

Monochorionic/ Monoamniotic Twin Ectopic Pregnancy

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A twin ectopic pregnancy is rare. A monochorionic, monoamniotic twin pregnancy is also rare. The authors present a case of an ectopic monochorionic, monoamniotic twin pregnancy diagnosed by the presence of a single yolk sac. The characteristics and diagnosis of monoamniotic twin pregnancies during the first trimester are discussed.

Key words: monochorionic, monoamniotic, ectopic salpingectomy

The overall number of multiembryonic pregnancies is on the rise. This is due, in part, to the application of superovulation therapies in patients with infertility. The population using this technique consists of older primagravida women who may often present with a history of previous fallopian tube damage.

An ectopic pregnancy is defined as a pregnancy that occurs following implantation of the fertilized egg on any tissue other than the mucous membrane lining of the uterine cavity.¹ A multigestation ectopic pregnancy is quite rare.

The use of sensitive pregnancy tests along with high-resolution transvaginal sonography is invaluable in providing an early diagnosis and proper treatment in cases of ectopic pregnancy. This is critical because undetected ectopic pregnancies can progress and cause rupture of the fallopian tube, threatening the life of the pregnant woman.

Case Presentation

A patient in her early 30s presented with complaints of vague right lower quadrant pain and a positive pregnancy test. Two months previously, the patient had undergone a hysterosalpingogram to determine right-sided fallopian tubal patency after failed efforts to achieve pregnancy. Her surgical history included a left salpingectomy for a left hydrosalpinx. At the time of this surgery, she was

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FIG. 1. Transvaginal scan demonstrating the uterine cavity and thickness of the endometrium in a longitudinal orientation.



FIG. 2. Transvaginal scan demonstrating a cyst within the right ovary.

found to have a suspected ectopic pregnancy within the right tube.

Her symptoms and history were suspicious for yet another ectopic pregnancy. Quantitative serum beta-HCG levels showed an increase in values over the course of a few days, but the values did not double, as would be expected with a normal intrauterine pregnancy.

The patient was scanned on a Philips Ultramark 400C sonography unit using a 5.5-MHz endovaginal probe. The scan revealed a midline anteverted uterus measuring $10.9 \times 4.3 \times 5.5$ cm. The uterus was even textured, with an endometrium exhibiting smooth contour. The endometrial thickness measured 2.4 mm, with no evidence of an intrauterine gestation (Fig. 1). According to reliable last menstrual dates, the gestational age of the embryo was six weeks and four days at the time of the sonography examination. Other significant findings included a considerable amount of free fluid in the cul-de-sac. The patient's left ovary was unremarkable, as was the entire left adnexa. The right ovary contained a slightly tender echo-free unilocular cyst, which measured $1.6 \times 1.5 \times 1.7$ cm (Fig. 2). This was thought to be a corpus lutein cyst. Situated separate from and medial to the right ovary was a well-defined single gestational sac. Upon close observation, this sac revealed two small fetal poles, both correlating with a gestational size of six weeks and three days. There was a single yolk sac with a diameter of 4.2 mm



FIG. 3. Transvaginal scan demonstrating a twin ectopic gestation.

(Figs. 3, 4). No separating membrane could be imaged between the fetal poles. No evidence of fetal heart motion was seen in either embryo.

In twin gestations, the yolk sac differentiates slightly after the amnion, and therefore the number of yolk sacs is a good proxy for the number of amnions.² Even though imaging only the yolk sac at a gestational age of six weeks is not a totally accurate method for confirming monoamnicity, most studies have shown this to be a fairly valid predictor. Unfortunately, in this case, there was no follow-up sonogram to further rule out the presence of a possible second yolk sac. No pathology was available either because single-dose methotrexate was used as treatment.



FIG. 4. Transvaginal scan demonstrating a single yolk sac with diameter measurement.

Discussion

Due to the high rate of perinatal morbidity and mortality in monochorionic compared with dichorionic gestations, all twins should be carefully assessed with sonography to determine the number of chorions and amnions.²

The membrane configuration can be most accurately assessed during the first trimester of the pregnancy. Sonographic counting of the number of gestational sacs is an accurate method for predicting chorionicity from approximately the 6th through the 10th gestational weeks.²

Monochorionic, diamniotic twin gestations are always associated with two yolk sacs. Monochorionic, monoamniotic gestations will be associated with either a single yolk sac or, less commonly, a partially divided yolk sac, depending on when the early zygote divides.² Sonographic visualization of a single yolk sac in a twin gestation before eight weeks should prompt a follow-up exam to reevaluate the number of yolk sacs, allowing more confident confirmation or exclusion of a monoamniotic gestation.²

Sonographically, amnionicity may be assessed by the sixth postmenstrual gestational week by counting the number of embryonic heartbeats within each gestational sac. If the ratio of embryos to gestational sacs is 1:1, then amnionicity can be assumed to equal chorionicity before visualization of the amnion later in the first trimester.²

Early detection of a pregnancy occurring outside of the uterine cavity is critical. Patients presenting with a history of a previous ectopic pregnancy have a 12.6% chance of having a repeat ectopic pregnancy because risk factors contributing to the first episode are still present, along with further scarring of the fallopian tube as a result of the prior ectopic pregnancy.²

With improved resolution transvaginal sonography, we are now able to confidently identify such abnormalities as are described in this article.

The incidence of twin ectopic pregnancy has little data to date. It is a rare occurrence. This is also true of monoamniotic, monochorionic twins. In this case, there was no evidence that the embryos were conjoined. Conjoined twins are a rare anomaly, with an estimated frequency of 1 in 50,000 to 100,000 births.² This occurs in monochorionic, monoamniotic pregnancies.

Conclusion

The diagnosis of monochorionicity and monoamnioticity is important for optimal pregnancy management. The characteristics seen in this ectopic pregnancy provide an example of features that are important to document in early intrauterine multiembryonic pregnancies.

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