Dear Editor,

We report the case of a 36-year-old female in the 29th week of her first pregnancy who attended the emergency room of our hospital reporting right lumbar pain irradiating to hypogastrium for the past month, as well as recently occurring edema in lower limbs and a marked decrease in urine output.

Normal vital signs were found at the emergency room. Tenderness was found in both renal fossae on bimanual palpation, and mild pitting edema was seen in lower limbs. No pathological findings were seen in a complete gynecological examination and a transvaginal ultrasound. Urinary sediment was unremarkable, and laboratory tests revealed creatinine levels of 3.9 mg/dL and urea levels of 66 mg/dL (prior baseline creatinine, 0.9 mg/dL). An abdominal ultrasound showed bilateral grade III ureteropyelocaliectasis, but the cause of obstruction could not be found. Based on diagnosis of obstructive acute renal failure, patient was admitted to hospital. Patient reported a urological history of surgery for vesicoureteral reflux at the age of 3 years. A Politano-Leadbetter bilateral ureteroneocystostomy was performed, and the patient had remained symptom-free since then. Gradual kidney function impairment continued in the first 48 hours of admission, with creatinine levels increasing to 4.9 mg/dL, and an emergency right percutaneous nephrostomy was therefore performed. Renal diversion resulted in deobstructive polyuria and disappearance of right flank pain and edema, which led to renal function improvement in the following 72 hours (creatinine 1.1 mg/dL, and urea 32 mg/dL).

The study was completed with magnetic resonance imaging, which showed mild calyceal dilation in the right kidney with nephrostomy catheter with no complications in its course and grade III left ureteropyelocaliectasis dilation up to its more distal end with no filling defects inside. The junction area at bladder trigone level was not identified. In the lesser pelvis, the fetus was seen to be in a cephalic position, exerting a mass effect on the bladder. No other pelvic masses or additional findings were seen (figs. 1 and 2).

An elective left percutaneous nephrostomy was then successfully performed. The patient was discharged home, where she experienced two symptomatic E. coli urinary tract infections diagnosed by urine culture and treated based on susceptibility testing.

At 36 weeks of pregnancy, obstetricians performed an elective cesarean section giving birth to a healthy male weighing 2850 g with an Apgar score of 9/9. The patient was discharged with no complications 6 days after surgery.

Ten days after delivery, a bilateral descending pyelography performed through the nephrostomy showed contrast passage to the bladder. Both nephrostomies were therefore closed and urine output was monitored at home. Patient re-evaluation at 48 hours showed that the patient continued to be asymptomatic, with urine output higher than 2,000 mL/day, a creatinine level of 0.84 mg/dL, and a bilateral renal ultrasound showing grade I ureteropyelocaliectasis in the right kidney and no ectasia in the left kidney. Nephrostomies were therefore removed. A new control at 4 months found a creatinine level of 0.98 mg/dL, a bilateral renal ultrasound with no evidence of tract ectasia, and unremarkable urinary sediment. The patient reported no symptoms during this time period.

**Ureteral reimplantation and gestational acute renal failure: a case report**

**Insuficiencia renal aguda obstructiva gestacional tras reimplante ureteral: a propósito de un caso**
From 40% to 70% of pregnant women experience some degree of asymptomatic dilatation of renal pelvis and ureters at iliac crest level. This dilatation develops during the second term of pregnancy, becomes maximal during the third term, and reverts to normality within a few weeks of delivery. This may be due to smooth muscle relaxation by progesterone and to uterine growth, compressing ureters at iliac crest level.

Ureteral dilatation is more common on the right side (76% on the right side and 35% bilateral). These differences are due to the position of iliac vessels relative to ureters, because the right ovarian vein crosses the right ureter at iliac crest level and drains into the inferior vena cava, while the left ovarian vein is parallel to the ureter and drains into the left renal vein. The lower frequency of left dilatation may also be attributed to the protection provided by the sigmoid colon, which is anterior to the ureter.

While hydronephrosis is common, most often asymptomatic, and requires no treatment, acute renal failure during pregnancy is highly uncommon, occurring in only one out of every 10,000 pregnancies. It is usually associated to septic abortion, preeclampsia, or uterine bleeding from placenta previa or abruptio placentae. However, acute renal failure due to bilateral ureteral obstruction caused by uterine growth during pregnancy is extremely more infrequent. Only 24 cases have been reported to date. This condition may cause severe persistent pain, frequent urinary tract infections, hypertension, and even kidney function impairment, as occurred in our case.

There are recognized risk factors for bilateral obstructive uropathy such as twin pregnancy, polyhydramnios, a solitary kidney, low abdominal wall compliance, and primiparity. These risk factors have been well documented in the available literature. However, prior urological surgery and ureteral reimplantation have not been reported to be risk factors. A case occurring after ureteral reimplantation was published in 1984, and a series of women undergoing ureteral reimplantation who showed a higher incidence of obstructive renal failure (5%) during pregnancy as compared to the general population was reported in 1955. Other authors subsequently arrived at the same conclusion.

Ureteral obstruction during pregnancy in women undergoing prior ureteral reimplantation has been reported to be a transient condition. It is postulated that patency of the reimplanted ureter is adequate and compensated when the patient is not pregnant, but its function is compromised during pregnancy, when the urinary tract is affected by the associated hormonal and mechanical changes. During normal pregnancy, the bladder is displaced anteriorly and superiorly by uterine growth. As pregnancy progresses, the bladder relocates in an intra-abdominal position, which causes ureteral obstruction in patients undergoing a Politano-Leadbetter ureteroneocystostomy due to the so-called “high ureteral reimplantation syndrome”. This occurs because the distal part of the ureter is reimplanted into the mobile portion of the bladder and is therefore prone to kinking and obstruction during bladder displacement in pregnancy. Another potential explanation is that fibrosis caused by ureteral surgery alters peristalsis in the more distal portion of the ureter, thus leading to obstruction.

Seven cases have been reported in literature, including our patient, and a Politano-Leadbetter procedure was used for ureteral reimplantation in all of them.

Clinical signs occur during the second term of pregnancy and consist of renal failure, hypertension, edema, and oliguria.
However, severe acute pyelonephritis may sometimes occur as a complication.\textsuperscript{1,9}

Several therapeutic modalities have been proposed in literature to resolve obstruction and renal failure. Patient positioning in lateral decubitus may improve decompression of the involved ureter. Amniotomy may also be performed to relieve obstruction and improve renal function, particularly in the event of polyhydramnios. However, ultrasound-guided placement of a percutaneous nephrostomy or ureteral catheter (if reimplantation allows for this) has become the treatment of choice for these cases. Final resolution of the condition is however only achieved with the end of pregnancy, which should occur as soon as the fetus is mature enough.\textsuperscript{1-5}

To prevent obstruction in subsequent pregnancies, a new ureteral reimplantation may be performed with careful dissection of the distal ureter, which will be reinserted through a more caudal submucosal tunnel at bladder base level.\textsuperscript{5}

Thus, women with a history of bilateral ureteral reimplantation using the Politano-Leadbetter procedure have an increased risk of ureteral obstruction at the vesicoureteral junction and renal function impairment during pregnancy. They therefore require urological monitoring during pregnancy, particularly if they report lumbar pain, decreased urine output and/or hypertension. Early detection of this condition is essential to provide adequate transient urinary diversion, thus avoiding greater complications for both the mother and the fetus.

REFERENCES


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