



Management of Primary Obstructive Mega Ureter, By Kalicinski Folding Technique: A Tertiary Care Center Experience

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Introduction

The term megaureter is a descriptive one, denoting dilatation of the ureter irrespective of cause. Usually defined as more than 7mm or greater than diameter (Cussen 1967)¹. Dilatation of ureter is not an uncommon condition it is next to only various type of duplications of renal system. Primary megaureter is a result of a functional or anatomical abnormality involving the ureterovesical junction whereas, secondary megaureter results from abnormalities that involve the bladder or urethra. Mega ureter is divided into 4 categories based on causality².

1. Obstructed
2. Refluxing
3. Non obstructed non refluxing
4. Refluxing with obstruction

The pathophysiology of primary obstructed megaureters (POM) is that obstruction results from the presence of an abnormal adynamic segment at the terminal end of the ureter near or at the ureterovesical junction (UVJ)¹². It is now widely accepted that the obstruction is more functional than mechanical. The true incidence of POM is not known but is thought to average 10% to 23% of antenatally detected upper urinary tract dilatations⁵. It is 3.5 - 5 times more common in males. The left ureter is involved 1.6 - 4.5 times

more often than right. Megaureter is bilateral in about 25% of patients. In 9% of the cases, there is contralateral renal agenesis⁶.

Pathophysiology

There are different school of thoughts for the pathogenesis. The most accepted one is the developmental one, ureter develops cranio caudally so the juxstavesicular part is the last part to develop which can represent as adynamic segment due to developmental anomaly³. Other studies point to the presence of excessive and abnormal collagen deposition at the narrow part of the ureter. Most recently demonstrated abnormalities in the interstitial cells of Cajal in POM, cells whose primary function is related to smooth muscle contractility, pacemaker activity, and ultimately peristalsis⁴.

Aim and Objective

To study the mode of presentation and the effect of Kalicinski folding technique as a surgical method of treatment.

Material and Methods

A case series

Study sample: Between 2014 August to 2017 August eight patients with a mean age of 17.6

years (range 14-35 yr) underwent Starr placcation methods for primary obstructive mega ureters.

Inclusion criteria

All patients who were diagnosed with mega ureter who have

1. Recurrent urinary tract infections
2. Presented with recurrent episodes pain abdomen
3. Progressive unremitting dilatation of ureter in ultra sonography
4. Deterioration of renal function on follow up.

Exclusion Criteria

1. Very poor renal function (split renal function < 10 %)

Patients demographical, diagnostic, procedural data were recorded. Initial evaluation was done by ultrasonography where diameter of the ureter recorded, voiding cystourethrography (VCUG) and diethylene triamine penta acetic acid (DTPA) scintigraphy done for reflux and differential renal function respectively. Intra venous urography was required for delineation of anatomy before the procedure.

Surgical Technique

Under general anesthesia, open surgery was done by open technique via flank incision, dilated ureter identified. The juxta vesical segment of the ureter is crushed and close to the bladder surface. The distal end closed with 3-o vicryl. Now the proximal end was canulated with 10 fr infant feeding tube. The redundant part was sutured on the lateral aspect with 4-o vicryl in a running suture. The redundant part was folded and the two are tacked together with 4-0 vicryl interrupted sutures. The infant feeding tube was fixed with new ureter with 3-o catgut suture. Uretero neocystotomy was done by modified Lich Gregoir extra vesical technique. Suction drain was kept. Post operatively drain was removed when the drain output was less than 20 ml. The infant feeding tube was removed after 2 weeks. Oral

fluids and feeds were started on the appearance of peristaltic sounds. Patients were followed for urinary tract infection, reflux, persistent dilatation, obstructions. Ultrasonography and voiding cystourethrography (VCUG) done at 6 months interval for 2 years. A successful outcome was defined by subjective and objective improvement in symptoms.

Results

Primary obstructive mega ureter was detected in six cases (5 males and 1 female) in the study period. The mean age at the surgery was 18 yrs (range 12-32 yr). In this case series out of six Left sided pathology detected in 4 cases and 2 on right sides. Pain was the presenting feature in 3 cases where as recurrent febrile UTI was the mode of presentation in 2 cases. In one case it was incidentally detected when the patient was presented with deranged RFT with contra lateral ureteric calculus which on subsequent investigation found to have obstructed mega ureter. Follow up at six month interval was done with ultrasonography and voiding cystourethrography (VCUG). On follow up out of six patients 3 patients have symptomatic improvement with normal ureteric caliber, One patient have persistant dilatation which is managed conservatively.

Discussion

Primary Obstructive megaureter are rare congenital anomalies its primary presentation in adults is rare. Diagnostic criteria include: dilated ureter, absence of vesicoureteral reflux, absence of infravesical obstruction and absence of distal ureteral obstruction. During the past 10 years there has been an increasing trend towards conservative management, the role of extended follow-up into early adulthood also has been advocated based on worsening of some previously stable megaureters at or beyond puberty^{7,8,9,10}. In this approach three main variables need to be monitored, i.e. symptoms, imaging and antibiotic prophylaxis. Symptoms are relatively

straightforward to follow and surgery is indicated if there is persistent pain, breakthrough pyelonephritis or calculi^{9,10}.

Patient	Age yrs	Sex	Side	Presentation	Operative finding ureter near VUJ	USG diameter in(mm) Pre op – post op	Follow up
1	14	M	L	Pain	Narrow	20-10	Persistent dilatation
2	12	M	L	Incidental + Altered RFT	Narrow	18-07	Normalised RFT
3	32	F	R	Febrile UTI	Narrow	20-06	Normal Ureter
4	18	M	L	Pain	Narrow	18-06	Normal Ureter
5	12	M	L	Febrile UTI	Narrow	14-07	Normal Ureter
6	20	M	R	Pain	Narrow	19-07	Normal Ureter

L-left, R- right, UTI- urinary tract infection, RFT- renal function test

Ultrasonography is the initial investigation of choice, to rule out reflux as a etiology voiding cysto urethrography (VCUG) is needed . Intra venous urography (IVP) provides the anatomy of the collecting system. With these investigations if the affected system appears to be compromised in function than diethylene triamine penta acetic acid (DTPA) scan is done to evaluate the functional status and for further follow up. Cystoscopy and retrograde pyelography (RGP) are required in complex cases with special indications only. Ultrasonography is the usual method of the investigation for follow up. In our series all the patients are followed with ultrasonography, the mean follow up 23 months (range 18-32 months). In follow up all the patients were symptom free with decrease in ureteric diameter in five out of six cases. Tailoring of the ureter can be achieved by one of two basic ways: plication or excisional tapering (Hendren). Plication can be done by Starr plication and, Kalicinski folding technique. The folding technique was judged to be superior owing to better maintenance of blood supply¹⁴ thereby decreasing the risk for ischemia and stenosis. Review of literature shows very few studies showing the efficacy of, Kalicinski method in the treatment of primary obstructive mega ureter. Folding techniques, however, are suitable only for the moderately dilated ureter (<1.75 cm in diameter). In general, good results have been reported with folding techniques, with success rates of 90% to 95%. The main reported

complications are obstruction, vesicoureteric reflux, and persistent dilatation. In our series one patient had persistent dilatation post operativey.

Conclusion

Primary obstructive megaureter in adults is a rare diagnosis. Conservative management is the main stay of treatment but in adult_ it is imperative to treat these patients as soon as possible.. When there is a indication of surgery, Kalicinski folding technique should be done as method of tapering the ureter to its normal caliber. Kalicinski folding technique is a well established procedure with excellent out come in the hand of a skilled surgeon.

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