Original Article

Endoscopic Management of Primary Obstructive Megaureter: Review of 28 Consecutive Cases

Tariq Ahmad, Shakir Rahman, Asif Malik, Muhammad Amjad Khan, Ahmad Nawaz, Akhter Nawaz and Ghufranullah

ABSTRACT

Objective: To determine the importance of endoscopic dilatation in the management of primary obstructive megaureter.

Study Design: Cross sectional study

Place and Duration of Study: This was conducted at Institute of kidney Diseases Peshawar, Pakistan from July 2017 to June 2018.

Materials and Methods: A sample of 28 patients was selected by convenience sampling. Detail history, examination, urinalysis and complete blood count, ultrasonography and MAG3 renography were performed in all patients. Age in months was a ratio data and analyzed for mean, SD, minimum and maximum.

Results: The age range was 4 months to 144 months. The mean age was 26months±5.4SD. Male to female ratio was 1.8. Range of Distal ureter diameter on Ultrasound was 9 to 35 mm with average of 14mm±6.85SD. Preoperative diuretic MAG3 showed obstruction in all cases with split renal function with range of 18 to 35% on affected side.JJ stent duration was 3 to 12 weeks with Average9 weeks±4.29SD.Reflux was not noted in any patient on postoperative MCUG.

Conclusion: Endoscopic treatment of obstructive megaureter is practical and effective therapeutic option. It should be extended to symptomatic cases for which open surgical repair is indicated.

Key Words: Megaureter, Primary, Obstructive ureter

Citation of articles: Ahmad T, Rahman S, Malik A, Khan MA, Nawaz A, Nawaz A, Ghufranullah. Endoscopic Management of Primary Obstructive Megaureter: Review of 28 Consecutive Cases. Med Forum 2019;30(7):26-28.

INTRODUCTION

Caulk in 1923, initially explained congenital megaureter. It was diagnosed in neonates and children[1]. In adults it is rarely diagnosed and present in 3rd and 4rth decade. It is mostly unilateral but in 15 – 25 % cases it is bilateral. Male to female ratio is 1.2 to 4.8. Children with obstructive uropathy usually suffer from obstructive type of ureter. However some are due to reflux and some are normal variety of urinary tract. A ureter is considered as megaureter if the luminal diameter is larger than 8mm[2]. Primary obstructive megaureter is a congenital dilatation of the ureter secondary to an adynamic segment at its terminal portion as a result of an intrinsic disturbance[3].

Department of Urology and Renal Transplantation, Institute of Kidney Diseases, Hayatabad Medical Complex, Peshawar.

Correspondence: Dr. Tariq Ahmad, Department of Urology and Renal Transplantation, Institute of Kidney Diseases, Hayatabad Medical Complex, Peshawar.
Contact No: 0345-9228080
Email: drtariqurologistikd@gmail.com

Received: January, 2019
Accepted: April, 2019
Printed: July, 2019

The pathogenesis of obstructive megaureter is due to the expression of transforming growth factor beta which might lead to a lack of post natal dysplasia. It represents 6-8% of all displaced urinary malformation in utero[4]. It can be associated with other genitourinary abnormalities such as duplex system, undescended testes, contralateral hydronephrosis and mega calicosis. King classified megaureter into primary and secondary obstructive megaureter[5]. Majority of the primary megaureter is diagnosed just in advanced stage of gestation[6]. It is confirmed after birth by ultrasound, MAG3 renography with diuretic stimulation and contrast instillation cystography[7].

The management of congenital megaureter is controversial. Due to growth and maturation, about 80% of prenatally detected primary obstructive megaureter resolve spontaneously[7], hence conservative management is considered a safe initial approach[9,10]. Surgical intervention even in the setting of some pathology, such as obstruction, is not always warranted. The major challenge in the management of obstructive megaureter is the clinical decision to intervene or not[11,12]. The classical management for the symptomatic primary obstructive megaureter is ureteral re-implantation, usually after ureteral remodelling[13]. Treatment may also be necessary in non-symptomatic

children with impaired renal function on scintigraphy[14,15].

MATERIALS AND METHODS

This cross sectional study was conducted at institute of kidney diseases Peshawar, Pakistan from July 2017 to June 2018. A sample of 28 patients was selected by convenience sampling. All pediatric population from 1 year to 12 year was included in the study. Age in months was a ratio data and analyzed for mean, SD, minimum and maximum. Those patients who had distal ureteric diameter more than 8 mm were included in the study. Detail history, examination, urinalysis and complete blood count, ultrasonography and MAG3 renography were performed in all patients. The indications for procedure were cross sectional ureterovesical diameter greater than 10mm, obstructive pattern on radionuclide scan, differential renal function less than 40% and recurrent urinary tract infections. Informed and written consent was taken from all patients. After general anesthesia and appropriate antibiotic cover patient was put in lithotomy position. Cystoscopy was done with 12 Fr, rigid cystoscope. Guide wire was passed in the affected ureter. Teflon ureteral dilators are passed in sequence from 6 Fr to 12 Fr under fluoroscopy guidance. 6 Fr double J stent was left in place. Catheter was kept for bladder drainage. All surgeries were performed by senior and experienced surgeons. All patients were followed up to 1 year. MCUG was performed in all patients after stent removal for secondary vesico-ureteric reflux.

RESULTS

All of the operations were successfully completed. The age range was 4 to 144 months. The mean age was 26months$\pm$5.4SD. There were 18(64.28%) male and 10(35.72%) were female. Male to female ratio was 1.8:1. There were 18 patients presented on left side and 6 on right side. 2 patients had bilateral obstructive megaureter. Range of Distal ureter diameter on Ultrasound was 9 to 35 mm with average of 14mm$\pm$6.85SD. 16(57.14%) patients presented were in <24 months of age group followed by 8(28.57%)patients in 25-96months and 4(14.28%) patients in >96 years of age group. Preoperative diuretic MAG3 showed obstruction in all cases with split renal function with range of 18 to 35% on affected side.JJ stent duration was 3 to 12 weeks with Average9 weeks$\pm$4.29SD. No significant postoperative pain, bleeding, incontinence or other major complications noted. Reflux was not noted in any patient on postoperative MCUG.

DISCUSSION

Megaureter is defined as distal ureteric diameter more than 8mm from 30 weeks gestation onward. Management of megaureter has evolved for the last 20 years. Open surgery is associated with many complications and as result many surgeons avoid open bladder surgery. The conservative approach has gained popularity. First time shenoy and rance described endoscopic treatment of primary megaureter[16]. Subsequently several authors described balloon endoscopic dilatation[17], But it is associated with meatal rupture and ureteral stricture. Angulo and coworkers in 1998 described endoscopic dilation of obstructive megaureter in Spain[18]. They operated on 11 patients in whom the problem was resolved with single dilatation in six patients and with second one in the remaining five.

Symptoms, ureteral dilatation on ultrasound and obstructive type emptying curve on renal scintigraphy are three criteria for endoscopic treatment of primary obstructive megaureter[19]. In our study twenty five out of 28(89.28%) patient were treated successfully with endoscopic dilatation. Only 3 patients required open surgical procedure because of inability to negotiate ureteral meatus(n=2) or to pass stent through ureteral meatus(n=1). This result is consistent with the (91%) result in the study of teklali Y etal[13]. In contrast in the study of Castagnetti M et al 50% patient required open surgery at the age of 14 months[8].

Follow up in our study was short from 6 months to 1 year, but we reported good results and low morbidity.Postoperatively in all patients the excretion pattern on MAG 3 scan was unobstructed. We observed a number of complications. Poor tolerance of stent was noted in 1 patient who was treated with anticholinergic medications. Migration of stent was noted in one patient, which was readjusted at three week time. 3 patients had breakthrough infections, who responded to antibiotics. One patient had Persistent hematuria which was treated with transanemic acid.

Patients having symptomatic megaureter have variety of options such as conservative management with the hope of self-resolution. It can also be endoscopically approached and dilated with serial dilators. I t can also be incised endoscopically. Traditionally it can be treated surgically both by laparoscopic and open approach. In open approach ureter is disconnected from the urinary bladder and re implanted in urinary bladder.it can be re implanted both by intravesical and extravesical technique. Some patients who have nonfunctioning kidney undergo nephro ureterctomy.

The potential onset of secondary vesico-ureteral reflux may create controversy.We did micturating cystogram in all patients. Not a single patient developed secondary VUR postoperatively. In contrast Ortiz et al reported secondary VUR in 21.5% patients, which were successfully treated by endoscopic sub ureteral injection[12]. Angulo et al reported reflux in 2 of the 11 patients[18]. One was secondary to neurogenic bladder which was treated successfully by Teflon STING. The

other was with grade I reflux which did not required treatment. It is concluded that endoscopic dilatation of primary obstructive megaureter yielded excellent short term results.

CONCLUSION

Endoscopic dilatation of vesico-ureteric junction allows effective internal drainage of primary obstructive megaureter. The history, physical examinations and imaging studies are essential for precise diagnosis of congenital obstructed megaureter. It is technically feasible and safe procedure. Although this procedure is associated with few complications such as infection and stent migration, none of the patient is at risk of deterioration that would have outweighed the morbidity of complication. In future more clinical researchis required to prove its convenience. This procedure for the management of megaureter is safe and successful and has moved away children from the risk of unnecessary surgery.

Author's Contribution:

Concept & Design of Study:	Tariq Ahmad
Drafting:	Shakir Rahman, Asif Malik
Data Analysis:	Muhammad Amjad Khan, Ahmad Nawaz, Akhter Nawaz, Ghufranullah
Revisiting Critically:	Tariq Ahmad, Shakir Rahman
Final Approval of version:	Tariq Ahmad

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Caulk JR. Megaureter: the importance of the ureterovesical valve. J Urol 1923; 9: 315-9.
2. Hodges SJ, Werle D, Mclorie G and Atala A. megaureter. Scientific World J 2010;10:603-612.
3. Angerri O, Caffaratti J, Garrat JM, Villavicencio H. primary obstructive megaureter: Initial experience with endoscopic dilatation. J Endourol 2007;21(9): 999-1004.
4. Lettgen B, Hropfl D, Bonzel KE, Meyer-Shwickerath M, Rasher W. primary obstructed megaureter in neonates. treatment by temporary uretero-cutaneostomy. Br J Urol 1993;72:826-829.
5. King LR. Megaureter: definition. Diagnosis and management. J Urol 1980;123:222-3.
6. Arena F, Baldari S, Proietto F, Centorrino A, Scalfari G, Romeo G. Conservative treatment in primary neonatal megaureter. Eur J Pediatr Surg 1998;8: 347-351.
7. Williams DI, Hulme-MoirI.Primary obstructive megaureter. Br J Urol 1970;42:140.
8. Castagnetti M, Cimador M, Sergio M, Grazia ED. double-J stent insertion across vesicouretrel junction-is it a valuable initial approach in neonates and infants with severe primary non refluxing megaureter. Urol 2006;68(4):870-5.
9. Keating MA, Escala J, Snyder HM, Heyman S, Duckett JW. Changing concept in management of primary obstructive megaureter. J Urol. 1989 Aug; 142: 636-640; discussion 667-8.
10. McLellan DL, Retik AB, Bauer SB, Diamond DA, Atala A, Mandell J, et al. Rate and predictors of spontaneous resolution of prenatally diagnosed primary nonrefluxing megaureter. J Urol 2002; 168(5): 2177-80.
11. Manzoni C. Megaureter. Rays 2002;27(2) 83-85.
12. Wilcox D, Mouriquand P. Management of megaureter in children. Eur Urol 1998;34(1):73-78.
13. Teklali Y, Robert Y, Boillot B, Overs C, piolat C. Endoscopic management of primary obstructive megaureter in pediatrics. J Pediatr Urol 2018;14: 382-87.
14. Farrugia MK, Hitchcock R, Radford A, Burki T, Robb A, Murphy F. British Association of Paediatric Urologists consensus statement on the management of primary obstructive megaureter. J Pediatr Urol 2014;10(1):26-33.
15. Drlik M, Flogelova H, Kubat M, Tomasek J, Zerhau P, Smakal O, et al. Isolated low initial differential renal function in patients with primary non refluxing megaureter should not be cosidered an indications for early surgery: a multicentric study. J Pediatr Urol 2016; 12(4). 231. e1-4.
16. Shenoy MU, Race CH. Is there a place for insertion of a JJ stent as a temporizing procedure for symptomatic partial congenital vesico-ureteric obstruction in infancy? BUJ INT 1999;84:524-5.
17. Romero RM, Angulo JM, Parente A, Rivas S, Tardaguila AR. Primary obstructive megaureter: the role of high pressure balloon dilatation. J Endourol 2014; 28(5):517-23.
18. Angulo JM, Arteaga R, Rodriguez Alarcon J, Calvo MJ. Role of retrograde endoscopic dilatation with baloon and derivation using double pig-tail catheter as an initial treatment for vesico-ureteral junction stenosis in children. Cir Pediatr 1998; 11:15-8.
19. Christman MS, KasturiS,Lambert SM, Kovell RC, Casale P. Endoscopic management and role of double stenting for primary obstructive megaureter: J Urol 2012;187(3):1018-22.
20. Ortiz R, Parente A, Perez-egido l, Burgos L, Angulo JM. Longterm outcomes in primary obstructive megaureter treated by endoscopic balloon dilatation. Experience after 100 cases. Front Pediatr 2018; 6: 675.