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## Case Report

# Magnetic resonance imaging findings in ovarian torsion post in vitro fertilization

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## ABSTRACT

Patients who get pregnant after being treated with in vitro fertilization (IVF) are at significantly increased risk of ovarian torsion compared to the general population and also in comparison to patients who get pregnant normally [1,2]. The risk is further increased in patients who develop ovarian hyperstimulation syndrome [1]. This possibility should be considered in this group of patients presenting with acute abdominal pain and immediate management should be commenced. Here, we report 2 patients who received treatment for infertility with IVF and developed ovarian torsion and we discuss their management including the imaging workup. The first case is a 34-year-old woman at 11 + 3 weeks of gestation after IVF who presented with a 12-hour acute right lower abdominal pain with nausea and vomiting. She underwent an ultrasound examination and then further evaluated with magnetic resonance imaging which showed asymmetric enlargement of the right ovary and stromal edema and a diagnosis of ovarian torsion was made. The patient underwent laparoscopic detorsion and the ovary was salvaged. The second case is a 33-year-old woman at 9 weeks of gestation after IVF who presented with intermittent abdominal pain, vaginal bleeding, and nausea and vomiting for 5 days but became worse on the fifth day. Ultrasound and subsequently magnetic resonance imaging were performed which confirmed hyperstimulation syndrome. Abnormal location of the left ovary anterior to the uterus with higher volume as well as the clinical progression raised the possibility of ovarian torsion and prompted a diagnostic laparoscopy which showed right ovarian torsion and detorsion was performed.

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## Introduction

It is estimated that about 2.7% of surgical emergencies in women are comprised by ovarian torsion. Up to 80% of these cases occur in patients who are at the reproductive age. Over-

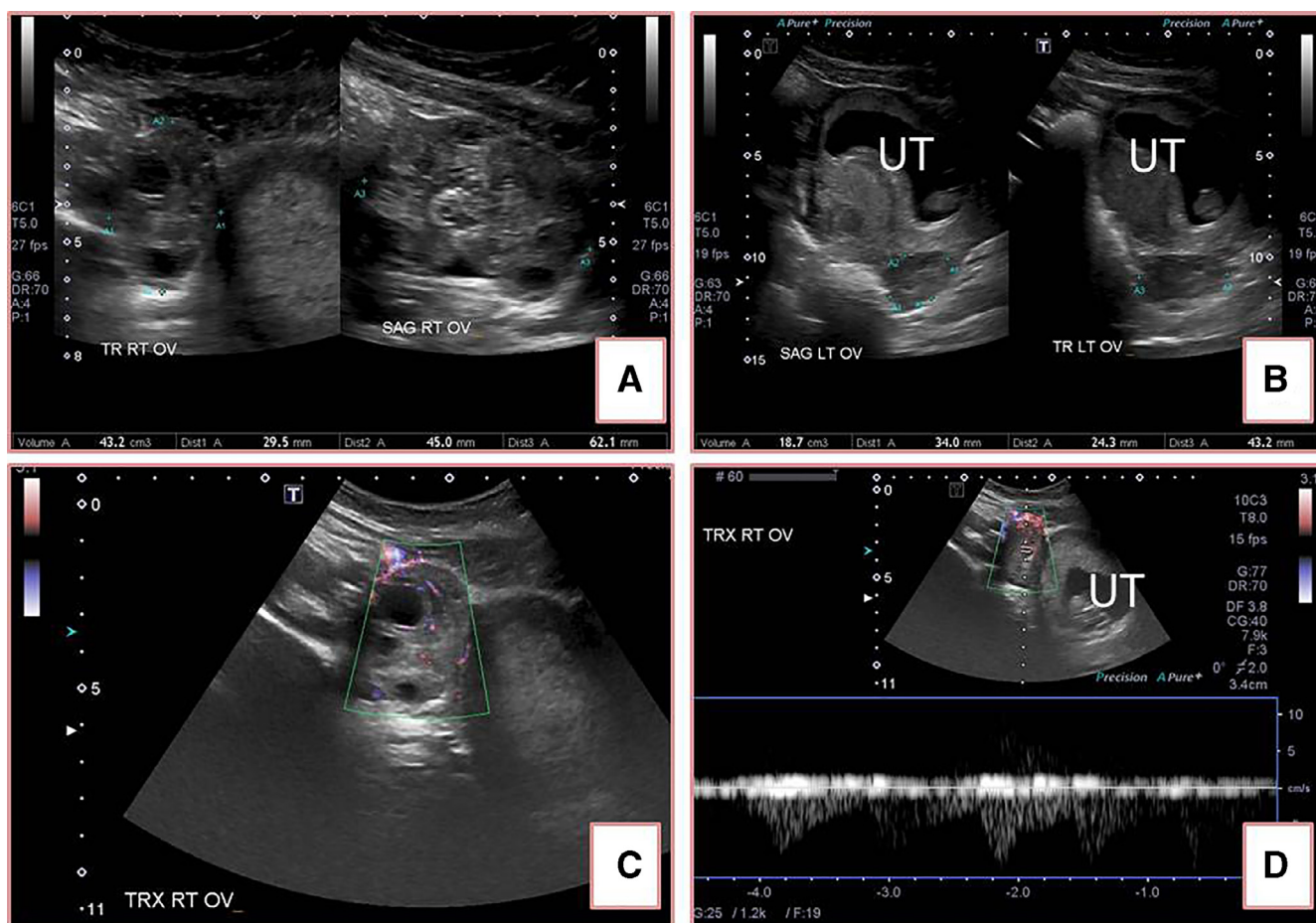
all, the incidence of ovarian torsion during pregnancy is about 1 in 5000 pregnancies. Currently many women with infertility are managed with in vitro fertilization (IVF) and there has been an associated increased risk of ovarian torsion to 0.2%–0.46%. This risk is further increases to up to 33% in patients who developed ovarian hyperstimulation syndrome

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**Fig. 1** – Patient 1: 34-year-old female at 11 + 3 weeks of gestation after in vitro fertilization. Pelvic ultrasound images: (a and b): demonstrate asymmetric enlargement of the right ovary (volume: right ovary 43.2 cm<sup>3</sup>, left ovary 18.7 cm<sup>3</sup>). (c and d): Color Doppler interrogation demonstrate presence of arterial and venous flow within the right ovarian parenchyma with normal spectral flow in (d) gravid uterus (UT). (Color version of figure is available online.)

and in pregnant women. Here, we report 2 cases that received treatment for infertility with IVF and developed ovarian torsion in the first trimester.

### Case 1

A 34-year-old female, gravida 1, para 0, at 11 + 3 weeks of gestation after IVF for a male factor infertility who presented to the urgent care unit with a 12-hour sudden onset right lower quadrant abdominal pain. This is associated with nausea and vomiting. She is known to have ulcerative colitis and underwent colonoscopy since 2 years but no surgical intervention was carried out. She denies any fever, diarrhea, and bloody stools. There has been no bleeding from the vagina. While she is feeling a bit dizzy when she presented to the hospital; she denies any syncope or presyncope. She describes the pain as a constant pain that is exacerbated with movement. She struggled to characterize the pain but did describe it as a “twisting pain.” She was evaluated by a gastroenterologist who referred her to surgical care to evaluate for the possibility of acute appendicitis. Abdominal ultrasound was performed which re-

vealed a single viable intrauterine pregnancy with ultrasound estimated gestational age of 11 weeks and 3 days. It has also demonstrated an enlarged right ovary at the maximum area of tenderness which measures 43 cm<sup>3</sup> in volume; however, arterial and venous flow was depicted on Doppler ultrasound (Fig. 1). Small amount of free fluid in the right side of the pelvis was seen. The left ovary measured 18 cm<sup>3</sup> in volume. The appendix was not visualized. The examination was interrupted multiple times due to extreme tenderness and nausea. Magnetic resonance imaging (MRI) was suggested to further evaluate her pain. The MRI examination confirmed the asymmetric enlargement of the right ovary which sits higher up within the right lower quadrant and demonstrates higher T2 signal intensity compared to the contralateral ovary (Figs. 2 and 3) suggestive of stromal edema and lead to a diagnosis of right ovarian torsion. Adjacent to the right ovary, a tubular structure was seen which demonstrated inflammatory changes and possibility of tortorted part of the right fallopian tube was raised. The appendix was not identified with confidence but there were no inflammatory changes in the right lower quadrant.

Immediately after the MRI, the patient was taken to the operating room by the gynecology team with the surgery team being in standby. Intraoperatively, the right ovary was seen

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