

# Bilateral primary Non-Obstructive and Non-Refluxing Megaureter in Child: Diagnosis by Non-Radiation Imaging Modalities.

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## ABSTRACT

Bilateral megaureters can present as asymptomatic or symptomatic pathology in the form of flank pain or urinary tract infection. The entity can also be diagnosed in antenatal ultrasound scan. We present 12-year old male child who presented with both flank vague pain and was subjected to ultrasonography (US) and Magnetic Resonance Urography (MRU). There was no evidence of any reflux or obstruction noticed as uretero-vascular junctions were normal on both sides. He was diagnosed as a case of bilateral primary non obstructive megaureters. Base line study was carried out by non radiation modalities in our institute for further follow up.

**Keywords:** megaureters; flank pain; US; MRU.

## INTRODUCTION

There are many developmental ureteral anomalies which can lead to great morbidity in children. Megaureter is dilatation of the ureter because of the underlying defect or due to some pathology like obstruction or reflux. This is also called as megaloureter. This could be congenital or acquired depending upon the stage of life and presentation. The anomaly is more common among males. This can also be associated with many other abnormalities.

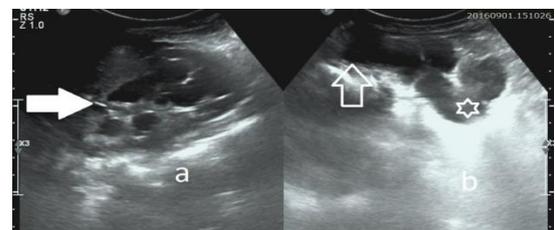
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## CASE REPORT

12-years old male child was brought to children outpatient department for slight distension of the abdomen with vague pain. He was the first sibling and was outcome of full term normal delivery. There was no history of any perinatal complications. The child use to cry while micturating. There was no history of any trauma or any other systemic disease. On examination he weighed 25 kg with normal height and physical parameters. The abdomen was

soft and with slight distension but without any palpable mass. Rest of the systemic examination was unremarkable. Routine urine examination had shown a few pus cells without any sediments. There was no abnormal growth in the culture specimen as he had already been treated for the urinary tract infections. Other Biochemical parameters were within normal limits. Plain x-ray chest and abdomen were normal. Ultrasound examination had shown mild dilatation of right side pelvicalyceal system and moderate dilatation on the left side. There was no gross loss of cortical thickness in both the kidneys. Both side ureters were also dilated in the parts wherever seen. Ureteral obstruction and reflux were ruled out.

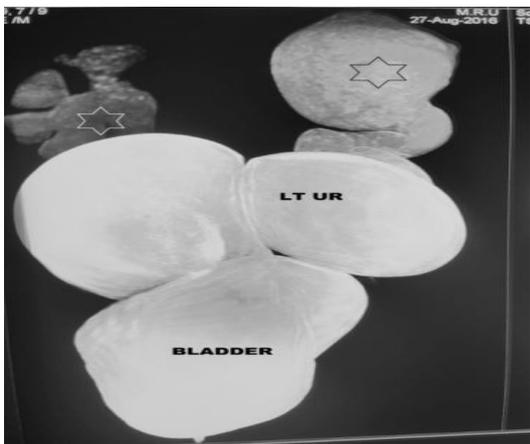


**Figure 1:** Ultrasound of both kidneys. (a) Right kidney shows mild to moderate dilatation of pelvicalyceal system with mild dilatation of ureter (white arrow). (b) Left kidney with moderate dilatation of the pelvicalyceal system (white hollow arrow) and prominent dilated and tortuous left ureter (white star).

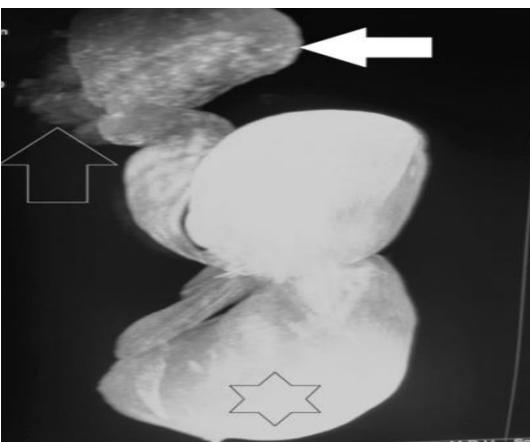


**Figure 2: Ultrasound of left side excretory system in left parasagittal section shows tortuous dilated ureter with anteriorly placed urinary bladder.**

Magnetic resonance Urogram (MRU) was performed. There was dilatation of the whole excretory system from pelvicalyceal system to the distal end of ureter. Left side was grossly dilated as compared to right. Both the ureters were tortuous in course and measure 9 mm and 12 mm in transverse section on right and left side respectively.



**Figure 3: Magnetic Resonance Urogram (MRU) shows mild dilatation of pelvicalyceal system on right side (white star) and moderate dilatation on left side (black star). There is gross dilated and tortuous left ureter merging with the urinary bladder.**



**Figure 4: MRU in oblique view shows grossly dilated pelvicalyceal system on left (solid white arrow) and mild dilatation right side (vertical white arrow).**

Patient has been kept under observation, as there were no alarming signs of deterioration with serum creatinine being in the normal range. Patient had been treated with appropriate antibiotics for urinary tract infection. Reimplantation of the left ureter has been contemplated for the future course of planning.

## DISCUSSION

Primary megaureters are because of intrinsic abnormality of the ureter rather than distal obstruction or reflux. Secondary megaureters results from the abnormalities in urinary bladder or urethra. This is slightly uncommon anomaly and can be of bilateral in nature. The pelvicalyceal system is not grossly dilated in primary megaureters and may appear normal in some cases.<sup>[1]</sup> The functional aspects of the kidneys remains undisturbed. The ureter usually measures > 7mm to qualify for this entity between 30 weeks fetal gestation and 12 years of age. The cause is unknown for this anomaly. This can present in four different<sup>[2]</sup> ways:

- I. Primary megaureters of obstructive type
- II. Primary megaureters of refluxing type
- III. Primary megaureters having both reflux and obstruction
- IV. Other type without having obstruction and reflux.

Our present case falls in the last category as there was no reflux or obstruction. This type of cases report quite late because of being asymptomatic for a long time. There is functional obstruction at the lower end with normal uretero-vascular junction. This is functional anatomical anomaly in fetal development. The muscle layer of the lower end of ureter is replaced by fibrous tissue and is unable to propel the urine downwards. This intern leads to the dilatation of the ureteral tunnel with the passage of time. This anomaly is also sometimes called as ureteral achalasia. The common complaints of such patients can be any of the following:

1. Pain abdomen
2. Mass in the lower abdomen
3. Urinary incontinence
4. Urinary tract infection
5. Hematuria
6. Calculi formation

The presence of reflux can aggravate the situation and leads to many complications<sup>[3]</sup>. Antenatal ultrasound is able to pick up this anomaly when present in the fetal body<sup>[4]</sup>. Various other imaging modalities which diagnose the abnormality are routine abdominal ultrasound, intravenous pyelography, micturating cysto-urethrogram and MR Urography.<sup>[5]</sup> Non radiation modalities are preferred in pediatric age group because of the radiation hazards in the growing years as was in our case. The management includes the repairing of the uretero-vascular junctional orifice to prevent the reflux. Re-

implantation of the ureter is the method of choice for the treatment of this anomaly.<sup>[6,7]</sup>

## CONCLUSION

Primary megaureters should be categorized properly for the management purpose. Our case was without any reflux and obstruction and was treated conservatively in the beginning before the surgical intervention was contemplated. The management is tailored as per the findings such as infection or stone formation. The treatment of choice remains as reimplantation when these are symptomatic with complications. The diagnosis can be made antenatally and pediatric urologist manages the case accordingly in post natal period. The patients can be kept in follow up if there are no major complications.

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