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Accuracy of Prenatal Ultrasonography for Diagnosis of Placenta Accreta Spectrum and Risk Factors in A Tertiary Center in Southern Iran

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Abstract

Background: Placenta accreta spectrum is one of the most important causes of massive bleeding in the peripartum period. The aim of this study was to determine the accuracy of prenatal ultrasonography for diagnosis of placenta accreta spectrum (PAS) and important risk factors of this pathology were evaluated in this report. **Materials and Methods:** This is a cross-sectional study conducted at Shiraz University of Medical Sciences during January 2018 to January 2019. All patients who were referred for ultrasound examination of placenta accrete spectrum and surgery in Hafez tertiary center were included. Patients with diagnosis of PAS in pathology were in one group and the others in the second group. All maternal and neonatal and demographic data and surgery complications were gathered in a data form. **Results:** Ultrasonography was 100% (95% C.I: 94.40%-100%) sensitive, 87.58% (95% C.I: 81.29%-92.36) specific, and 87.58% (95% C.I: 82.44%-91.66%) accurate discriminating PAS from non-PAS patients. From 217 patients, 64 and 153 patients were in PAS and non-PAS group, respectively. There was significantly more age, gravidity, live children, history of D&C, hormonal contraception, and history of previa in PAS group compared with Non-PAS group (p-value<0.05 for all); however, gestational age was significantly lower in PAS group (p-value<0.05). The odds of PAS significantly increase with previa and low-lying placenta OR adj (95% C.I): 114.68 (28.45-462.29). The patients with one C/S OR adj (95% C.I): 29.07(3.80-222.33) and the patients with two C/S OR adj (95% C.I): 106.08(13.79-815.51) were significantly more in PAS group compared with those with no C/S (p-value <0.05 for both). **Conclusion:** Detection rate of ultrasound examination was good, and it is recommended for women with PAS risk factors. Decreasing the rate of cesarean section and encouraging vaginal birth after cesarean section (VBAC) are the best ways of prevention of this pathology. [GMJ.2024;13:e3316] DOI:[10.31661/gmj.v13i.3316](https://doi.org/10.31661/gmj.v13i.3316)

Keywords: Placenta Accrete Spectrum; Palenta Previa; Cesarean Section; Outcome Assessment

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Thurn *et al.* in 2015 reported 3 years of experience in five countries: Denmark, Finland, Iceland, Norway, and Sweden. 205 cases were diagnosed during the study; 49% of all PAS cases occurred in women with placenta previa. Seven times increased risk of PAS with one cesarean section and 56 times with two or three incisions were the other finding of this study [9]. The important result of the present study was that odds ratio in one previous cesarean section to patients without this history was 29, and patients with more than 2 previous history had 106 times higher chance for this pathology; this is a very terrible event in the obstetric field. Placenta previa increased this chance about 95 times in the present study. This result is significantly higher than that of these countries with a difference that they reported about 50% of patients with negative history of cesarean section, but in this study only 1.28% of the PAS group did not have repeated cesarean section. These two risk factors are the most important ones in Iranian population.

Marcellin *et al.*'s study in 2018 retrospectively reported 156 cases of PAS in 5 years, comparing the depth of invasion of placenta percreta with the others. In 51 women with percreta, significantly higher BMI, gravidity and parity, and number of previous cesarean section were reported in comparison with other types of PAS [15].

A binational case control study in Australia and New Zealand reported a significant relationship between BMI and PAS [16]; although increasing BMI with a higher rate of cesarean section can increase the chance of PAS, here this relationship was not significant.

Some studies have reported the probability of a relationship between the first trimester aneuploidy screening and second trimester MSAFP with PAS; they did not have significant relationships. The result of the present study was the same and did not confirm this theory [17-19]. Some studies concluded that antenatal diagnosis and surgery in elective condition could decrease the rate of complication [20, 21], but in our study with antenatal diagnosis of all cases, there was no significant difference between the patients who had undergone elective surgery in 34-35 weeks of gestation or emergent cesarean due to mater-

nal or fetal problems. One of the reasons was that all operations were performed in the hospitals affiliated to Shiraz University of Medical Sciences with surgeons and other multidisciplinary team who had adequate experience. Shamshirsaz *et al.* reported that PAS patients who delivered in multidisciplinary center in elective setting had lower complications [22, 23].

A systematic review in 2017 reported that ultrasound examination had a good accuracy in finding PAS with a sensitivity of 81.2% and specificity of 98.9% [7]. The present report showed that in our center ultrasound diagnosis was 100% sensitive for PAS but had 21% overdiagnosis in highly suspicious patients. Due to high costs imposed on the health care system, it is important to improve the accuracy of diagnosis even though saving the mothers is the best choice.

Conclusion

Women with risk factors of PAS should have ultrasonography examination before delivery although the surgeon should be cautious about abnormal placenta invasion. Since the cesarean section is the most effective risk factor in PAS, decreasing the rate of cesarean section is the best prevention. Also, because with increasing the number of cesarean sections this risk increases progressively, trial of labor after cesarean section is a good suggestion for patients who plan to have more than two children in their family.

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Conflict of Interest

There is no conflict of interest to be declared regarding the manuscript.