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CASE REPORT

Renal Arteriovenous Fistulas during Pregnancy: Diagnosis and Treatment

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Abstract

A pregnant patient presented to the emergency-room with macrohematuria, and flank pain caused by a right lumbar ureter stone. Despite medical therapy, persistent macrohematuria and pain prompted the placement of a DJ stent and a catheter nephrostomy, but hemoglobin levels continued to decrease. Doppler ultrasound revealed a arteriovenous fistula. Following an initial conservative approach, the patient underwent fistula embolization, resulting in the successful closure of the fistula. The patient remained stable, and after 70 days, the baby was born. This case highlights the rare occurrence of arteriovenous fistula during pregnancy and the importance of individualized treatment based on the patient clinical condition.

Keywords:

- Urology
- Pediatric
- Pregnancy
- Fistula
- Embolization

Introduction

A 34-year-old pregnant woman, 36+4 weeks of gestation, presented to the emergency-room with macrohematuria (7.1g/L) and flank pain caused by 17mm right lumbar ureter stone. She was initially discharged with medical therapy only; however, due to persistent symptoms, a DJ stent was inserted, which initially improved the clinical condition. However, the stent was later removed due to acute retention and presence of clots in the urinary system. Persistent pelvic dilatation (26mm) and clots necessitated the placement of a nephrostomy which was performed under ultrasound guidance to avoid any radiation exposure [1,2]. The patient’s hemoglobin levels continued to decrease, and there was frank hematuria from the nephrostomy tube, raising suspicion of a parenchymal arteriovenous fistula (FAV).

medial-third with arteriovenous flows and low resistance (Figures 1,2). Since US was able to provide detailed images of vascular system, size, and localization of the fistula, a magnetic resonance (MRI) was not considered necessary due to the urgency of the case [1].

Nephrectomy was an option; however, due to the advanced stage of pregnancy, the potential harm from a minimally invasive radiation procedure was deemed to be greater than in the first three months [1]. She underwent super-selective embolization of the FAV via inguinal access, with a DAP 18.8Gycm² delivered to the patient. Patient remained stable, 70 days later the baby was born after labor induction. No adverse events were found after 18 months of follow-up (Figure 3).

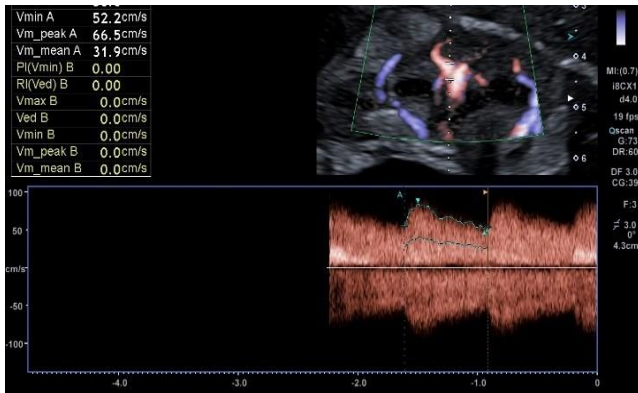


Figure 1: Doppler-Ultrasound revealing arteriovenous fistula of 6mm on the medial-third of right kidney. The image depicts increasing vascularization and an arteriovenous flows characterized by low resistance.



Figure 2: Detailed imaging of the renal fistula at doppler-ultrasound.

The patient required two blood transfusions to avoid any problems with the fetus. With the aim to reduce ionizing radiation exposure as-low-as-reasonably-achievable (ALARA), a Doppler-ultrasound was performed. It was able to reveal an increase in parenchymal vascularization (obstruction) and small arteriovenous fistula (6mm) at the

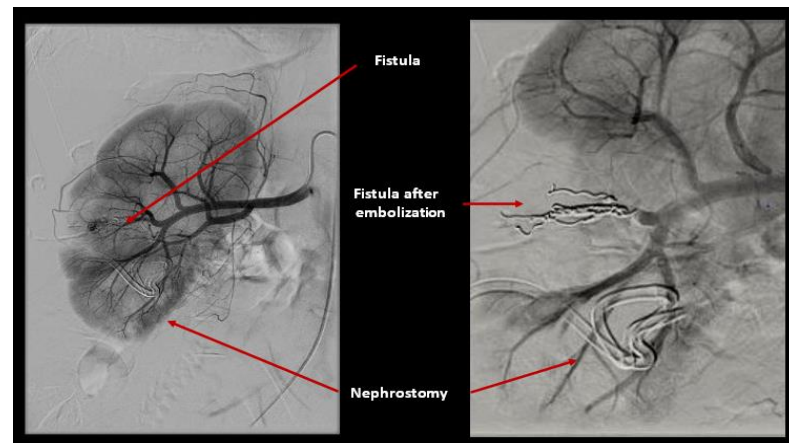


Figure 3: Radiological images depicting the arteriovenous fistula before and after embolization, carried out through inguinal access and super-selective fistula catheterization. The intervention involved the use of a “Concerto” coil and “Contour” particulate matter. Radiation exposition expose during the procedure was measured at a DAP of 18.8 Gycm².

AVFs are rare occurrences during pregnancy, with symptoms such as flank pain, palpable mass, or hemorrhage [3,4]. A prompt diagnosis should be made to prevent complications such as hemorrhage, heart failure, or preterm delivery [5].

In pregnant patient diagnosis can be challenging considering the risks associated with radiation exposure. Doppler ultrasound can be used to evaluate blood flow and detect the presence of abnormal vascular connections. If further imaging is required, magnetic resonance imaging (MRI) can be used. It does not use ionizing radiation and can provide detailed images of the vascular system. In some cases, a diagnostic angiogram may be necessary to confirm the diagnosis of an AVF [1].

Only a few case series have reported successful outcomes with radiologic embolization, and there is limited data on the safety and efficacy of this procedure. In general,

embolization is reserved for cases where conservative management has failed, with significant maternal or fetal morbidity or mortality risk [1]. Individualized treatment, based on the patient's clinical conditions is essential. Embolization can be a useful option, but careful consideration of the risks and benefits is necessary. Close collaboration between obstetrician, interventional radiologist, and other specialists is critical to achieving optimal outcomes.

Conclusion:

- About team work (urology, radiology and gynecology)
- An example of a conservative treatment of ateroventous fistola

Conflict Of Interest: There are no potential conflict of interest

Ethical Consideration: Not required

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provided the contribution towards to manuscript preparation

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