

THE PREDICTIVE VALUE OF AN ABSENT YOLK SAC AT FIVE WEEKS GESTATION IN PREGNANCIES ACHIEVED FROM SINGLE, EUPLOID, FROZEN EMBRYO TRANSFER: AN ANALYSIS OF 13,647 PREGNANCIES

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Background

The confirmation of intrauterine pregnancy after fertility treatment can be an anxiety provoking time for patients and their partners. The prognosis of these early pregnancies relies heavily on sonographic findings, however, current guidelines rely on data from spontaneous conceptions. Pregnancies achieved through single, euploid, frozen embryo transfer (FET) have highly accurate dating, making this population an ideal group to study the natural progression, and predictive value, of early pregnancy sonographic milestones.

Objective

The objective of this study was to evaluate the predictive value of the absence of a yolk sac at 5 weeks 0 days through 5 weeks 6 days gestation in pregnancies achieved from single, euploid FET.

Materials and Methods

This was a retrospective cohort study including patients who underwent a single, euploid FET from January 2017 through July 2022. Patients who had the presence of at least a gestational sac on first pregnancy ultrasound at approximately 5 weeks gestation were included. Ectopic pregnancies, biochemical loss, and patients who underwent first sonogram after 5 weeks 6 days were excluded. The primary outcome of this study was ongoing pregnancy rate, defined as presence of fetal heart tones at 8 weeks gestation. Secondary outcomes included rate of spontaneous abortion (SAB), defined as pregnancy loss after fetal heart tones identified, as well as early pregnancy loss, defined by diagnostic criteria of failed intrauterine pregnancy. Multivariate regression analysis was performed to evaluate effects of possible confounders.

Results

A total of 13,647 patients met inclusion criteria. The presence of a yolk sac (YS) was demonstrated in 12,664 (92.8%) pregnancies, whereas the absence of YS was seen in 983 (7.2%) pregnancies. The ongoing pregnancy rate in the absent YS group was 54.0%, compared to 94.8% in the present YS group ($p < 0.05$). Early pregnancy loss and SAB rates were increased in the absent YS group when compared to the present YS group (40.5% vs 1.2%, $p < 0.05$ and 5.5% vs 4.0%, $p < 0.05$, respectively). In patients with an absent YS on initial ultrasound at 5 weeks gestation, 648 (65.9%) had YS demonstrated on a follow up ultrasound obtained 1-10 days later, with an average of 3.09 days. If a YS was established, the interval time to YS was increased in the early pregnancy loss group compared to ongoing pregnancy group (3.41 vs 3.08 days). Increasing BMI was associated with higher rates of SAB and early pregnancy loss in both absent and present YS groups.

Conclusions

The presence of a YS at 5 weeks gestation is highly predictive of ongoing pregnancy and should instill confidence in patients undergoing fertility treatment with single, euploid FET.

Although the absence of a YS at 5 weeks gestation is associated with higher rates of early pregnancy loss and spontaneous abortion, approximately half of patients who do not have a YS appreciated at first ultrasound will go on to have ongoing pregnancy at 8 weeks gestation. This data provides clinicians with a counseling tool to guide patient expectations in cases where early pregnancy milestones are not appreciated at initial ultrasound.

Financial Support

None