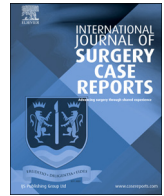




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# Round ligament varicosities diagnosed as inguinal hernia during pregnancy: A case report and series from two regional hospitals in Japan

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## ABSTRACT

**INTRODUCTION:** Round ligament varicosities (RLV) are not well-known and they are usually caused by pregnancy. Although the groin swelling of RLV mimics an inguinal hernia, it is difficult to distinguish between them through clinical examination alone, and there have been few published reports on this topic, especially from Asia.

**CASE PRESENTATION:** A 37-year-old Japanese woman complained of left groin swelling for 2 weeks at her 28th week of gestation of her first pregnancy. According to a physical examination, she had a soft, painless swelling in the superficial inguinal ring of the left groin. An inguinal hernia was suspected and she was thus scheduled to undergo herniorrhaphy. However, since she had varicosities in the left labia majora, she first underwent color Doppler ultrasonography and a final diagnosis of round ligament varicosities was this made. Her symptoms resolved after delivery of her baby.

**DISCUSSION:** We herein report 10 cases of RLV in pregnant Japanese women who were initially suspected of having an inguinal hernia. All of them were suspected to suffer from inguinal hernias after a clinical examination by their attending gynecologist. All of them were diagnosed using gray scale and color Doppler ultrasonography, treated with conservative management, and the symptoms resolved in all cases after the delivery.

**CONCLUSION:** This is the largest report from Asia regarding RLV. To avoid unnecessary surgery in pregnant women, surgeons must be aware of this entity make an accurate diagnosis based of the findings of Doppler ultrasonography.

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## 1. Introduction

Round ligament varicosities (RLVs) are not well-known and they are mostly caused by pregnancy. The groin swelling of round ligament varicosities mimics an inguinal hernia. It is difficult to distinguish between them based on clinical examination alone. The round ligament passes from the lateral uterus, through the internal abdominal ring, and along the inguinal canal and terminates at the labia major. The round ligament contains arteries, veins,

lymphatics and nerves. RLVs arise from the veins draining the round ligament and the inguinal canal into the inferior epigastric vein [1]. We herein report our most recent case and describe ten similar cases of RLVs that were initially suspected to be an inguinal hernia during pregnancy. Our case series is compliant with the PROCESS Guidelines [2].

## 2. Case presentation and series

A 37-year-old woman complained of a left groin swelling of 2 weeks duration at her 28th week of gestation for her first pregnancy. Therefore, she was referred to our surgical department due to suspicion of an inguinal hernia. According to a physical examination, she had a soft, painless swelling in the superficial inguinal ring of the left groin. Her past history included *Toxoplasma gondii* infection. An inguinal hernia was suspected and she was scheduled to undergo herniorrhaphy. However, since she had varicosities in the left labia majora, she first underwent color Doppler ultrasonog-

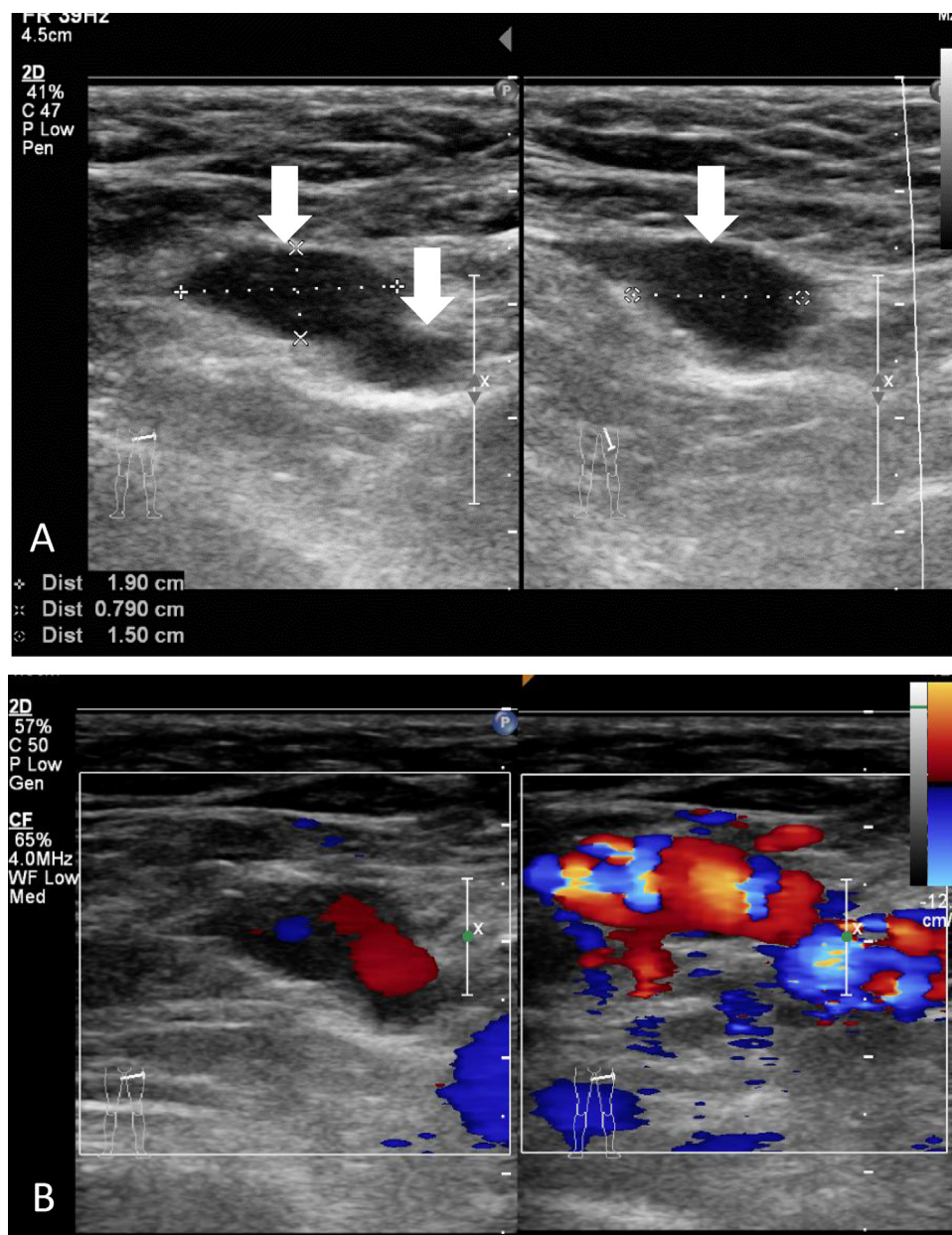
**Abbreviations:** RLVs, Round ligament varicosities; US, Ultrasound.

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**Fig. 1.** A. Transverse gray-scale sonogram shows echo-free tubular structures (arrows) in the left inguinal canal. B. A color Doppler sonogram demonstrates multiple dilated veins with a blood flow.

raphy and a definitive diagnosis of round ligament varicosities was made (Fig. 1A and B). Her symptoms resolved after delivery of her baby.

From March 2008 to September 2016, a total of ten pregnant women were referred to our two surgical departments (Table 1). The chief complaint of all ten women was inguinal swelling and groin pain during pregnancy. All of them were suspected to have an inguinal hernia after a clinical examination by their attending gynecologist. The patients' ages ranged from 25 to 33 years (mean: 28 years). The swelling measured from 3 to 4 cm in diameter along the inguinal ligament based on a clinical examination while the patients were standing.

Most of them (7/10) first noticed inguinal swelling in the second trimester, 1/10 in the first, and 2/10 in the third (mean: 23 week of pregnancy). The symptoms were located on the left side in 7/10 patients and on the right side in 3/10, while none of the patients demonstrated symptoms on both sides. The symptoms were groin

swelling alone in 4/10 patients and painful groin swelling in 6/10 patients. A gray scale US examination revealed multiple echo-free tubular structures in the inguinal canal. Color Doppler US examinations demonstrated multiple dilated veins and an increased blood flow either while standing or during the Valsalva maneuver. Because of these findings, all of the patients were finally diagnosed to have RLVs. After a correct diagnosis was made, they were managed conservatively, and successfully underwent an uncomplicated delivery. The symptoms all resolved within two weeks postpartum.

### 3. Discussion

A hernia of the inguinal region appearing for the first time during pregnancy is uncommon because most of the intra-abdominal structures that could potentially fill the hernia sac will be pushed aside by the growing uterus [3]. In a recently published article, it was emphasized that groin swelling that appears during preg-

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