Original Article

Placenta Accreta Spectrum and Obstetric Hystrctomies in Relation to Increasing Cesarean Section

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Abstract

Objective: To see the association between the PAS and previous uterine surgeries, the morbidity and rate of hysterectomy associated with it.

Methodology: It was a prospective observational study conducted over a period of 18 months from July 2017 to December 2018 in Department of Obstetrics and Gynecology Bahawal Victoria Hospital.

Results: The age range of all the women in the study was from 19 to 39 years. Of 6675 cesareans 1176(17.6%) were placenta previa. Of these 356 (30%) cases of placenta previa were in an unscarred uterus and 820(70%) were in scarred uterus. 487 cases were having varied degree of placental invasion. 414 (85%) were diagnosed as having placental invasion before surgery. 73(15%) cases were diagnosed as having adherent placenta per operatively. 283/487 (58%) patients had obstetric hysterectomy and conservative surgery was done in rest 204 (42%) cases.10 patients were reopened because of continued bleeding. 06 patients were those in whom conservative surgery was done and 04 were these in who obstetric hysterectomy was already done.

Conclusion: Proper risk management, antenatal diagnosis, planned /elective surgery with multidisciplinary approach and anticipating the worst can help lessen the morbidity associated with PAS.

Key Words: Placenta accrete, PAS, obstetric hysterectomy. Adherent placenta.

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Introduction

Adherent placenta is said to occur when placenta does not separate from the uterine wall following delivery of the baby, it was studied by Irving et al, in 1937.[1] There are many classifications of adherent placenta one of them being dependent on the degree of cytotrophoblastic invasion deep into the myometrium. The milder form is placenta accrete when the villi are superficially attached to the myometrium. Placenta increta is a condition in which the villi invade deep into the myometrium. And the severe form is placenta percreta when the villi invade all the way through the myometrium and cross the serosa and into the surrounding organs and tissues. Placenta increta and percreta are collectively called morbidly adherent placenta.[2] Placenta accrete spectrum is the newer term for such conditions and thus placenta accrete spectrum (PAS) will be used.[3] this is observed only in human placenta and is associated with major morbidity and mortality.[4] Whenever there is PAS there is life threatening massive hemorrhage from the placental site

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increasing the risk of obstetric hysterectomy.[5] The incidence was 1 in 1000 in 1980 which has substantially increased over 40 years and now has become 1 in 400. This rise is mainly attributed to the rising rate of cesarean sections.[6] PAS is notorious for its massive hemorrhage making it a major cause of maternal mortality. Maternal mortality thus associated is about 7-9%.[7] Maternal mortality associated with PAS was the point of pondering in the recent confidential inquiry into maternal mortality that took place in the United Kingdom (MMBRACE-UK, 2017). [8]

Safe obstetrics that has led to more and more cesarean sections has become the major cause of placental invasion in subsequent pregnancies both in developed and in developing countries. [9, 10] Number of previous cesarean sections is directly proportional to the increased risk of placental adherence. Any woman who has had previous three or more cesareans is likely to develop PAS in up to 70% cases. [11] Any uterine surgery including the aggressive curettage, increasing age, and parity all contribute to increasing placental invasion and thus the morbidity associated with it. [12] On the cellular and vascular level, the pathogenesis currently agreed upon is poor decasualization on the maternal side, aggressive trophoblastic activity and/or both.[13] The site of previous uterine surgery for any reason or injury during curettage or IUCD placement is the favored site for placental invasion. [14]

PAS is known for its massive hemorrhage and complications so it requires proper antenatal diagnosis, workup and planned elective surgery in hands of well-trained experienced surgeons. Diagnosis is done by ultrasound and those who are high risk are subject to more explicit ultrasounds and MRI to confirm the depth of placental invasion. The prognosis is better with preoperatively well-diagnosed cases opened electively.[15] The increased mortality rate as high as 7-8% is not unpredictable anymore. [16] It is, therefore, necessary to detect any degree of placental adherence and invasion early so the cases may be well managed in presence of multidisciplinary team that includes consultant gynecologist, consultant anesthetist, neonatologist, hematologist, blood bank team, urologist, general surgeon, and operating staff. Ultra sonography along with greyscale and MRI is the diagnostic tools and the radiologist must be experienced enough to pick up the condition.[17] The antenatal diagnosis allows better decision making in time, place and arrangements regarding the surgery as the morbidity is already anticipated. This lowers the need for blood transfusions, injury to surrounding organs, and need of obstetric hemorrhage. Also, a conservative approach may be adopted in case of uterus conservation for future fertility. Cases, where diagnosis is made pre operatively and surgery, is done electively both mortality and mortality may be reduced by 80% [18].

In the treatment option cesarean hysterectomy while leaving the placenta in situ is the recommended modality. Conservative management may have opted subject to fertility wishes and parity in selected cases of placenta accrete.[19]

More and more cases of PAS are being reported in our setup but as the data is sparse to formulate a protocol, this study is being done to document the incidence of placental adherence and invasion and the morbidity and mortality associated with it. Relationship of PAS with previous cesarean sections and also the number of obstetric hysterectomies being done due to this spectrum of placenta accrete to emphasize the antenatal diagnosis and best management approach.

Methodology

A prospective observational study was done over eighteen months i.e. from July 2017 to December 2018 in the Department of Obstetrics and Gynecology Bahawal Victoria Hospital to study the incidence of placental invasion and morbidity associated with it. The study was started after taking ethical approval from the ethical committee. After taking informed and written consent patients planned for cesarean section in which placenta was low lying or covering the os were included. The relationship of all types of Placental invasion with several previous scars was noted. Morbidity and mortality in patients with PAS were also noted. Patients who were found to be having placenta previa and placental invasion during surgery were also included. All the patients who delivered vaginally in the presence of low lying placenta and were planned for elective cesareans were excluded from the study. All patients with the placenta accrete spectrum who had to have an obstetric hysterectomy for life-saving or securing hemostasis were also noted. All this information was platted in graphs and tables using SPSS version 17. A significant relationship was analyzed.

Results

The age range of the women included in the study was 19- 39 years. In our study period of 18 months total of 6675 cesarean sections were done. There was 17.6%

(1176) prevalence of placenta previa in these. Placenta previa in the unscarred uterus was seen in 356 (30%) cases. Rest i.e. 820 (70 %) were in patients who already had one or more cesarean sections. This is now well known that previous scars increase the incidence of placenta previa by many folds.

487 patients had some degree of placental invasion. 85% i.e., 414 were diagnosed preoperatively as having PAS. 73 (15%) patients were diagnosed with placental invasion after the delivery of baby preoperatively. (Table I)

Table I: Relationship of Uterine Scars with Placenta Previa/Accreta.

Status of uterus	Low placenta/ placenta previa N (%)	Placenta accreta spectrum N (%)	Placenta not N (%) adherent
Unscarred uterus	356(30%)	2(0.5%)	354 (99.5%)
Previous one cesarean section	256(22%)	87 (34%)	169 (66%)
More than one cesarean section	564(48%)	398(70%)	166 (30%)
Total sections	1176(17.6%)	487 (41%)	689(59%)

Morbidity was lesser in cases in which placental invasion was diagnosed preoperatively when compared to those cases in whom placental invasion was found incidentally. (Table II)

Table II: Outcome of PAS in Diagnosed and Undiagnosed Placental Invasion.

Sequel of PAS	Diagnosed placental invasion	Un diagnosed placental invasion
Need for Blood transfusion >3 pints	230(56%)	68(93%)
Peripartum hysterectomy	218 (77%)	65(89%)
Re exploration	4(0.96%)	6 (8 %)
Bladder / ureter injury	9(2.17%)	17 (23%)
Maternal mortality	0 (0%)	2 (2.7%)
TOTAL cases of PAS	414 (85%)	73 (15%)

Cesarean hysterectomy with the placenta in situ is the preferred surgical approach but uterine preservation can be done in milder forms of the adherent placenta. Lesser obstetric hysterectomies were documented in well diagnosed cases in contrast to those where placental invasions was found preoperatively. Out of these 487 patients who had PAS 283 (58%) had obstetric hysterectomy whereas conservative surgery was possible in the other 42% i.e. 204 patients. Despite full efforts done 10 patients were re-explored for continued bleeding and hemostasis had to be secured.10 out of these 6 reopened patients were those in whom uterus was left inside those in whom obstetric hysterectomy was already done. (Table III)

Table III: Hysterectomy of Conservative Surgery in Relation to Uterine Scars.

Category	Peripartum hysterectomy	Conservative surgery
Previous One Cesarean Section	3 (3%)	84(97%)
Previous two or more cesarean sections	215 (54%)	183 (46%)
Re exploration	4 (40%)	6 (60%)

Discussion

This study has enlightened that placenta previa is not uncommon and when present with a uterine scar the risk of PAS is raised by many folds. A similar relationship between placental invasion and previous surgery is also denoted by many studies. [20] this specifies the dire need for diagnosing the condition before the placenta starts to bleed and a higher index of suspicion when both placenta previa and previous scar co exist in a patient. So, the operator may have adequate reaction time.[21] There are five times raised risk of placenta previa in the previous cesarean section as compared to the unscarred uterus. [20]

Increasing incidence of PAS is attributed to improved diagnostic modalities and increased clinical risk management at the clinician's side to anticipate the condition.[21] Peripartum hysterectomy rate is also increased in PAS as the blood loss is so massive and quick that the conservative approach is difficult unless already diagnosed and inexperienced hands.[22] Now the incidence of hysterectomy for placental invasion has come to be 64%.[23]

Maternal morbidity is markedly increased in PAS because of invasion of placenta beyond endometrium deep within the myometrium and even invading the serosa into the adjacent organs. This results in life-threatening blood loss resulting in the need for four or more pints of blood to be transfused. The complications associated are devastating including massive blood loss, injury to urinary system and bowel, need for hysterectomy, need for internal iliac artery ligation, acute renal failure secondary to hypovolemia, shock ant maternal death in severe cases. Shock, post operative ventilator support and need of ICU are also increased

and so prolonged hospital stay causing psychological and financial implications. These complications were seen more in multiple scars of the uterus and they increase with an increasing number of uterine surgeries. Other studies were conducted establishing the risk of placenta accrete spectrum and its complications in association with the previous cesarean section. These also showed similar results to our study.[24] Makoha and colleagues also demonstrated markedly raised maternal morbidity due to PAS. They also studied Need for hysterectomy, injury to adjacent organs, prolonged hospital stays and post operative anemia and found all were raised in the adherent placenta. [25] Still few studies are contrary to the association.[26,27]

Peripartum hysterectomy has also peaked due to increased incidence of placental adherence and invasion. Uterine atony was the major cause of obstetric hysterectomy but over time PAS had contributed much to this increased incidence of obstetric hysterectomy. In the study period, 283 patients had obstetric hysterectomies due to placental invasion. These findings were matching with other studies who state placental invasion as a major contributor to obstetric hysterectomy. [28]

Mortality was although low but not zero. Two mortalities were reported in this study period as a sequel to PAS. In both, these patient's placental invasion was not diagnosed pre operatively. The placenta was found to be adherent when it was tried to remove following delivery of the baby resulting in massive hemorrhage and then irreversible shock. Overall morbidity and mortality was increased in cases where the antenatal diagnosis was not clear. Complications rate was lower when the antenatal diagnosis was done in a study by Warshak et al, [29] and Abuhamad.[30]

Conclusion

Undoubtedly PAS is a major risk of present-day obstetrics where the rate of cesarean sections is growing and so is the rate of PAS. Proper clinical risk stratification and pre operative diagnosis are required to lessen the grave morbidity and high mortality associated with it. Surgery done for placenta previa in a case of repeat cesarean must be timed elective operation in presence of the multidisciplinary team and to anticipate all the above mentioned complications may improve the sequel of PAS. The protocol must be set to further investigate all cases with previous uterine scar and placenta present anteriorly and low.

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