

Antenatal Diagnosis, Surgical Approach and Maternal Morbidity with Placenta Accreta

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ABSTRACT

Objective: To emphasize the importance of antenatal diagnosis of the morbidly adherent placenta, employ management options accordingly and their impact on the patient's outcome.

Study Design: Cross-sectional study.

Place and Duration of Study: Combined Military Hospital, Okara Pakistan, Jan 2018 to Aug 2020.

Methodology: One hundred and twenty-four patients were enrolled in the study. Diagnosed morbidly adherent placenta was made through trans-abdominal ultrasound, and a Doppler study in selected cases of posterior placenta previa magnetic resonance imaging (MRI) was performed. The surgical approach was either a high transverse placenta sparing or a classical incision on the uterus. After delivery of baby, conservative management included resection of part of uterus with adherent placenta followed by reconstruction of the lower uterine segment, segmental resection of myometrial tissue and hemostatic sutures, and over sewing of placental bed. The requirement of blood transfusion, intensive care unit stay, post-operative recovery, and day of discharge, along with all demographic and surgical details, was noted.

Results: In 87(70%) patients, high transverse or placental sparing incision was made to assess the baby. Over sewing of the placental bed was done in 37(29.8%) patients, and myometrial segment resection was done in 57(46%) patients. An obstetrical hysterectomy was carried out in 30 patients. Blood transfusion of > 4 units RCCs was required in 92(74%) patients. 16% the patients required intensive care management.

Conclusion: Antenatal diagnosis of morbidly adherent placenta through useful imaging modality allowed for a planned surgical approach and minimized maternal morbidity.

Keywords: B-lynch, Morbid placental adherence, Obstetrical hysterectomy, Placenta accrete.

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INTRODUCTION

Morbidly adherent placenta (MAP) or abnormally invasive placentation (AIP) describes a spectrum of disorders in which there is abnormal adherence of the placenta with the uterine wall, and it does not deliver spontaneously. In MAP between the myometrium and placenta, the decidua basalis is thinned out or absent, so the placental trophoblasts come in direct contact with the myometrium. MAP can be graded into three types depending on the depth of invasion. In 78% of cases, the chorionic villi are attached to but do not invade the myometrium leading to placenta accreta. In the case of placenta increta, the chorionic villi invade the myometrium (17% cases). While in placenta percreta, the chorionic villi invasion extends beyond the uterine serosa (5% of cases).¹ Maternal morbidity and mortality increase with the increase in depth of myometrial invasion. MAP is a serious clinical condition and can lead to massive obstetrical haemorrhage due to forceful and patchy separation of the placenta.

Studies have revealed that the mean estimated blood loss ranges from 2000-7800ml.²

MAP is increasing globally due to the persistent rise in cesarean sections.³ In 1997 the placenta accreta was reported to be 7 in 1000 pregnancies. However, an Italian study conducted in 2013 suggested an incidence of placenta accreta 1 in 322 pregnancies.⁴ The two main risk factors for morbidly adherent placenta are placenta previa and previous cesarean section. The risk increases with the increasing number of previous cesarean sections; with four or more prior cesarean sections, the risk of MAP is almost 67%.⁵ Other forms of uterine surgeries, myomectomy, uterine curettage, manual removal of placenta, prior placenta accreta, endometrial ablation and radiation therapy are added to the risk factors. Additional demographic risk factors include IVF, advancing maternal age, grand multi gravida and high parity and multiple terminations of pregnancy.⁶

The first line of diagnosing MAP is ultrasound evaluation using greyscale and colour Doppler imaging.⁷ Reduced myometrial thickness, interruption of the utero-bladder interface, obliteration of demarcation

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between uterus and placenta, intra-placental lacunae and bridging vessels,⁸ are suggestive ultrasound features of placenta accreta. Magnetic resonance imaging (MRI) is done in case of non-conclusive ultrasound or Doppler. It is used as an adjunct to visualize pelvic anatomy and bladder invasions; posterior and lateral uterine wall and parametrial invasions can also be identified.^{9,10}

The objective of our study was to emphasize the importance of antenatal diagnosis of the morbidly adherent placenta, employ management options accordingly and their impact on the patient's outcome.

METHODOLOGY

It was a cross-sectional study carried out at the Department of Obstetrics and Gynaecology Combined Military Hospital Okara from January 2018 to August 2020. After getting approval from the Institutional Ethical Review Committee (IERC/OBS/2020/05), patients were enrolled through a non-probability consecutive sampling technique. Using the WHO sample size calculator, taking a confidence level of 95% and anticipated proportion of morbidly adherent placenta 7%,¹¹ a sample size of 124 patients was calculated.

Inclusion Criteria: Women with a history of previous one or more cesarean sections associated with placenta previa, history of myomectomy, hysterotomy were included in the study.

Exclusion Criteria: Patients with uterine malformations, pelvic inflammatory disease, history of dilatation and curettage, placental abruption, intrauterine contraceptive device insertion and unwillingness for surgery were excluded from the study.

Written informed consent was taken from all the patients. Counselling for fetal prematurity, visceral injury, massive haemorrhage, possible need for blood and blood products transfusion, and need for peripartum hysterectomy. The conversation about future fertility desires with the couple was made. If the uterus is conserved, options for sterilization and the risk of MAP in future pregnancies were discussed.

Diagnosis of morbidly adherent placenta was made through trans-abdominal ultrasound and Doppler, in selected cases of posterior placenta previa, magnetic resonance imaging (MRI) was performed, and the diagnosis and extent of placental adhesions were confirmed in the third trimester. These patients were admitted in advance to delivery time at or around 37 weeks of gestation, 1 day prior to surgery. Blood arrangement was ensured pre-operatively. A

multidisciplinary approach was used. A consultant obstetrician, anaesthetist, and other surgical teams, including a surgeon, pathologist, and paediatrician, were informed about the case. The operative procedure was carried out under regional as well as general anaesthesia.

A high transverse placenta sparing or classical incision was made to access the baby. After delivery of baby, conservative management included resection of part of uterus with adherent placenta followed by reconstruction of the lower uterine segment, segmental resection of myometrial tissue and hemostatic sutures, and over sewing of placental bed. Compression (brace) sutures (B- Lynch) were also applied in certain patients with the atonic uterus. Balloon tamponade was done to control secondary haemorrhage. Injection Methotrexate 50 mg I/M was given if there was a suspicion of placental remnants after piecemeal placental removal on days 1 and 3.

In planned peripartum hysterectomy, the uterus was opened by a classical midline incision, and the baby was delivered, the placenta was left in situ and hysterectomy was done. Hysterectomy was also done in those cases where conservative management failed, or patients had hemodynamic instability.

The requirement of blood transfusion, intensive care unit stay, postoperative recovery, and day of discharge, along with all demographic and surgical details, was noted in the pre-designed proforma.

Statistical Package for Social Sciences (SPSS) version 22.0 was used for the data analysis. For quantitative variables, the mean and standard deviation was calculated. For qualitative variables, frequency and percentage were calculated.

RESULTS

A total of 124 patients fulfilling the criteria were included in the study. All patients were comparable for age, parity and gestational age. The mean age of patients was 34.02 ± 2.78 years, and the mean parity was 2.57 ± 1.03 . Only one patient was primigravida with major degree placenta previa and evidence of morbid adhesion with myometrium on MRI. The mean gestation age of patients was 37.82 ± 0.92 weeks. Baseline characteristics of patients like the number of previous cesarean sections, type and site of the placenta were shown in Table-I.

A high transverse uterine incision was given in 87(70.2%) patients. After delivery of the foetus, depending upon the extent of myometrial involvement,

oversewing of the placental site was done in 37(29.8%) patients. In comparison, segmental myometrial resection was done in 57(46.0%) patients. 30 (24.2%) patients underwent an obstetrical hysterectomy. Blood transfusion >4 units RCC was required in 32(25.8%) patients. 20(16.1%) patients stayed in ICU for >24 hours. The surgical approach, modalities used, and outcome were shown in Table-II.

Table-I: Baseline Characteristics of the Patients (n=124)

Characteristics		n (%)
Number of previous cesarean section	1	43 (34.7)
	2	66 (53.2)
	3 or more	15 (12.1)
Placenta Previa	Minor	32 (25.8)
	Major	92 (74.2)
Placental Site	Anterior	95 (76.6)
	Posterior	29 (23.4)

Table-II: Intra-operative Interventions and Early intra and Postoperative Morbidities (n=124)

Characteristics		n (%)
Type of uterine incision	High transverse	87(70.2)
	Midline	37(29.8)
Intra-operative procedure	Over-sewing Placental site	37(29.8)
	Segmental resection	57(46.0)
	Hysterectomy	30(24.2)
Bladder Injury	Yes	24(19.4)
	No	100(80.6)
Blood Transfusion (>4 Units)	Yes	32(25.8)
	No	92(74.2)
ICU Stay	Yes	20(16.1)
	No	104(83.9)

DISCUSSION

Due to easy access to recent advances in modern obstetrics and the rising trend of litigation, the cesarean section rate is generally on the rise globally. In addition, the round-the-clock availability of radiologist anaesthetists, blood and components have rendered surgical procedures safer. However, this trend has the price of the rising incidence of placenta accreta.

The incidence of placenta accreta in the present study was 1:150, whereas it was 1:200 in a study conducted by Izhar *et al.*¹¹ and 1:31, as reported by Arif *et al.*¹² Studies have revealed a parallel increase in the incidence of morbid adherence to placenta MAP as the number of cesarean sections is increasing.¹³

Risk factors associated with MAP are scarred uterus, previous cesareans with placenta previa, multiparity and advanced maternal age. In our study, 123 patients were multi gravida, and only one

primigravida had a history of myomectomy. Similarly, a study by Iqbal *et al.* revealed 77 % multi gravid and 23% grand multipara.¹⁴ At the same time, Waheed K came across placenta accreta in primigravida, managed conservatively with a successful outcome.¹⁵

Stergios suggested a planned cesarean section without attempting placental separation and proceeding for peripartum hysterectomy in patients having diagnosed placenta accreta.¹⁶ While we proceeded according to the per-op scenario, 46% had a segmental resection, 29.3% had oversewing of the placental site, and 24% underwent a hysterectomy. Few other studies have also reported using various interventions apart from peripartum hysterectomy to stop bleeding following partial placental separation. These included insertion of vertical compression sutures,¹⁷ square suture technique,¹⁸ and use of multiple compression sutures. It was a novel procedure to conserve fertility in patients with placenta accreta.¹⁹

Another triple *p* procedure (per operative placental localization, placental no separation and pelvic de vascularization) was carried out by Teixidor *et al.*²⁰ In their study, the fetus was delivered by high transverse placental sparing incision, myometrial resection, and uterine wall reconstruction. However, no single intervention can be suggested to control massive haemorrhage after separating the morbidly adherent placenta.

CONCLUSION

Antenatal diagnosis of the morbidly adherent placenta through appropriate imaging modality (ultrasound, colour Doppler or MRI) allows for a surgical approach to minimize potential maternal morbidity. Employing planned surgical techniques help in reducing massive haemorrhage, preserving the uterus and hence the future fertility of the patient, with minimal need for blood and blood products transfusion and intensive care unit stay.

Conflict of Interest: None.

Auhtor's Contribution

Following authors have made substantial contributions to the manuscript as under:

NA: Study design, data analysis, critical review, drafting the manuscript, critical review, approval of the final version to be published.

BZ: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

RQA & FS: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or

integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Agten AK, Jones NW. Abnormally invasive placentation: diagnosis and management. *Obstet Gynaecol Reprod Med* 2019; 29(7): 189-194. doi: 10.1016/j.ogrm.2019.04.005.
2. Wise A, Clark V. Challenges of major obstetric haemorrhage. *Best Pract Res Clin Obstet Gynaecol* 2010; 24(3): 353-365. doi: 10.1016/j.bpobgyn.2009.11.011.
3. Comstock CH, Bronsteen RA. The antenatal diagnosis of placenta accreta. *BJOG* 2014; 121(2): 171-181; discussion 181-182. doi: 10.1111/1471-0528.12557.
4. Familiari A, Liberati M, Lim P. Diagnostic accuracy of magnetic resonance imaging in detecting the severity of abnormal invasive placenta: a systematic review and meta-analysis. *Acta Obstet Gynecol Scand* 2018; 97(5): 507-520. doi: 10.1111/aogs.13258.
5. Jauniaux E, Bunce C, Grønbeck L, Langhoff-Roos J. Prevalence and main outcomes of placenta accreta spectrum: a systematic review and meta-analysis. *Am J Obstet Gynecol* 2019; 221(3): 208-218. doi: 10.1016/j.ajog.2019.01.233.
6. Tovbin J, Melcer Y, Shor S, Zlotin MP, Svirsky R. Prediction of morbidly adherent placenta using a scoring system. *Ultrasound Obstet Gynecol* 2016; 48(4): 504-510. doi: 10.1002/uog.15813.
7. Jauniaux E, Bhide A, Kennedy A. FIGO consensus guidelines on placenta accreta spectrum disorders: prenatal diagnosis and screening. *Int J Gynaecol Obstet* 2018; 140(3): 274-280.
8. Jauniaux E, Hussein AM, Fox KA, Collins SL. New evidence-based diagnostic and management strategies for placenta accreta spectrum disorders. *Best Pract Res Clin Obstet Gynaecol* 2019; 61(1): 75-88. doi: 10.1016/j.bpobgyn.2019.04.006.
9. Jauniaux E, Ayres-de-Campos D. Placenta Accreta FIGO. Diagnosis and Management Expert Consensus Panel. FIGO Consensus Guidelines on Placenta Accreta Spectrum Disorders. *Int J Gynaecol Obstet* 2018; 140(3): 265-273. doi: 10.1002/ijgo.12407.
10. Cali G, Timor-Tritsch IE, Palacios-Jaraquemada J. Outcome of Cesarean scar pregnancy managed expectantly: systematic review and meta-analysis. *Ultrasound Obstet Gynecol* 2018; 51(2): 169-175. doi: 10.1002/uog.17568.
11. Izhar R, Hussain S, Tahir S. Comparison of two protocols for management of placenta accreta at Tertiary Care Centre in Pakistan. *J south Asian Feder Obst Gynae* 2017; 9(1): 18-24. doi:10.5005/jp-journals-10006-1450.
12. Arif A. Study of frequency and outcome of management in pregnancies complicated by morbid adherence of placenta. *Pak Armed Forces Med J* 2010; 4(12): 131-136.
13. Chaudhary R. The frequency of morbidly adherent placenta. *Ann Punjab Med Coll* 2013; 7(2): 128-132. doi: 10.29054/apmc/2013.392.
14. Iqbal N, Sohail N, Tayyab M. Placenta accreta- still a dilemma. *Ann King Edward Med Uni* 2012; 18(3): 250-254.
15. Waheed K, Sarwar A, Ijaz S. Conservative management of placenta in creta in a primigravida – a case report. *J Pak Med Assoc* 2019; 69(7): 1049-1051.
16. Doumouchtsis SK, Arulkumaran S. The morbidly adherent placenta, an overview of management options. *Acta Obstet Gynecol Scand* 2010; 89(9): 1126-1133. doi: 10.3109/00016349.2010.503869.
17. Chen CP, Hwu YM, Chen HS, Su TH. Parallel vertical compression sutures: a technique to control bleeding from placenta previa or accreta during cesarean section. *BJOG* 2005; 112(10): 1420-1423. doi: 10.1111/j.1471-0528.2005.00666.x.
18. Tjalma WA, Jacquemyn Y. Compression sutures instead of emergency peripartum hysterectomy. *Eur J Obstet Gynecol Reprod Biol* 2006; 124(2): 187-192. doi: 10.1016/j.ejogrb.2005.06.012.
19. Shazly SA, Badee AY, Ali MK. The use of multiple 08 compression suturing as a novel procedure to preserve fertility in patients with placenta accreta: case series. *Aust N Z J Obstet Gynaecol* 2012; 52(3): 395-399.
20. Teixidor VM, Belli AM, Arulkumaran S, Chandraran E. Prevention of postpartum hemorrhage and hysterectomy in patients with morbidly adherent placenta: a cohort study comparing outcomes before and introduction of the triple-P procedure. *Ultrasound Obstet Gynecol* 2015; 46(1): 350-355. doi: 10.1002/uog.14728.