Prenatal Ultrasonographic Diagnosis of Posterior Urethral Valve: A Case Report.

Nayan Chandra Sarkar¹ and Malabika Misra¹.

¹Assistant Professor, Dept. of Obstetrics & Gynaecology, COMJNMH, Kalyani. WEST BENGAL.

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ABSTRACT
Obstructive lesions of the genitourinary tract are amongst the most common ultrasound verdicts in Obstetric ultrasonography. Numerous anomalies of lower urinary tract leading to obstructive uropathy have been established in literatures, either isolated of urethra or in combination with other syndromes like Prune-belly syndrome or anorectal malformation. Posterior urethral valves (PUVs) are exclusive to males and by far the most common cause of lower urinary tract obstruction (LUTO); the reported incidence is 1 per 8,000 to 1 per 25,000 live births.

INTRODUCTION
The widespread use of antenatal ultrasonography has enabled diagnosis of posterior urethral valves (PUVs) in many more individuals. Persistent distended bladder seen in antenatal ultrasonography arise a suspicion of bladder outlet obstruction and the ultrasonographic findings of the secondary effect of the obstruction on the ureters and kidneys in the form of hydroureter and hydronephrosis or dysplastic kidneys help to diagnose a case of LUTO. At times it is diagnosed during evaluation of a case of hydronephrosis when it is found that the dilatation of the ureters, bladder and proximal urethra are also coexisting. Most cases of bladder outlet obstruction recognized in the second and third trimester of gestation depending upon the time it takes to develop ultrasonographic features of obstruction.

In this present case report I would like to elucidate the prenatal ultrasonographic features of PUV and formulate a brief discussion on the treatment option including prognosis of such a case.

CASE REPORT
A 30-year-old G2L1 was booked at our antenatal service at 11 weeks of gestation. She had a normal child of a consanguineous marriage. Her anomaly scan at 20 weeks of gestation was normal. At 28 weeks of gestation she was diagnosed to have Gestational Diabetes Mellitus and admitted in the hospital for the initiation of Insulin. Scan was repeated after admission which showed a distended bladder with dilated proximal urethra, and bilateral hydroureteronephrosis. It was found to be a male at 28 weeks of gestation and normal amniotic fluid index for the gestation. Repeated on the same day and on the next day revealed the same findings. No other systems anomalies were identified. Patient was informed about the problem and a follow up was planned after discussion with the higher referral centre and the patient and her relatives. She was referred to the higher centre at 34 weeks for delivery as there was increasing bilateral hydronephrosis, more on the right side and decreasing amniotic fluid index. But the patient could not go to the higher centre for her personal reason. When she went to the higher centre, an elective LSCS was done at 37 weeks.

After delivery, male baby was found to have distension of lower abdomen with bladder and poor stream of urine. Enlarged right kidney was palpable. Newborn was referred to a center with paediatric surgery unit, after
one week of delivery as earlier shifting could not be arranged by the patient. At that hospital, renal biochemical profile of the newborn was within normal limit. Neonatal ultrasound showed bilateral hydronephroureterosis and thickened bladder.

The MCU showed thickened and trabeculated bladder with dilated and elongated posterior urethra. There was grade-II reflux into right ureters and kidney but no reflux was noted on the left side. A cystourethroscopy was performed and a posterior urethral valve was noted which was fulgurated at the same time. Newborn had uneventful post-op and catheter drainage for 4 days. After the fulguration procedure, Tc99m-DTPA renogram (F+0) was performed for evaluation of renal function and drainage of collecting system which showed nonfunctioning right kidney and hydroureteronephrotic non obstructed left kidney with good cortical function. Since then the patient has been under regular follow up in paediatric hospital to follow up the renal function. When I met recently with them, baby was doing well.
DISCUSSION

There is a wide range of anomalies which can cause lower urinary tract obstruction. Among all anomalies of the urethra the posterior urethral valve is the commonest one (Dinneen, 1996; Derry et al., 2007; Glazer et al., 1982; Bierkens et al., 1996). Many of these conditions are difficult to differentiate by antenatal ultrasonography as sonographic features of lower urinary tract obstruction may be pretty same in many cases.

Classically the diagnosis of PUV consists of distended foetal bladder and a dilated proximal urethra (key-hole appearance) in a male foetus. Depending upon the severity and time of obstruction there will be development of other sequel of obstruction such as oligohydramnios with its effect on pulmonary development and other structural compressive deformities and back pressure effect on ureters and kidneys such as hydroureter and hydronephrosis with enlarged kidneys (Mahony et al., 1985; Sanders et al., 1988).

In our case it was found that the amniotic fluid index was reducing and termination of pregnancy at 34 weeks after administering antenatal steroid was advised though patient could not make it possible. Presence of renal cortical cyst has a very good specificity and sensitivity of renal dysplastic changes. Increased renal echogenicity is also a prognostic indicator as it indicates renal dysplastic changes. Fresh fetal urine obtained by vesicocentesis and measurement of various parameters like sodium, chloride, calcium, microglobulin and measurement of urine output rate by ultrasound after a vesicocentesis have been used by several investigators for foetal prognostic signs (Nicolaides et al., 1992). One of the intrauterine fetal surgical interventions is percutaneous placement of catheter one end into the foetal bladder and the outer end into the amniotic cavity outside the foetal abdomen. But this is only possible in a centre with all facilities and ongoing experience with proper selection of cases after ruling out other anomalies including chromosomal problem of the foetus and explaining the procedure related complications. Crombleholme and colleagues reviewed and uncontrolled experience of 40 cases, many of whom underwent a shunt procedures. In the group with normal appearing kidneys and normal amniotic fluid, there was 90% survival rates among those treated surgically. However, the nonintervention subgroup had a 70% survival rate with the same favourable criteria. In those with dysplasia, there were no survivors without intervention and this group had a 30% survival rate with shunting (Crombleholme et al., 1990).

But in most of the situation, when intrauterine treatment is impossible then early delivery may be of some benefit to shorten the effect of oligohydramnios and the effect of back pressure on the kidneys and ureters. Hence antenatal steroid and early delivery in a centre where at least post-delivery simple cystoscopic fulguration is available may be helpful in such a case. Though in our case we had the baby with one nonfunctioning kidney the other kidney was functioning well and the baby is doing well with one functioning kidney. As noted in postnatal MCU that there was no reflux on the left side which perhaps has saved the left kidney and right kidney lost the functionality as more insult of back pressure was on it alone.

Long term follow up in childhood is necessary as there may be later manifestation of the reduced function of the kidney. Hence our patient is on regular follow up.

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