Objective
Disorders in the umbilical cord are clearly associated with fetal dysfunction. To date, the correlation between the thickness of the umbilical cords and their NRFS (non-reassuring fetal status) has not been described in the literatures. We attribute fetal dysfunction to thin a umbilical cord because of its weakness. The aim of this study was to investigate whether measuring the thickness of the umbilical cord using fetal ultrasound can predict their NRFS during labor.

Method
We measured the umbilical cord area and the Wharton’s jelly area by fetal ultrasound at 34-40 weeks. (Figure 1) We then analyzed whether NRFS cases relate to the thickness of the umbilical cord, the Wharton’s jelly’s area and perinatal outcome.

Result
A total of 315 cases were enrolled in this study. Forty seven cases (13.6%) resulted in NRFS. For univariable analysis, there were differences between 2 groups in parity, abnormal umbilical cord’s attachment, single umbilical cord artery, standard deviation of estimated fetal weight, and the umbilical cord area. (Figure 2)
After multiple regression analysis, there were significant differences in parity, standard deviation of estimated fetal weight, and the umbilical cord area. (Figure 3)

Conclusion
The thickness of the umbilical cord correlated with NRFS. Therefore, the measurement for the thickness of the umbilical cord before birth might predict NRFS during delivery.