Original Research Article

Reliability of ultrasound and colour doppler in the antenatal diagnosis of morbidly adherent placenta in placenta praevia

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International Archives of Integrated Medicine, Vol. 4, Issue 12, December, 2017.

Available online at http://iaimjournal.com/
ISSN: 2394-0026 (P) **ISSN: 2394-0034 (O)**
Received on: 30-11-2017 **Accepted on:** 05-12-2017
Source of support: Nil **Conflict of interest:** None declared.
How to cite this article: Sudha Tangirala. Reliability of ultrasound and colour doppler in the antenatal diagnosis of morbidly adherent placenta in placenta praevia. IAIM, 2017; 4(12): 122-126.

Abstract

Background: Morbidly adherent placenta is a life threatening condition that requires multidisciplinary approach for management. Women presenting with placenta praevia have become the highest risk for abnormal placental adherence.
Aim: Aim of the present study is to evaluate the efficacy of ultrasound and colour Doppler in the antenatal diagnosis of morbidly adherent placenta in women presenting with placenta praevia.
Materials and methods: This was a prospective study conducted on patients with persistent placenta praevia who underwent transabdominal B mode and colour Doppler ultrasound evaluation in the third trimester during the period of May, 2015 to May, 2017. The imaging findings were compared with the final diagnosis at the time of delivery and at pathological examination.
Results: In the present study, there were a total of 24 patients of morbidly adherent placenta with an incidence of 1.17 per 1000 pregnancies. Previous caesarean section with placenta praevia was the main risk factor for placental adherence.
Conclusion: Ultrasound and colour Doppler have a fairly good sensitivity for prenatal diagnosis of placenta accrete.

Key words

Morbidly adherent placenta, Placenta praevia, Ultrasound.

Introduction

Morbidly adherent placenta is a significant contributor to maternal morbidity and mortality and presently one of the common indications for emergency caesarean hysterectomy.

Morbidly adherent placenta is a general term used to describe an abnormal attachment of placenta to myometrium and occurs when defect of decidua basalis allows the chorionic villi to invade the myometrium. Depending on the depth of invasion abnormal adherence of placenta is divided into three types. In placenta accrete villi are attached to myometrium but do not invade the myometrium. In placenta increta villi partially invade the myometrium and in the most severe type i.e. placenta percreta villi penetrate through entire thickness of myometrium [1]. Placenta praevia and previous caesarean section are the most important reported risk factors for placenta adherence.

The reported incidence of morbidly adherent placenta has increased from approximately 0.8 per 1000 deliveries in 1980 to 3 per 1000 deliveries in the past decade [2]. An important risk factor for placenta adherence is placenta praevia in the presence of uterine scar. The risk of placenta adherence was 0.03% for those at their first caesarean delivery if there is no placenta praevia and 3% if there is placenta praevia. Women with either an anterior or posterior placenta praevia are at increased risk for placenta accrete and the risk increases markedly when the placenta overlies a scar [3]. Additional risk factors include maternal age, prior uterine surgery, endometrial ablation, smoking etc.

Placental adherence can lead to massive haemorrhage, DIC, need for hysterectomy and surgical complications hence, the need for accurate prenatal diagnosis. Accurate prenatal diagnosis allows better timing of delivery, availability of skilled anaesthesia and surgical team and availability of blood products in advance. For accurate diagnosis ultrasound is known to be a useful tool. Ultrasonography when performed by obstetrician or radiologist experienced in detection of abnormal adherent placenta was more accurate than MRI for diagnosis according to French study published in PLOS one.

Ultrasound criteria for diagnosis

(RCOG Green-top Guidelines No. 27)

Grey scale;

1. Loss of normal hypoechoic retroplacental zone.
2. Irregular retroplacental sonolucent zone.
3. Thinning or disruption of hyperechoic serosa- bladder interface.
4. Presence of focal exophytic masses invading the urinary bladder.
5. Abnormal placental lacunae.

Color doppler;

1. Diffuse or focal lacunar flow
2. Vascular lakes with turbulent flow (peak systolic velocity over 15cms/s
3. Hypervascularity of serosa-bladder interface
4. Markedly dilated vessels over peripheral subplacental zone.

Aim of the study

The purpose of the study was to evaluate the sensitivity of ultrasound and color Doppler in the diagnosis of morbidly adherent placenta, and to identify which ultrasound findings correlate and help in the diagnosis of abnormal placental adherence.

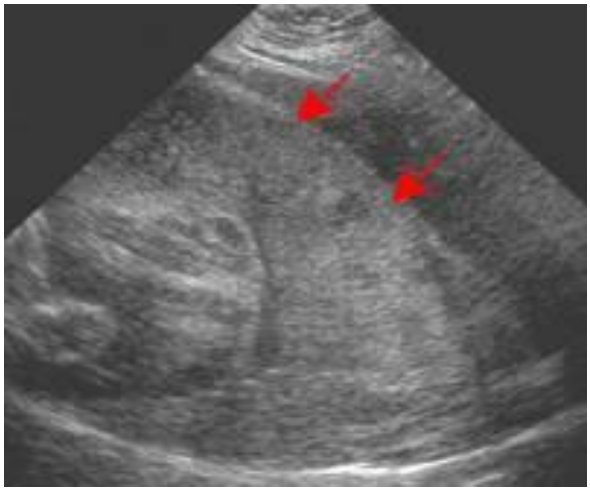
Materials and methods

This was a prospective study conducted in the Department of Obstetrics and Gynaecology in association with Department of Radiodiagnosis, King George Hospital, Visakhapatnam. The study was conducted on 78 antenatal women in third trimester diagnosed as having persistent placenta praevia either in our hospital or referred from other centres. Ultrasound was performed on these antenatal women to look for the evidence of abnormal adherence of placenta and cases

were followed up at delivery to confirm the reliability of ultrasound in diagnosing placental adherence.

The criteria taken for diagnosis were loss of normal retroplacental hypoechoic zone, thickness of myometrium <1mm by ultrasound and blood vessels bridging the uterine and bladder interface, placental lacunae with turbulent flow with color Doppler. No antenatal diagnostic technique affords 100% assurance of either ruling in or out of placenta adherence. Definitive diagnosis was made postpartum in cases of hysterectomy where specimens showed chorionic villi in direct contact with the myometrium and absence of decidua. Patients were counselled about the risks and complications once the diagnosis of placenta accrete is made. In cases of strong suspicion delivery was conducted before haemorrhage has occurred, with adequate arrangement of anaesthesia and surgical team and blood (**Photo – 1, 2**).

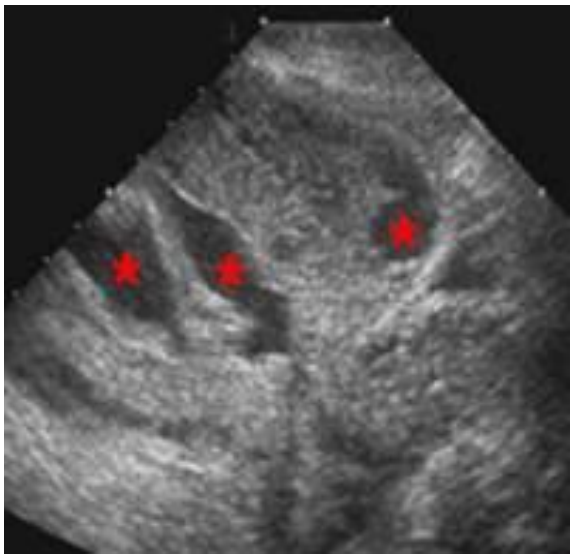
Photo – 1: Sonogram demonstrating absence (arrows) of the intervening myometrium between the placenta and uterine serosa



Results

There were 13445 deliveries during the study period of which 24 patients had morbidly adherent placenta giving an incidence of 1.17 per 1000 deliveries. Of the 24 cases of morbidly adherent placenta, association of placenta parevia with caesarean section was diagnosed in 20 of these patients (83.3%). The reliability of ultrasound in diagnosing morbidly adherent placenta was very high with loss of retroplacental zone seen in 23 of the cases (95.83%) while increased turbulence on colour Doppler was noted in 22 cases (91.66%).

Photo – 2: Sonogram demonstrating numerous vascular lacunae (asterisks) within the placenta in a patient with placenta accrete.



Placenta accrete was found in 16 (66.6%), placenta increta in 6(25%), and placenta percreta in 2 cases (8.33%). In all patients, diagnosis of morbidly adherent placenta was confirmed at caesarean section (**Table – 1, 2, 3**).

Discussion

The incidence of morbidly adherent placenta has increased dramatically over the past three decades parallel to the increase in the caesarean delivery rate [4]. At present, the incidence is 1 per 2,500 deliveries and it occurs when there is a defect in decidua basalis, resulting in abnormally invasive placentation [5]. Prior uterine surgery, myomectomy and curettage, in addition to caesarean section are associated with abnormal placentation, but more ominously placenta praevia has been associated with a higher rate of placenta accrete [6].

Incidence of morbidly adherent placenta in the literature varies between 0.001 and 0.9% of all deliveries; a rate that depends on the definition

adopted for accrete/ population studied and parallels the increase in caesarean delivery rate. Among women with placenta praevia incidence of placenta accrete is almost 10% [7].

The incidence of placenta adherence over the two year study period is 1.17% showing an increasing trend. Zaki, et al. reported a 60% rate of placenta accrete with three or more caesarean deliveries [8].

Table – 1: Demographic data.

Demographic data		**No**	**%**
Age	20-25years	3	12.5%
	25-30 years	12	50%
	30-35 years	7	29.16%
	>35 years	3	12.5%
Registration status	Booked	8	33.33%
	Unbooked/ Referred	16	66.66%
Gravidity	Gravida 1	4	16.66%
	Gravida 2	16	66.6%
	Gravida 3	3	12.5%
	4 & more	1	4.16%
Risk factors	Placenta praevia without Previous caesarean	4	16.66%
	Placenta praevia with previous caesarean section	20	83.3%
Types of map	Accreta	16	66.6%
	Increta	6	25%
	Percreta	2	8.33%

Table - 2: Cases diagnosed by ultrasound.

Number of cases diagnosed by ultrasound	22(91.66%)
Number of cases missed by ultrasound	2(8.33%)

Table – 3: ultrasonographic findings.

Loss of retroplacental zone	23	95.83%
Increased lacunae	16	66.66%
Increased tubulence on colour doppler	22	91.66%

Ultrasound when performed by obstetrician or radiologist experienced in diagnosing abnormal placental adherence was more accurate than MRI according to a French study published in PLOS one. MRI appeared to be complementary to the diagnosis of ultrasound especially when ultrasound yielded few signs of the condition.

Conclusion

Ultrasound is highly sensitive and specific in the antenatal diagnosis of placenta acccreta. Developing a screening protocol helps in improving the maternal and fetal outcome.

Acknowledgement

I would like to thank the Department of Obstetrics and Gynaecology and Department of Radio diagnosis for their help and cooperation in doing my work for this study.

References

1. Jauniaux E, et al. Prenatal ultrasound diagnosis and outcome of placenta previa accrete after caesarean delivery: a systematic review and metaanalysis. Am J Obstet Gynecol., 2017.
2. Bowman ZS, Eller AG, Kennedy AM, et al. Accuracy of ultrasound for the

prediction of placenta accreta. Am J Obstet Gynecol., 2014; 211(2): 177.
3. FitzPatrick KE, et al. Uterine rupture by intended mode of delivery in the UK: A national case control study. PLOS Medicine, 2012.
4. Aggarwal Richa, Suneja Amita. Morbidity adherent placenta: A critical review. Journal of Obst and Gyn. of India, 2012; 62(1): 57-61.
5. ACOG committee on obstetrics practice. ACOG committee opinion no. 266; January 2002, placenta accreta. Obst and Gynaecol., 2002; 99: 169-70.
6. Wu S, Kocherginsky M, Hibbard JU. Abnormal placentation; 20 year analysis. Am J Obst and Gyn., 2005; 192: 1458-61.
7. Miller DA, Choller JA, Goodwin TM. Clinical risk factors for placenta previa accrete. Am J Obst and Gyn., 1997; 177: 210-4.
8. Zaki Z, Bahar AM, Ali ME, et al. Risk factors and morbidity in patients with placenta previa accreta compared to placenta previa non-accreta. Acta Obstet Gynecol Scand., 1998; 77: 391-4.