup>9</sup>.

The present study was designed to determine the efficacy of double-J stenting for hydronephrosis during pregnancy. Although a dilatation of kidneys is a physiological phenomenon during pregnancy, the appearance

of aggravating signs and symptoms alarm for prompt treatment to avoid any complications.

Antenatal hydronephrosis refers to the dilatation of renal pelvis and collecting system. It was detected on ultrasound showing hypoechoic areas. Normal hyperechoic area in the center of the kidney was replaced by large hydronephrotic renal pelvis. It was graded from grade 0 (no hydronephrosis) to grade 4 (gross hydronephrosis). This study will provide us with effectiveness of double-J stenting for antenatal hydronephrosis in our local patients. The results of this study will be shared with local obstetricians and general surgeons to develop consensus for future research and therapeutic recommendations for hydronephrosis during pregnancy.

## METHODOLOGY

This study was conducted at the Department of Urology, Lady Reading Hospital, Peshawar. Study design was observational and the duration of the study was 2 years from January 2015 to December 2016 in which a total of 50 patients were observed. Symptomatic women with antenatal hydronephrosis (grade 2 or above), before 32 completed weeks of gestation, 20-40 years of age and having normal renal function tests i.e. blood urea and serum creatinine were included. While women with any type of surgical or medical intervention on kidneys during current pregnancy and history of pre-existing renal failure were excluded.

The study was conducted after approval from hospitals ethical and research committee. All women meeting the inclusion criteria and presenting with antenatal hydronephrosis with grade 2 or above were enrolled in the study through OPD and were admitted in the ward for further workup. Written informed consent was taken from all included patients and they were explained the objectives of study. Detailed history was taken from all the included patients and were examined for and clinical findings.

All women were subjected to double-J stent insertion under local anesthesia by single experience surgeon having minimum of five years of experience. After insertion of the stents, all women were kept in the ward for observation and discharged if stable on 2<sup>nd</sup> post operative day. All women were regularly followed up and a check ultrasound was done at the end of 1<sup>st</sup> month of treatment to determine the efficacy in terms of improvement in at least 2 grades of hydronephrosis from baseline. All the above-mentioned information including name, age and address were recorded in a pre-designed proforma. Strictly exclusion criteria were followed to control confounders and bias in the study results.

Data was entered and analyzed in SPSS version 22. Mean  $\pm$ SD was calculated for numerical variables like age. Frequencies and percentages were calculated for categorical variables like grade of hydronephrosis at baseline, grade of hydronephrosis at follow up and efficacy. Efficacy was stratified among age and baseline grade of hydronephrosis to see the effect modifications using chi square test with p value of <0.05 considered as significant. All results were presented as tables.

## RESULTS

Among 50 patients, 31(62%) patients were in the age range of 18-30 years, 19(38%) patients were in age range 31-40 years. Mean age was  $28 \pm 4.16$  years. Regarding baseline grade of hydronephrosis, 23(46%) patients had grade 2 hydronephrosis, 17(34%) had grade 3 hydronephrosis and 10(20%) had grade 4 hydronephrosis. After 1 month of follow up, improvement in the grade of hydronephrosis is shown in table 1. Efficacy of double-J stenting for hydronephrosis during pregnancy was 72% as shown in table 2. All the stentings were done successfully under local anesthesia without any complication. Stratification of efficacy with respect to age and baseline grade of hydronephrosis in table 3.

**Table 1: Grades of hydronephrosis after 1 month (n=50)**

Grades	Frequency	Percentage
Grade 0	19	38%
Grade 1	17	34%
Grade 2	10	20%
Grade 3	4	8%
Grade 4	0	0%
Total	50	100%

**Table 2: Effectiveness of double-J stenting (n=50)**

Effectiveness	Frequency	Percentage	P value
Effective	36	72%	0.000
Not effective	14	28%	
Total	50	100%	

**Table 3: Stratification of effectiveness with respect to age and baseline grade of hydronephrosis (n=50)**

Effectiveness		Effective	Not effective	Total	P value
Age	18-30 years	22	9	31	0.8355
	31-40 years	14	5	19	
	Total	36	14	50	
Grade	Grade 2	17	6	23	0.9615
	Grade 3	12	5	17	
	Grade 4	7	3	10	
	Total	36	14	50	

## DISCUSSION

Patients with hydronephrosis secondary to pregnancy do present to our department either directly or as a referral case from the gynecological departments from the whole of the province. In the literature we don't have any study on this issue from our country. In our population this problem is not very infrequent in child bearing age women, so in the future we want to study the same issue from different aspects to generate better public awareness.

Our study showed that the effectiveness of double-J stenting for hydronephrosis during pregnancy was 72%. Similar results were observed in the study conducted by Ngai et al<sup>9</sup> in which 30 pregnant patients presented with intractable flank pain necessitating double-J ureteric stenting. All pregnant women had hydronephrosis on ultrasonography (USG), and 12 (40%) had evidence of coexisting renal stones on USG. All ureteric stents were inserted successfully. The mean (range) indwelling time was 47.4 (3–224) days. Radiologically, 14 (47%) and 15 (50%) had complete resolution of the hydronephrosis on follow-up USG in late pregnancy and in the early postnatal period respectively while in our study 36 (72%) patients had complete resolution in the hydronephrosis after 1 month of follow up.

in the study by Song et al<sup>10</sup> it was reported that 05 patients (20%) had a significant past history; 03 patients

had renal calculi, one patient with had solitary functioning kidney and another had history of ureteric re-implantation. The mean gestational week of presentation with hydronephrosis was 20.1 ± 6.9 weeks. In majority of the patients (18/25, 72%) no associated renal or ureteric calculus was found. Six patients (6/25, 24%) with flank pain responded to analgesics while double-J stents were inserted in 18 patients (18/25, 72%). The pain and hydronephrosis resolved. After delivery, proper management of the associated renal and ureteric calculi was performed and then the double-J stents were removed<sup>10</sup>. Despite the delays in referrals of the patients to tertiary care center from the general physician level and availability of much better facilities abroad, our results are comparable to the international studies.

## CONCLUSION

Double-J ureteral stenting is an effective method in treating the hydronephrosis secondary to pregnancy.

## REFERENCES

- Cheung KL, Lafayette RA. Renal physiology of pregnancy. *Adv Chronic Kidney Dis* 2013; 20:209-14.
- Atar M, Bozkurt Y, Soylemez H, Penbegul N, Sancaktutar AA, Bodakci MN et al. Use of renal resistive index and semi-rigid ureteroscopy for managing symptomatic persistent hydronephrosis during pregnancy. *Int J Surgery* 2012; 10:629-33.

3. Pepe F, Pepe P. Color Doppler ultrasound (CDU) in the diagnosis of obstructive hydronephrosis in pregnant women. *Arch Gynecol Obstet* 2013; 288:489-93.
4. Yamaçake KGR, Nguyen HT. Current management of antenatal hydronephrosis. *Pediatr Nephrol* 2013; 28:237-43.
5. Sinha A, Bagga A, Krishna A, Bajpai M, Srinivas M, Uppal R et al. Revised guidelines on management of antenatal hydronephrosis. *Indian J Nephrol* 2013; 23:83-97.
6. Çeçen K, Ülker K. The comparison of double J stent insertion and conservative treatment alone in severe pure gestational hydronephrosis: a case controlled clinical study. *Sci World J* 2014; 2014:989173-9. Available at: [downloads.hindawi.com/journals/tswj/2014/989173.pdf](http://downloads.hindawi.com/journals/tswj/2014/989173.pdf)
7. Nuri Bodakci M, Kernal Hatipoglu N, Ozler A, Turgut A, Hamidi C, Hatipoglu N et al. Hydronephrosis during pregnancy: how to make a decision about the time of intervention?. *Med Glas* 2014; 11:165-9.
8. Pansota MS, Rasool M, Saleem MS, Tabassum SA, Husain A. Indications and complications of double J ureteral stenting: our experience. *Gomal J Med Sci* 2013; 11:8-12.
9. Ngai HY, Salih HQ, Albeer A, Aghaways I, Buchholz N. Double-J ureteric stenting in pregnancy: A single-centre experience from Iraq. *Arab J Urol* 2013; 11:148-51.
10. Song G, Hao H, Wu X, Li X, Xiao YX, Wang G et al. Treatment of renal colic with double-J stent during pregnancy: a report of 25 cases. *Zhonghua Yi Xue Za Zhi* 2011; 91:538-40.

### CONTRIBUTORS

AAG conceived, designed, did statistical analysis, editing of manuscript and final approval of manuscript. BA did data collection and manuscript writing. All authors contributed significantly to the submitted manuscript.