

Ureteric Injury During Transvaginal Oocyte Retrieval (TVOR) and Review of Literature

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ABSTRACT

We report a case of ureteric injury during transvaginal oocyte retrieval (TVOR), which was identified immediately (on the operation table) and managed successfully in the same sitting. A 28-year-old woman with primary infertility underwent *in-vitro* fertilisation (IVF) in a private centre. Because of the policy of doing an ultrasonography post-procedure, she was diagnosed immediately with vaginal vault haematoma and ureteric injury. A double-J catheter was inserted under cystoscopic guidance. A major complication was averted by the timely diagnosis of ureteric injury and its appropriate management. To conclude, given the elective nature of TVOR and IVF, patients should be informed about all potential complications, including ureteric injury. Early diagnosis of complications (by knowing and anticipating potential risks of procedure) leads to efficient management by timely intervention.

KEYWORDS: Cystoscopy, *in-vitro* fertilisation, oocyte retrieval, ureteric injury

INTRODUCTION

Transvaginal oocyte retrieval (TVOR) has now become the technique of choice for obtaining oocytes for *in-vitro* fertilisation (IVF), owing to good oocyte retrieval yield and minimal invasiveness.^[1,2] However, it should not be considered as a risk-free procedure. Various complications, such as bleeding from the vaginal wall, injury to pelvic vessels, pelvic abscess and direct lesion to the bowel or the ureter, have been reported.^[1,3,4] However, there are very little systematic data about these complications during TVOR. We report a case of ureteral injury following transvaginal follicular aspiration.

CASE

A 28-year-old woman with a history of primary infertility due to male factor (severe oligoasthenozoospermia) underwent IVF. She did not have any other relevant medical history, especially endometriosis, history of pelvic inflammatory disease, tuberculosis, previous abdominal or pelvic surgeries or renal pathology. Ovarian stimulation was based on antagonist regimen with daily injection of human menopausal gonadotrophin (HMG) 300 IU and GnRH antagonist

added from the 5th day of stimulation. Ovulation was triggered after 11 days of gonadotrophin treatment at peak serum estradiol level of 2100 pg/ml.

Oocyte retrieval was performed by TVOR under general anaesthesia. The right ovarian follicles were aspirated first followed by the left ovary, and ten oocytes were retrieved. After retrieval while doing ultrasonography of the pelvis (when the patient was still under anaesthesia and in the operation theatre), a 4 cm × 3 cm collection was noted on the right side above the right ovary, posterior to the bladder and anterolateral to the uterus [Figures 1 and 2]. There was minimal fluid collection in the anterior pouch, but no collection in the pouch of Douglas. Abdominal Ultrasonography (USG) was performed, which did not reveal any intra-abdominal fluid collection [Figure 3].

In view of the provisional diagnosis of the (non-increasing) vault haematoma, there was dilemma

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Access this article online

Quick Response Code:



Website:

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DOI:

10.4103/jhrs.JHRS_124_16

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How to cite this article: Choudhary RA, Bhise NM, Mehendale AV, Ganla KN. Ureteric Injury During Transvaginal Oocyte Retrieval (TVOR) and Review of Literature. J Hum Reprod Sci 2017;10: 61-4.

between conservative management versus exploration; to find the cause of haematoma and its further management. The patient was catheterised, and frank haematuria was noted. We proceeded with cystoscopy, which revealed continuous trickling of blood from the right ureteric orifice [Figure 4]. A diagnosis of right ureteric injury was made, and cystoscopic right ureteral stenting was performed [Figure 5].

Continuous bladder irrigation was maintained, and the patient was on intravenous antibiotics. After 24 h, urine routine microscopy revealed reduction in haematuria. There was no evidence of leucocytosis or infection. On post-operative day 3, a repeat urine examination showed only a few RBSCs, and USG showed reduction in the size of

the haematoma. The patient was discharged on day 3 after surgery.

USG of the abdomen and the pelvis was performed after 7 days of discharge, which showed further

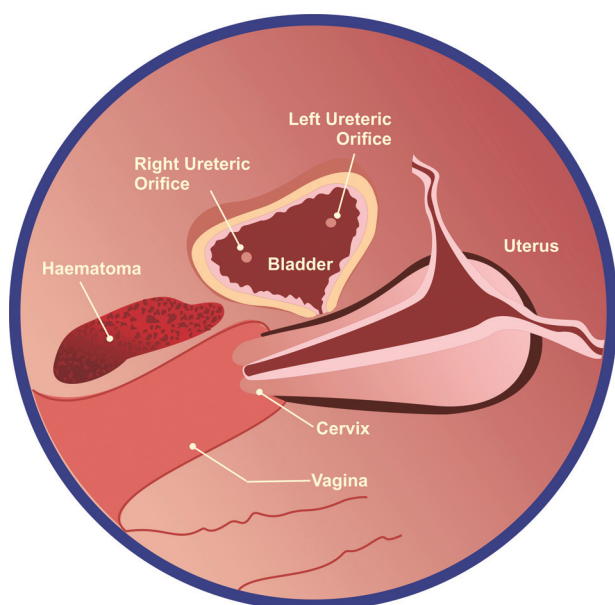


Figure 1: A collection of 4 cm × 3 cm noted on the right side between the right ovary, bladder and vaginal vault

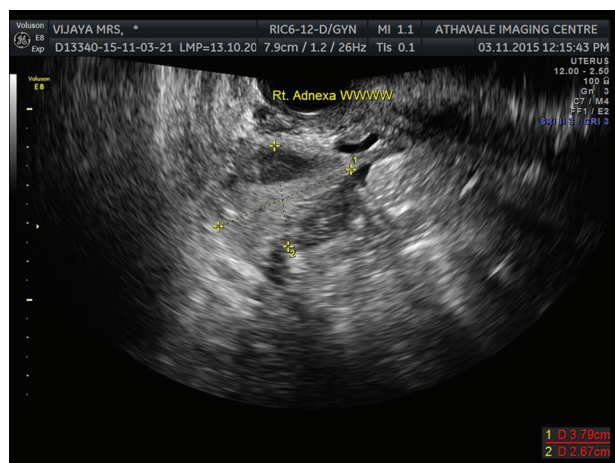


Figure 2: Transvaginal ultrasonographic image of the haematoma (3.8 cm × 2.7 cm) as seen in the right adnexa

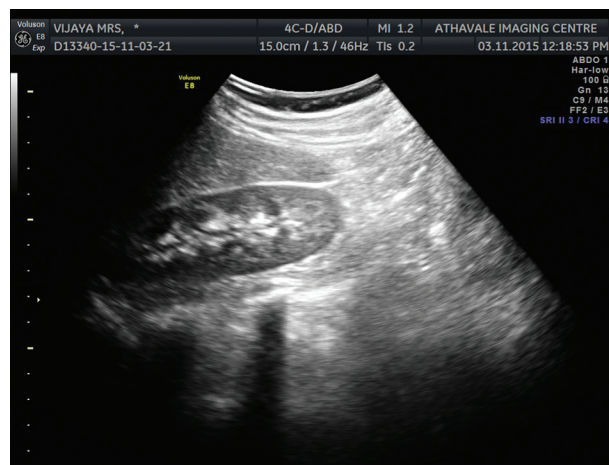


Figure 3: Ultrasonography of the abdomen showing no fluid collection in the abdomen/paracolic gutter (pouch of Morrison)



Figure 4: Cystoscopy showing bleeding from the right ureteric orifice

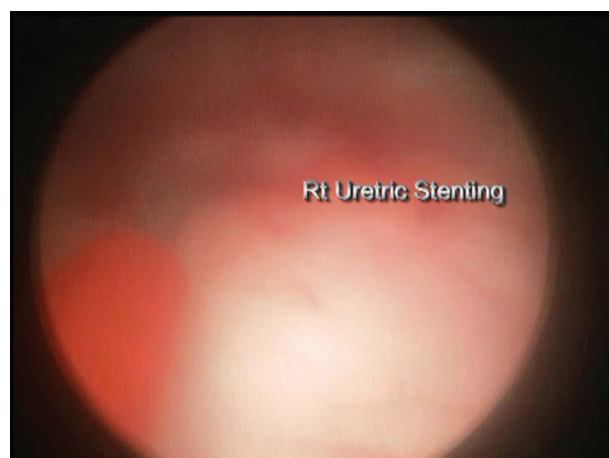


Figure 5: Cystoscopic stenting of the right ureteric orifice

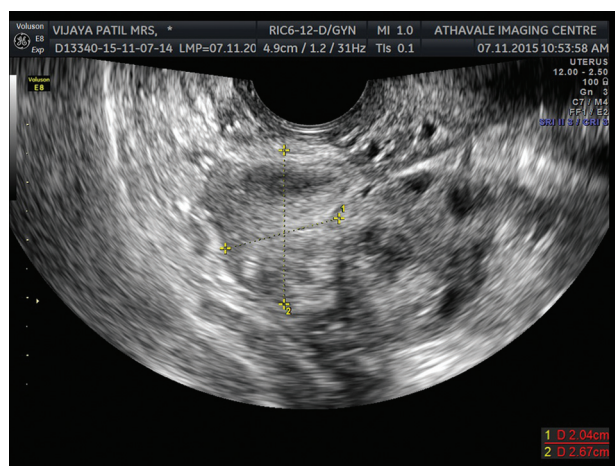


Figure 6: TVS image of the pelvic haematoma showing further decrease in size (2.6 cm x 2 cm), after 1 week

reduction in the size of the haematoma (2.6 cm x 2 cm), and Doppler ultrasound revealed no anatomical abnormality [Figures 6 and 7].

A follow-up USG after 6 weeks revealed no haematoma, and ureteric Double J (DJ) stent was removed. Following this, there was no haematuria.

DISCUSSION

Since the introduction of ultrasound-guided TVOR in 1985 by Wikland, it has been the standard method of oocyte retrieval with very few cases of complications being reported.^[1] The review of the literature showed that the main complications were haemorrhage (0.08%), pelvic abscess (0.6%) and injuries of the bowel, the bladder and the pelvic vessels occasionally.^[4] Ureteric injuries are one of the rarest complications. In addition, very few cases of puncture injury were diagnosed in the immediate post-operative period.^[1-3,5,6]

In IVF setting, transvaginal ultrasonography (TVS) is hindered by changes in ovarian volume and structure due to superovulation and follicular puncture. In most cases reported in the literature, the diagnosis of ureteral injury was made between 5 days and 4 months.^[1,5,6] In our case, this complication was diagnosed immediately and, hence, a major catastrophe could be prevented by timely intervention. Our case points to the importance of doing a routine ultrasonography of the pelvis after TVOR. This is very important, especially if there is a history of endometriosis, pelvic inflammatory disease, past abdominal/pelvic surgeries, ovarian hyperstimulation syndrome (OHSS), and in donors. Late diagnosis can lead to infection and renal dysfunction requiring more extensive surgery (ureteral re-implantation into the bladder/nephrectomy).^[1,5,6]

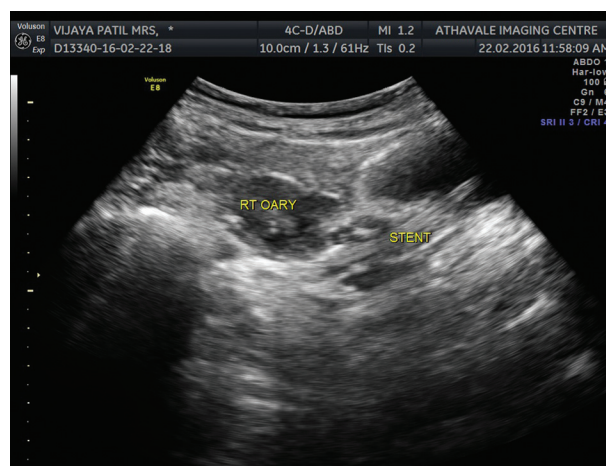


Figure 7: TVS image of uretric stent *in situ*

Coroleu *et al.*^[1] reported a case of ureteral injury, presenting as irregular enlargement of the posterolateral wall of the bladder, and highlighted the use of abdominal USG as a complementary technique in the diagnosis of extrapelvic pathology. Mongiu *et al.*^[7] reported a case of ureterovaginal fistula 7 days after TVOR that required a percutaneous nephrostomy tube. These cases highlight the importance of early detection of such injuries to prevent serious complications such as fistula and renal failure.^[8] The first reported case of ureteral trauma following TVOR was by Miller *et al.*^[2] in 2002. But unlike in our case, wherein the injury was diagnosed immediately, in the operation theatre itself, this case was diagnosed 4 h after the procedure.

The review of the literature revealed a recent case report by Burnik Papler *et al.*^[9] of ureteral injury with delayed haematuria presenting 4 days after TVOR in a patient with endometriosis. Grynberg *et al.* reported a case of ureteral injury after TVOR, which was initially misdiagnosed as an OHSS. This case highlights the importance of being aware of ureteric complications that may go undetected, especially in OHSS.^[10]

Vilos *et al.*^[11] reported a case of ureteric injury during TVOR, treated with ureteral stents, and added that these stents could be used in subsequent retrievals to identify the ureters. Rísquez and Confino^[12] studied the use of Doppler ultrasound in preventing these injuries and showed that although Doppler was routinely used, it did not predict 24/53 (45%) of moderate peritoneal bleeding. To summarize, Doppler ultrasound has the potential to reduce haemorrhagic complications depending upon the expertise of the operator.^[12] To conclude, one must give proper information on the risk of these rare but potentially severe complications of follicular puncture to all patients. Early identification of complications and prevention of complications is the need of the hour.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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