

CASE REPORT

## Round ligament varicosities mimicking inguinal hernia in pregnancy

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Round ligament varicosities during pregnancy are rare, and can easily be mistaken for an inguinal hernia. On physical examination, round ligament varicosities and groin hernia are difficult to distinguish. The diagnosis of round ligament varicosities can be established on gray-scale and color Doppler sonography. We experienced a case of round ligament varicosities in which a 29-year-old woman presented symptoms at 36 weeks gestation. The patient was diagnosed using Doppler sonography, managed with conservative therapy, and had an uncomplicated vaginal delivery at 40 weeks. The symptoms were resolved completely by two weeks postpartum. We report a case of round ligament varicosities that was diagnosed at 36 weeks of gestation with a review of the literature.

**Key Words:** Round ligament varicosity, Pregnancy, Inguinal hernia, Sonography

### INTRODUCTION

A mass in the female groin during pregnancy is rare. The differential diagnoses of a groin mass include inguinal hernia, round ligament varicosities (RLV), mesothelial cysts, lymphadenopathy, endometriosis, subcutaneous lipoma, cyst of Nuck (persistent embryonic remnants of the process vaginalis with cyst formation), vascular aneurysms, soft tissue malignancies, abscess, and cystic lymphangiomas [1-5]. The RLV can easily be mistaken for an inguinal hernia (especially a strangulated or incarcerated groin hernia that needs an emergency operation), because they share the same clinical appearance. We report a patient with RLV during pregnancy diagnosed by Doppler sonography and managed with conservative therapy

(repeated sonography and obstetric practice).

### CASE REPORT

A 29-year-old woman presented at 36 weeks gestation with a palpable mass and pain in the right groin during her second pregnancy. Her first pregnancy had been uneventful. The symptom started at 32 weeks gestation, and she visited a local obstetrician. The opinion of the obstetrician was inguinal hernia, and he transferred her to a general surgeon. The general surgeon diagnosed a right inguinal hernia, and he transferred her to our hospital. On physical examination, the skin of her right groin looked reddish, bulging, and slightly edematous. The mass (2 × 2 cm) was

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palpable softly, but tender, and was reducible completely by supine position change (Fig. 1).

An inguinal hernia was suspected, and a sonography was performed. Gray-scale sonography showed a mass in the right groin composed of multiple, echo-free, tubular channels. The color Doppler sonography confirmed hypervascular and abundant venous flow consistent of a mass (Fig. 2). There was no sonographic evidence of a herniated bowel, or thrombus, or adenopathy. Based on sonographic results, we diagnosed round ligament varicosities, and performed repeated sonography and obstetric practice. The patient had an uncomplicated vaginal delivery at 40 weeks, and by two weeks postpartum, the

mass subsided.

## DISCUSSION

The most common diagnosis of a female groin swelling during pregnancy is an inguinal hernia. However, inguinal hernias during pregnancy are relatively rare, with a reported incidence of 1 in 1,000 to 3,000 pregnant women [1,2,6].

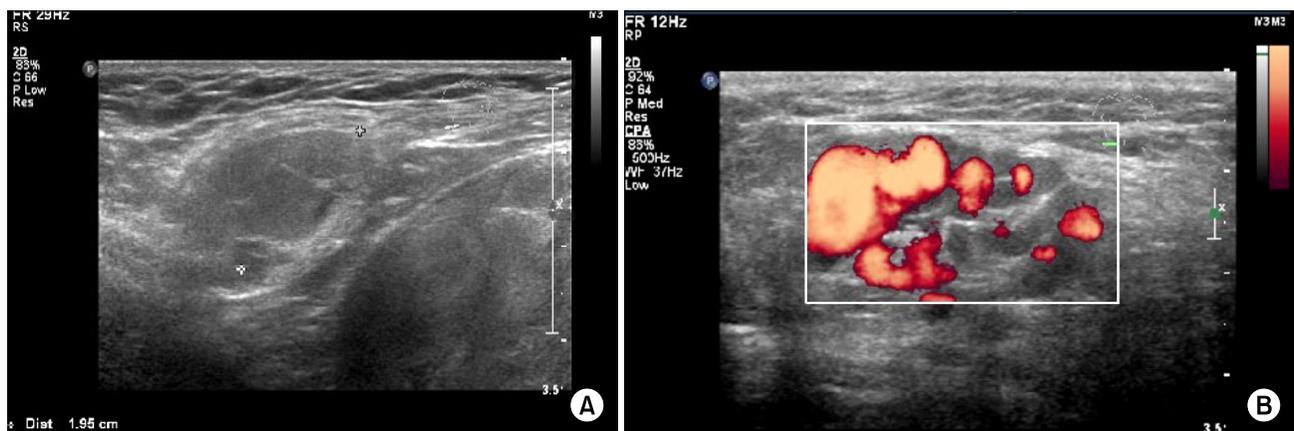
The RLV may mimic an inguinal hernia, which is an exceedingly rare phenomenon. A thorough literature search revealed only 16 cases internationally of RLV during pregnancy reported in the last 53 years [6]. The RLV was first reported in 1941 by Verovitz and first reported in Korea in 2010 by Jung et al. [7,8].

The RLV are prominent veins within the round ligament and are more common in pregnancy because pregnancy promotes increased venous return and reduced venous tone. The varicose vein formation of the round ligament during pregnancy have several mechanisms, including progesterone-mediated venous smooth muscle relaxation, a raised cardiac output causing increased venous return from the limbs and leading to engorgement of venous tributaries, and most importantly, pelvic venous obstruction by the gravid uterus [1-3,5].

The clinical manifestation of RLV usually includes swelling and tenderness in the groin region, which can be pro-



**Fig. 1.** Right inguinal swelling caused by round ligament varicosities.



**Fig. 2.** Gray-scale (A) and color Doppler imaging (B) show a mass in the right groin composed of multiple, and echo-free tubular channels that filled with color on Doppler imaging.

voked by increased intra-abdominal pressure in cases of coughing or Valsalva maneuver. A clue that might suggest RLV is the coexistence of vulvar or lower limb varicosities [2,3]. Our case, however, absence of vulvar or lower limb varicosities did not exclude RLV.

The diagnosis of RLV can be established by sonography [1,3-5,9]. The characteristic sonographic findings include a prominent venous plexus with accompanying dilated draining veins and the typical "bag of worms" appearance of smaller veins. Color Doppler imaging can confirm venous flow and augmentation of this flow with Valsalva maneuver [4]. According to McKenna et al. [5], ultrasound criteria that may be used in the diagnosis of RLV includes: multiple dilated veins passing through the inguinal canal, absence of bowel or lymph nodes in the inguinal mass, and veins seen to drain into the inferior epigastric vein.

The differential diagnoses of RLV include inguinal hernia, lymphadenopathy, endometriosis, subcutaneous lipoma [1-5]. The sonographic findings of inguinal hernia are a superficial, well-delineated echogenic mass that appears adjacent to, yet distinctly separate from, the uterine wall. The sonographic findings of lymphadenopathy are hypo-echoic round or oval masses of varying size in the region of the inguinal area. The characteristic sonographic appearance of endometrioma is that of a well-defined unilocular or multilocular, predominately cystic mass containing diffuse homogeneous, low-level, and internal echoes. The sonographic findings of lipoma show a homogeneous, and echogenic mass that is surrounded by a thin echogenic capsule.

After a correct diagnosis of RLV, a wait-and-see policy is justified. After delivery, when pelvic venous obstruction by the gravid uterus is relieved, spontaneous resolution will occur in most patients [2-5,9]. However, RLV requires close monitoring during pregnancy as rupture of varices and acute variceal thromboses have been reported. Rupture and thrombosis of the RLV may occur and give an intense painful swelling groin, in which case emergency surgical exploration is recommended. This recommendation comes first of all to rule out a strangulated hernia, and secondly to reduce pain or discomfort caused by the inguinal mass [1,7,10].

When a pregnant patient with an inguinal mass visits

our hospital, we have to know that RLV is a part of the differential diagnosis of an inguinal mass during pregnancy, and we must perform a diagnosis using duplex sonography. If the RLV is diagnosed by sonography with the absence of a herniated bowel, or thrombus, we manage it conservatively (repeated sonography and obstetric practice). However, if RLV presenting with rupture of varices and variceal thromboses are observed, emergency surgical exploration is recommended.

## CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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