Fetal fibronectin as predictor of preterm delivery in women with symptoms of preterm labor

Women with negative FFN test results are unlikely to deliver in the following 2 weeks; observation is still warranted, but expensive interventions may be unnecessary.

**Bottom line**

In pregnant patients with preterm contractions, fetal fibronectin (FFN) has a high negative predictive value (>99%) and a low positive predictive value for delivery in the 7 to 14 days after the test. In clinical practice, negative FFN results in women with symptoms of preterm labor are associated with lower admission rates and decreased cost without adversely effecting neonatal outcomes.

**Epidemiology of preterm delivery**

In the United States, preterm delivery accounts for 75% of perinatal mortality and major perinatal morbidity, including respiratory distress syndrome, bronchopulmonary dysplasia, intraventricular hemorrhage, sepsis, retinopathy, necrotizing enterocolitis, and neurodevelopmental delays.

Detection of FFN is one tool to help determine which women with symptoms of preterm labor are at risk of preterm delivery.

**Factors affecting FFN reliability**

FFN is a low-molecular-weight glycoprotein found in amniotic fluid and placental tissue associated with cellular adhesion. When the extracellular matrix of the chorionic–decidual interface is disrupted, such as occurs with preterm labor, FFN can be detected in cervico-vaginal secretions. FFN samples are obtained by swabbing the posterior vaginal fornix after visualization with a sterile speculum.

Digital or ultrasound vaginal examinations must be avoided prior to collection, as these maneuvers may make the results inaccurate. FFN values may also be unreliable if coitus has occurred during the previous 24 hours, blood is present in the sample, or the patient has preeclampsia.

**Negative predictive value of FFN most useful**

A multicenter trial was conducted on 763 women presenting with symptoms of preterm labor who were between 24 0/7 and 34 6/7 weeks’ gestation, had intact membranes, and were less than 3 cm dilated. These women received FFN testing on presentation and were then followed to time of delivery.

This study reported a negative predictive value of 99.7% for delivery in the 7 days after presentation and 99.5% in the 14 days after presentation. The positive predictive value was lower, however: 13.4% of patients with a positive test had delivered in 7 days and 16.2% had delivered in 14 days.

Consequently, FFN is a useful test for identifying women who, despite preterm contractions, are unlikely to deliver in the following 2 weeks. In these women, practitioners can feel more comfortable forgoing expensive interventions, which, by one analysis, translates into a 50% cost savings without negatively impacting neonatal outcomes.

In a study of 45 women with signs of preterm labor who had a FFN test ordered,
a negative result was associated with fewer admissions to the antepartum ward (25.7% vs 63.6%, \(P=.032\)) and a significantly shorter length of stay on the antepartum service (median, 0; interquartile range, 0–1 day; vs median, 1; interquartile range, 0–3 days; \(P=.008\)).

Caveats

The negative predictive value of FFN testing is somewhat variable in different settings and is not 100%, so prolonged observation of preterm contracting patients may still be warranted. In addition, the underlying cause of the patient’s contractions should be considered, including abruption, cervicitis, urinary tract infection, polyhydramnios, multiple gestation, fetal macrosomia, and maternal drug use.

Finally, a positive FFN is not a particularly strong predictor of preterm delivery. For the contracting patient with a positive FFN or in whom a FFN cannot be obtained, maternity care providers must continue to rely on a careful history, physical examination, and (according to many experts) ultrasound in deciding whether to administer steroids and tocolysis and whether to admit or arrange transfer to a higher-level facility.

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REFERENCES
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