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Original Research

Efficacy of color doppler ultrasonography in antenatal diagnosis of placenta accreta

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ABSTRACT:
Background: The present study was conducted to assess the role of color doppler ultrasonography in antenatal diagnosis of placenta accreta. **Materials & Methods:** 54 pregnant females with high clinical suspicion of placenta accrete underwent CDUS. The USG examination was done by two separate radiologists. **Results:** Age group 18-20 years had 12, 21-23 years had 8, 24-26 years had 11, 27-29 years had 13 and >30 years had 10 patients. The sensitivity was 85.6%, specificity was 87.2%, PPV was 70.4% and NPV was 95%. **Conclusion:** Color doppler ultrasound is an effective method of assessment of suspected cases of placenta accreta.
Key words: Color doppler ultrasonography, Placenta accreta, Sensitivity

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INTRODUCTION

Placenta accreta refers to abnormal placentation in which chorionic villi attach directly to or invade the myometrium. It is a significant cause of maternal morbidity and mortality, and is now the most common indication for emergency postpartum hysterectomy. Its prevalence has risen multifold over the past years, primarily due to the increasing percentage of pregnant patients undergoing primary and repeat cesarean sections.[1]

The incidence of placenta accreta should increase steadily over the next century as the number of Cesarean sections and maternal age at delivery increase.[2] There is a need for reliable antenatal diagnosis since placenta accreta encountered unexpectedly can lead to catastrophic blood loss, multiple complications such as adult respiratory distress syndrome, Sheehan's syndrome, renal failure, and even death. If these pregnancies can be identified before delivery, the site and time of delivery, as well as the surgical approach, can be planned ahead and blood loss minimized.[3]

In women with placenta previa, placenta accreta risk varied from 2% in women less than 35 years old with no previous Cesarean section to 39% in women at or over 35 years of age with two or more Cesarean sections.[4] In women with placenta previa, previous Cesarean section and advanced maternal age were independent risk factors. Implantation of the placenta over the scar markedly increased the incidence of placenta accrete.[5] Identification and management of placenta accreta is a clinical and diagnostic challenge being encountered with increasing frequency. Clinicians should be aware of the clinical issues and risk factors,

and radiologists with imaging protocol and findings associated with it to facilitate optimal case management.[6] The present study was conducted to assess the role of color doppler ultrasonography in antenatal diagnosis of placenta accreta.

MATERIALS & METHODS

The present study was conducted among 54 pregnant females with high clinical suspicion of placenta accrete. All were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. All patients underwent CDUS. The USG examination was done by two separate radiologists. Findings of the study were evaluated statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Age wise distribution of patients

Age group (Years)	Number	P value
18-20	12	0.14
21-23	8	
24-26	11	
27-29	13	
>30	10	

Table I, graph I shows that age group 18-20 years had 12, 21-23 years had 8, 24-26 years had 11, 27-29 years had 13 and >30 years had 10 patients. The difference was non- significant (P> 0.05).

Graph I Age wise distribution of patients

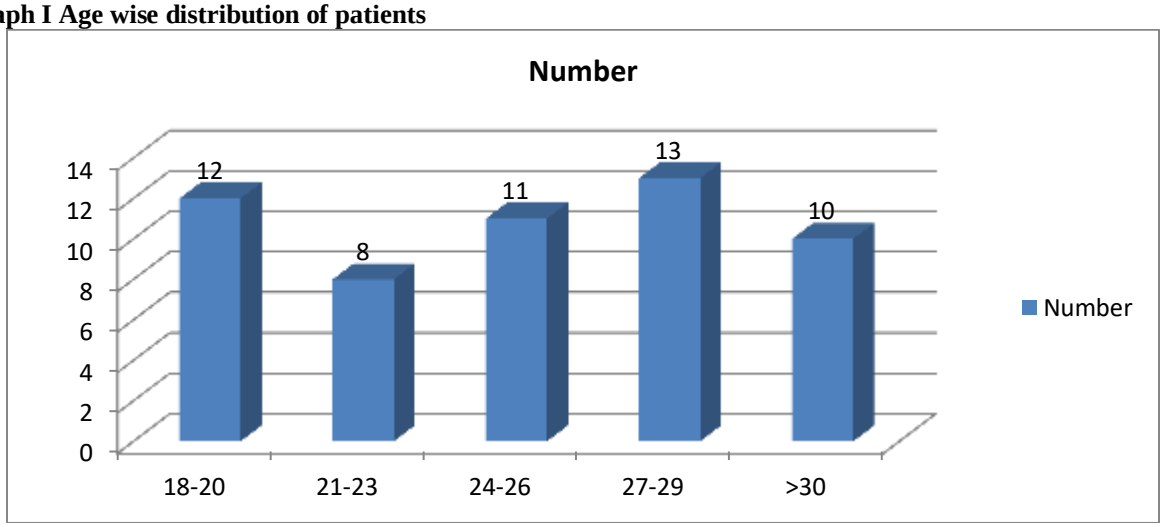


Table II Assessment of parameters

Parameters	Number	P value
Parity		
2	36	0.04
>2	18	
Placental location		
Anterior	32	0.05
Posterior	22	
Complaints		
Fever	52	0.61
Dysuria	46	
Hematuria	41	
Bleeding per vaginum	49	

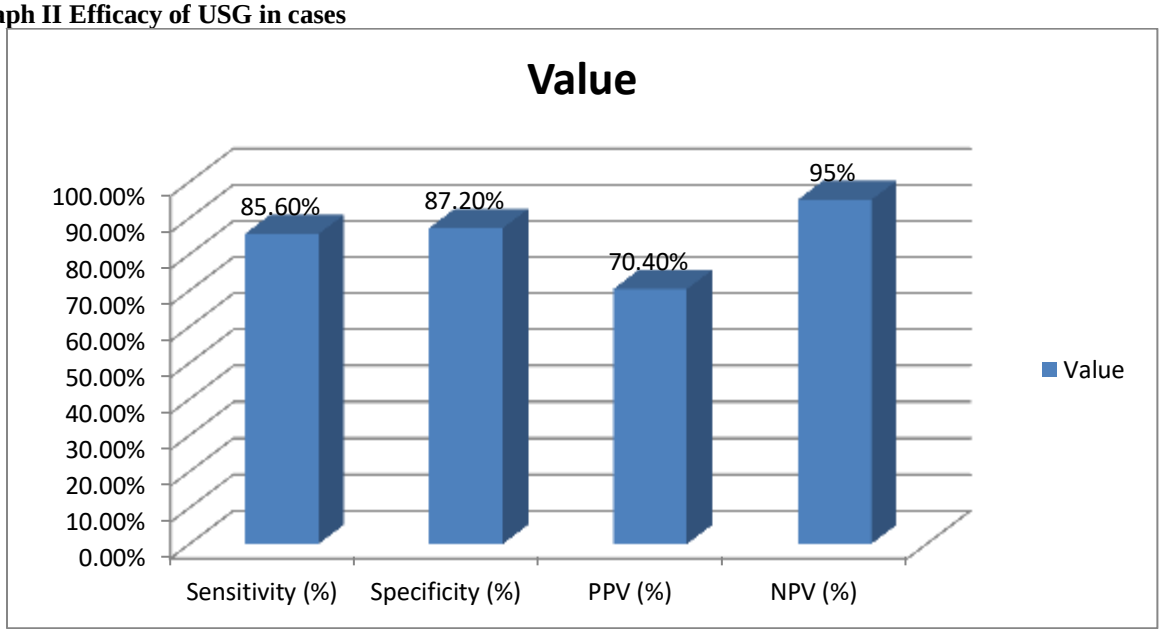
Table II shows that parity 2 was seen in 36 and >2 in 18, placental location was anterior in 32 and posterior in 22. Complaints were fever in 52, dysuria in 46, hematuria in 41 and bleeding per vaginum in 49 cases. The difference was non- significant (P> 0.05).

Table III Efficacy of USG in cases

Efficacy	Value
Sensitivity (%)	85.6%
Specificity (%)	87.2%
PPV (%)	70.4%
NPV (%)	95%

Table III, graph II shows that sensitivity was 85.6%, specificity was 87.2%, PPV was 70.4% and NPV was 95%.

Graph II Efficacy of USG in cases



DISCUSSION

Placenta accreta (and percreta) does occur in the first trimester. It is usually discovered during dilatation and curettage when massive bleeding occurs due to placental invasion of the myometrium by placenta.[7] Individuals who are at risk for placenta accreta at term are also at risk for placenta accreta in the first trimester, i.e. scarring of the uterus by surgical incision is a risk factor in the first trimester as well as later in pregnancy. Most patients will first present for ultrasound examination at 18–20 weeks. It is good practice to ask each patient if she has had any uterine surgery, since this increases her risk for placenta accreta.[8] In these cases, the placenta and bladder wall should be carefully examined. Placenta increta with uterine rupture has been reported at this time12-15. We also found ultrasound evidence for placenta accreta at 16–19 weeks' gestation in most patients who were later proven to have it by pathological examination of their uterus.[9] The present study was conducted to assess the role of color doppler ultrasonography in antenatal diagnosis of placenta accreta.

In present study, age group 18-20 years had 12, 21-23 years had 8, 24-26 years had 11, 27-29 years had 13 and >30 years had 10 patients. Satija et al[10] in their study 30 patients at risk of placenta accreta underwent both CDUS and MRI. Eight cases of placenta accreta were identified (3 vera, 4 increta, and 1 percreta). All patients had history of previous cesarean section. Placenta previa was present in seven out of eight patients. USG correctly identified the presence of placenta accreta in seven out of eight patients (87.5% sensitivity) and the absence of placenta accreta in 19 out of 22 patients (86.4% specificity). MRI correctly identified the presence of placenta accreta in 6 out of 8 patients (75.0% sensitivity) and absence of placenta accreta in 17 out of 22 patients (77.3% specificity). There were no statistical differences in sensitivity (P = 1.00) and specificity (P = 0.687) between USG and MRI.

We found that parity 2 was seen in 36 and >2 in 18, placental location was anterior in 32 and posterior in 22. Complaints were fever in 52, dysuria in 46, hematuria in 41 and bleeding per vaginum in 49 cases. The sensitivity was 85.6 %, specificity was 87.2%, PPV was 70.4% and NPV was 95%.

At MRI, the placenta appears as soft-tissue structure of intermediate signal intensity along the margin of the uterus. The myometrial-decidual interface has a low signal intensity line deep to the placenta. Initially, the placenta appears homogeneous, with the degree of

placental lobulation and heterogeneity increasing with gestational age. Thin septa can be routinely seen coursing through the normal placenta between lobules.[11] The subjacent uterine wall has a trilayered appearance on T2W (sandwich appearance) image, consisting of a vascular layer of high signal intensity between two thinner layers of low signal intensity. In unenhanced T1-weighted images, the placenta and the myometrium both demonstrate homogeneous intermediate signal intensity. Dynamic contrast-enhanced imaging of the placenta shows early intense lobular enhancement of the placental tissue that precedes enhancement of the myometrium.[12]

CONCLUSION

Authors found that color doppler ultrasound is an effective method of assessment of suspected cases of placenta accreta.

REFERENCES

1. Dwyer BK, Belogolovkin V, Tran L, Rao A, Carroll I, Barth R, et al. Prenatal diagnosis ofplacenta accreta: Sonography or magnetic resonance imaging? J Ultrasound Med 2008;27:1275-81.
2. Blaicher W, Brugger PC, Mittermayer C, Schwindt J, Deutinger J, Bernaschek G, et al. Magnetic resonance imaging of the normal placenta. Eur J Radiol 2006;57:256-60.
3. Hung TH, Shau WY, Hsieh CC, Chiu TH, Hsu JJ, Hsieh TT. Risk factors for placenta accreta. Obstet Gynecol 1999;93:545-50.
4. Baughman WC, Corteville JE, Shah RR. Placenta accreta: Spectrum of US and MR imaging findings. Radiographics 2008;28:1905-16.
5. Wu S, Kocherginsky M, Hibbard JU. Abnormal placentation: Twenty-year analysis. Am J Obstet Gynecol 2005;192:1458-61.
6. Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA, *et al.*; National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Maternal morbidity associated with multiple repeat cesarean deliveries. Obstet Gynecol 2006; 107:1226-32.
7. Yang JI, Lim YK, Kim HS, Chang KH, Lee JP, Ryu HS. Sonographic findings of placental lacunae andthe prediction of adherent placenta in women withplacenta previatotalis and prior Cesarean section. Ultrasound Obstet Gynecol 2006;28:178-82.
8. Lax A, Prince MR, Mennitt KW, Schwebach JR, Budorick NE. The value of specific MRI features inthe evaluation of suspected placental invasion. Magn Reson Imaging 2007; 25:87-93.
9. Teo TH, Law YM, Tay KH, Tan BS, Cheah FK. Use of magnetic resonance imaging in evaluation placental invasion. ClinRadiol 2009;64:511-6.
10. Satija B, Kumar S, Wadhwa L, Gupta T, Kohli S, Chandoke R, Gupta P. Utility of ultrasound and magnetic resonance imaging in prenatal diagnosis of placenta accreta: A prospective study. Indian J Radiol Imaging 2015;25:464-70.
11. Kanal E, Barkovich AJ, Bell C, Borgstede JP, Bradley WG Jr, Froelich JW, et al.; ACR Blue Ribbon Panel on MR Safety. ACR guidance document for safe MR practices: 2007. AJR Am J Roentgenol 2007;188:1447-74.
12. Masselli G, Brunelli R, Casciani E, Polettini E, Piccioni MG, Anceschi M, et al. Magnetic resonance imaging in the evaluation of placental adhesive disorders: Correlation with color Doppler ultrasound. Eur Radiol 2008;18:1292-9.