FOGSI - ICOG

Good Clinical Practice Recommendations

GCPR

Placenta Previa & Placenta Accreta Spectrum: Diagnosis & Management

Convenor – Bela Bhatt Co-Convenor – Archana Baser

Mentors – Hrishikesh D Pai, Madhuri Patel, Laxmi Shrikhande

Advisors – Sanjay Gupte, Hema Divakar

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Co-ordinator – Surekha Tayade

Imaging Science Committee

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DISCLAIMER

The recommendations for "Placenta Previa & Placenta Accreta Spectrum" have been developed, to be of assistance to obstetricians, gynecologists, consulting physicians, and general practitioners by providing guidance and recommendations for managing women with Placenta Previa & Placenta Accreta Spectrum. The recommendations included here should not be viewed as being exclusive of other concepts or as covering all legitimate strategies. The suggestions made here are not meant to dictate how a particular patient should be treated because they neither set a standard of care nor do they guarantee a particular result. To diagnose patients, choose dosages, and provide the best care possible while also taking the necessary safety precautions, clinicians must rely on their own experience and knowledge. The writers or contributors disclaim all responsibility for any harm and/or damage to people or property resulting from the use or operation of any techniques, goods, guidelines, or ideas presented in this content.

INTRODUCTION

- Placenta previa and placenta accreta spectrum (PAS) are potentially life-threatening complications of pregnancy, the incidence of which is increasing due to the increasing number of cesarean sections.
- Placenta previa is defined as a placenta developing within the lower uterine segment and graded according to the relationship and/or the distance between the lower placental edge and the internal os of the uterine cervix.
- Placenta accreta spectrum, formerly called as morbid adherent placenta, refers to the abnormal trophoblastic invasion of part or all of the placenta into the myometrium of the uterine wall and ranges from placenta accreta, placenta increta, and placenta percreta.

Even in the absence of ultrasound findings, the clinical risk factors are equally important for the diagnosis of PAS. (GRADE IA strong recommendation-High quality evidence)

So, there is a strong need to pick them up early in pregnancy to manage them well and improve the overall outcome of pregnancy.

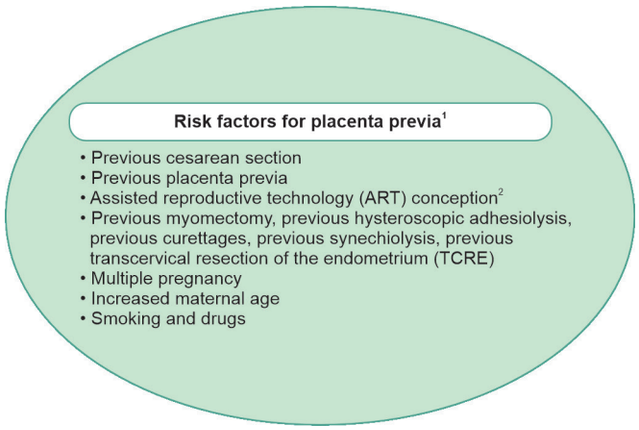
Good Clinical Practice Guidelines is an attempt to standardize the screening, diagnosis, and management of placenta previa and placenta accreta spectrum for the best possible outcome.

SCREENING AND DIAGNOSIS

Ultrasound is a very strong and useful tool to screen, diagnose pregnancies with placenta previa and PAS.

The effectiveness of ultrasound is dependent upon screening for risk factors, the quality of ultrasound, and the experience of the sonologist. Magnetic resonance imaging (MRI) may complement ultrasound in the diagnosis of PAS.

PLACENTA PREVIA



- Extra vigilance in all high-risk cases.
- Screening for placenta previa has to be universal at 18–22 weeks scan.

PLACENTA PREVIA: ULTRASONOLOGICAL DIAGNOSIS AT 18–22 WEEKS

- Diagnosis of placenta previa not to be deemed <18–20 weeks of gestation.

• Confirming the placental location is one of the vital aims of routine mid-pregnancy ultrasound by (18+6 to 21+6 weeks of gestation) by transabdominal examination.	• GPP*

OLD CLASSIFICATION OF PLACENTA PREVIA[1]

Grade	*Alternative Terminology*	*Anatomical Location of Placenta*
Grade I	Minor previa	Lower edge inside the lower uterine segment
Grade II	Marginal previa	Lower edge reaching the internal os
Grade III	Partial previa	Placenta partially covers the cervix
Grade IV	Complete previa	Placenta completely covers the cervix

NEWER CLASSIFICATION OF PLACENTA PREVIA[2,3]

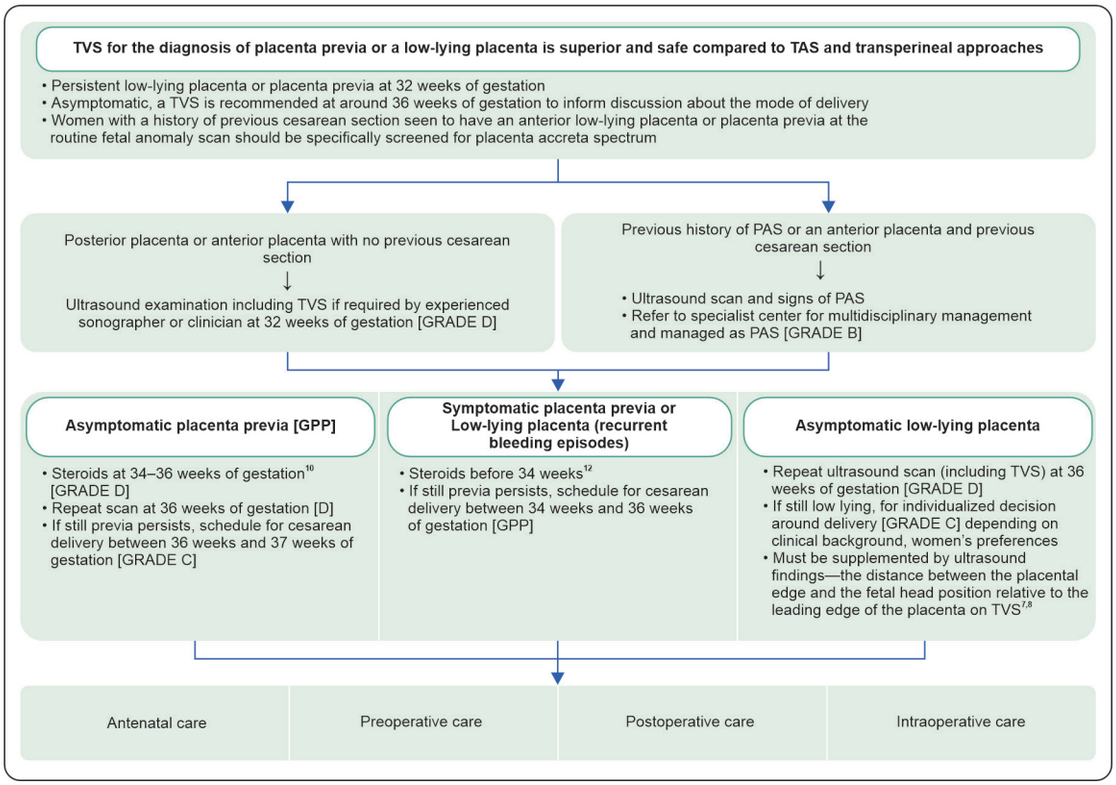
For pregnancies >16 weeks of gestation, the placenta should be reported as:

- **Placenta Previa**: Covering the internal os
- **'Low lying':** When the placental edge is less than 20 mm from the internal os
- **Normal:** When the placental edge is 20 mm or more from the internal os on transabdominal ultrasound (TAS) or transvaginal ultrasound (TVS)

- TVS reclassifies 26–60% of placentas diagnosed as low lying at the routine fetal anomaly scan.[3]
- Apparent placental 'migration' following the development of the lower uterine segment during the third trimester of pregnancy results in the resolution of the low-lying placenta in 90% of the cases before term.[4,5]
- If the placenta is thought to be low lying (less than 20 mm from the internal os) or previa (covering the os) at the routine fetal anomaly scan, a follow-up ultrasound examination including a TVS is recommended at 32 weeks of gestation to diagnose persistent low-lying placenta and/or placenta previa.

ACCURACY OF TRANSVAGINAL ULTRASOUND IN PREDICTING PLACENTA PREVIA[6]

Positive predictive value	*Negative predictive value*	*False positive*
93.3%	97.6	2.33



(A) ANTENATAL CARE[10]

Women with recurrent bleeding (symptomatic) (low-lying placenta or placenta previa)	[GPP]

- Tailor the antenatal care
- Hospitalization as per the individual woman's needs
- Antenatal Hb correction to maintain Hb >11 gm%
- Social circumstances (e.g. distance between home and hospital, transportation facilities, previous bleeding episodes, laboratory results, and willingness of receiving donor blood or blood products)

Women with asymptomatic placenta previa or a low-lying placenta in the third trimester	[GPP]

- Counsel about the risks of preterm delivery and obstetric hemorrhage
- Tailor the antenatal care as per the individual needs [GPP]

• **Role of cervical cerclage:** In order to reduce bleeding and prolong pregnancy, cerclage not recommended	[GPP]
• Prevention and treatment of anemia during the antenatal period is recommended for women with placenta previa or a low-lying placenta as for any pregnant woman	GRADE D
• **Rh negative women with history of bleeding:** Anti-D prophylaxis is recommended (300 microgram) and additional doses to be given after quantifying fetomaternal hemorrhage by Kleihauer-Betke test (if available)	
• In case of recurrent bleeding anti-D is repeated if beyond 3 weeks or assess the fetomaternal hemorrhage according to Kleihauer-Betke test (if available) • If Kleihauer-Betke test is not available, a standard dose of 300 mcgm should be given.	GRADE D

DELIVERY IS INDICATED FOR ANY OF THE FOLLOWING: • Heavy or uncontrolled bleeding • Non-reassuring results of fetal heart monitoring • Maternal hemodynamic instability	GRADE C

(B) PREOPERATIVE CARE

• Counseling and documenting informed consent of delivery with the explanation of a higher risk of massive obstetric hemorrhage and need for hysterectomy	GRADE D
• Liaison with blood transfusion unit and access to critical care	[GPP]
• Review indications for blood transfusion	[GPP]
• Note, discuss, and document if any plans to decline blood or blood products	
• Women who decline blood products and in women where the anticipated blood loss is great enough to induce anemia - Recommend cell salvage	GRADE D
• An appropriately experienced operator should carry out surgical procedure • IV line: 14–16 gauge IV cannula should be put	
• Regional anesthesia is not contraindicated • Individualized approach for anesthesia, either general or regional depending on proper case selection[11]	

(C) INTRAOPERATIVE CARE

Precisely determine placental location by preoperative and/or intraoperative ultrasonography and plan for the optimal place for uterine incision	GRADE D
Clamping the umbilical cord immediately if placenta is transected during fetal delivery to avoid excessive fetal blood loss[12]	GRADE D
Initiate pharmacological measures to control hemorrhage [C] and resort to surgical methods if persistent bleeding	GRADE C

Surgical hemostatic techniques includes:

- Oversewing the placental implantation site
- Bilateral uterine artery ligation
- Bilateral ovarian artery ligation
- Internal iliac artery ligation
- Compression sutures for atony
- Intrauterine tamponade for lower segment bleeding[9]
- Resort to hysterectomy earlier if medical and surgical measures fail [GRADE D]
- Interventional radiological techniques should also be urgently employed where possible [LEVEL 3A].

(D) POSTPARTUM CARE

• Debriefing
• Risk stratification for thromboprophylaxis
• Continued vigilance for ongoing bleeding
• Close and frequent communication between the operative team and the immediate postoperative team is strongly encouraged
• Critical care services help whenever required

PLACENTA ACCRETA SPECTRUM

Introduction: Placenta accreta spectrum (PAS), formerly called as morbid adherent placenta, refers to the abnormal trophoblastic invasion of part or all of the placenta into the myometrium of the uterine wall and ranges from placenta accreta, placenta increta, and placenta percreta.

PAS must be screened prenatally for preventing adverse outcomes.

Vital steps:

- Identification of high-risk women from a risk population [GRADE B]
- Accurate diagnosis for analyzing the degree and extent of invasion and planned management[1] [GRADE D].

DIAGNOSIS OF PAS: ROLE OF ULTRASOUND [LEVEL 1A]

Prediction • Ultrasound evaluation LEVEL 1A] [4,5]* • Clinical risk factors [GRADE B]	• Important screening and diagnostic tool [GRADE C] • The absence of ultrasound findings does not preclude a diagnosis of PAS • USG by skilled operator with experience in diagnosing PAS [GRADE C]
Women with a history of previous cesarean section with an anterior low-lying placenta or placenta previa @ routine fetal anomaly scan ↓ **Specifically screened for PAS [GRADE D]**	

- No single or combination of ultrasound signs is specific for the depth of abnormal placentation or to differentiate between adherent and invasive placentation.
- Signs of adherent and invasive placentation vary with gestational age.
- Depend on the thickness and composition of the placental bed, number of prior uterine scars, and presence of scar defects between pregnancies, depth of invasion, and the lateral extension of the villous tissue.[13]
- High degree of suspicion in selected cases, based on history and radiological features, sudden surprises during the termination of pregnancy can be avoided and suspicious cases can be carefully followed up in the second and third trimesters.[14]

USG SCREENING FOR PAS IN FIRST TRIMESTER:[11–14 WEEKS] [LEVEL 1A]

Ultrasound findings that are suggestive of adherent placenta in the first trimester.[15,16]

Ultrasound features	• Low-lying gestational sac specially at the site of a previous lower segment cesarean section (LSCS) scar • Irregular placental-myometrium interfacing gestational sac at the site of previous uterine scar • No retroplacental clear zone • Decreased retroplacental myometrial thickness (less than 1 mm) • On color Doppler imaging, intraplacental dilated vessels with high velocity (> 30 cm/s) turbulent blood flow • Increased periplacental vascularity • Bladder wall interruption.

CLINICAL AND USG SCREENING FOR PAS IN SECOND AND THIRD TRIMESTERS

History [GRADE B]	• Repeated cesarean section • Previous placenta previa • Previous uterine surgery • Maternal age over 35 years old • Smoking habit • Past history of surgery like myomectomy and curettage • Multiparity • Asherman's syndrome • Risk of placenta accreta spectrum approaches 100% if a scar pregnancy is allowed to continue
Other parameters which must raise suspicion [GRADE A]	• Abnormal results of placental biomarkers increase the risk of placenta accreta spectrum • Unexplained elevation in maternal serum alpha fetoprotein is associated with an increased risk of placenta accreta spectrum

Ultrasound features [1A]	**B MODE:** • Myometrial thinning at the placental site • Placental bulge-deviation of uterine serosa from the expected plane • Loss of bladder wall uterine serosa interface • Focal exophytic mass-placental breaking through the serosa • Multiple vascular lacunae within the placenta • Loss of the normal hypoechoic zone between the placenta and myometrium • Decreased retroplacental myometrial thickness • Abnormalities of the uterine serosa–bladder interface • Extension of placenta into myometrium, serosa, or bladder. **COLOR DOPPLER:** • Uterovesical hypervascularity • Turbulent lacunar blood flow is the most common finding of placenta accreta spectrum on color flow Doppler imaging • Increased subplacental vascularity, gaps in myometrial blood flow • Vessels bridging the placenta to the uterine margin.[17]
MAGNETIC RESONANCE IMAGING	• MRI **may complement USG** findings indicated in assessing the [GPP] 1. Depth of invasion 2. Lateral extension of myometrial invasion with posterior placentation 3. Suspecting bladder invasion • **But MRI is not mandatory:** – Sensitivity of MRI was 94.4% – Specificity was 84.0% – Dark intraplacental bands on T2-weighted imaging – Abnormal bulging of the placenta or uterus – Disruption of the zone between the uterus and the placenta – Abnormal or disorganized placental blood vessels.

ROLE OF MRI IN DIAGNOSIS [LEVEL 1B]:

- More prone to selection bias than those of ultrasonography because generally only patients with an indeterminate ultrasound examination or at very high risk of placenta accreta spectrum should undergo MRI.
- Useful for diagnosis of difficult cases, such as posterior placenta previa, and to assess the depth of invasion in suspected percreta.[18]

FOLLOW-UP PROTOCOL IN SECOND AND THIRD TRIMESTERS:

- High degree of suspicion to be made in cases where clinical and radiological features indicate a possible adherent placenta.
- Color Doppler must be performed to look for abnormal vasculature.
- The patient must be referred to a center with expertise in the management of these cases [GPP]
- MRI for further evaluation in cases with a very high degree of suspicion, intermediate ultrasound diagnosis, or cases of suspicion with posterior placenta [GRADE C][18]

MANAGEMENT OF PAS

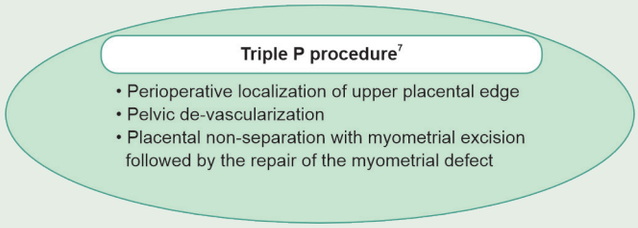
- Confirmed PAS-delivery must be scheduled at dedicated Multidisciplinary Team [LEVEL 1B]
- Building of Hb in antenatal period to maintain it above 11 gm%
- Care plan: Team-Obstetrician, anesthetist, urologist, neonatologist, interventional radiologist (subject to availability) and other surgical specialties, e.g. cancer surgeons (subject to availability) if indicated in managing invasive placentation [LEVEL 1B]
- In an emergency, the most senior clinicians available should be involved in diagnosing and managing invasive placentation.

A) PREOPERATIVE PREPARATION

- Multidisciplinary team (experienced anesthetist, obstetricians, and gynecologists) [LEVEL 1B]
- Delivered in a specialist center with immediate access to blood products, high dependency unit (HDU), and neonatal intensive care unit (NICU) by a multidisciplinary team with expertise in complex pelvic surgery [LEVEL 1B]

- Delivery planned at 35+0 to 36+6 weeks of gestation to balance the risks of fetal maturity and the risk of unscheduled delivery in the absence of risk factors for preterm delivery in women with PAS [LEVEL 1A]
- Emergency delivery plan to be formulated with the woman, along with the use of an institutional policy for the management of maternal hemorrhage in women with PAS presenting with hemorrhage [GPP]
- Consents and clear communication about the overall risks of cesarean section, specific risks of placenta accreta spectrum like massive obstetric hemorrhage, higher risk of lower urinary tract damage, the need for blood transfusion, and the risk of hysterectomy [GPP]
- In the case of massive hemorrhage, additional interventions including cell salvage and interventional radiology should be discussed [GRADE D]
- Reservations for transfusion of blood and blood products should be discussed in advance and documented [GRADE D]
- Maximization of preoperative hemoglobin values [GRADE D]
- Standard perioperative antibiotic prophylaxis
- Women diagnosed with PAS who decline donor blood transfusion should be cared for in a unit with an interventional radiology service [GRADE D]
- Course of steroids can be given 1 week prior to planned delivery or earlier if there are risks of preterm delivery, if no previous course has been given
- Choice of anesthetic technique for cesarean section for women with PAS should be decided by the experienced anesthetist conducting the procedure in consultation with the woman prior to surgery [GRADE D]
- Discussion may be necessary regarding the need to convert regional anesthesia to general anesthesia if required and women is asked to consent for the same [GRADE D]

B) INTRAOPERATIVE PREPARATION



- Choice of skin incision: Vertical midline incisions for better access, visualization and additional procedures like internal iliac ligation if required.
- Inspection of the uterus after peritoneal entry is opened is highly recommended to discern the level of placental invasion and specific placental location.
- It allows for optimizing the approach to the uterine incision for delivery and whenever possible, the incision should avoid the placenta.
- Choice of uterine incision will depend on the position of the placenta, the depth of invasion, and the parametrial extension of the PAS as assessed by ultrasound and/or MRI before delivery, visual assessment of the uterus at the time of surgery and the presenting clinical symptoms, i.e. bleeding or no bleeding.
- Resort to **cesarean section hysterectomy** with the placenta left in situ rather than attempting to separate it from the uterine wall [GRADE C]

Partial Myometrial Resection (Uterine Preserving Surgery)

- Indicated when the extent of the placenta accreta is limited in depth and surface area, and the entire placental implantation area is accessible and visualized (i.e. completely anterior, fundal or posterior without deep pelvic invasion) [GRADE C].
- Facilities for close monitoring of volume status, urine output, ongoing blood loss, and overall hemodynamics.
- Frequent and ongoing communication between surgical, anesthesia, and intraoperative nursing staff are recommended to ensure all continuously apprised of current status, ongoing blood loss, and expectations about future blood loss.
- **Sparse evidence to support uterus preserving surgery in PAS and to be done only at tertiary care center.**
- Informed consent about the high risk of peripartum and secondary complications, including the need for secondary hysterectomy [GRADE D].

Indian Evidence[19] [GPP]

- PAC (Paily aorta clamp*) had been used in resource-limited settings; 33 women of varying grades of PAS had positive surgical outcomes with no clamp-related adverse events. The study highlighted that over-the-peritoneum clamping of the abdominal aorta is an effective and safe hemostatic technique we propose in low-resource settings, pending further larger, prospective trials. 5PAC Paily et al.2022 .pdf

PLACENTA PERCRETA: Surgical Approaches

1. Primary hysterectomy following delivery of the fetus, without attempting placental separation [GRADE D]
2. Delivery of the fetus avoiding the placenta, with repair of the incision leaving the placenta in situ [GRADE D]
3. Delivery of the fetus without disturbing the placenta, followed by partial excision of the uterine wall (placental implantation site) and repair of the uterus [GRDE D]
4. Delivery of the fetus without disturbing the placenta, and leaving it in situ, followed by elective secondary hysterectomy 3–7 days following the primary procedure [GRADE D]

- Owing to unacceptability of elective peripartum hysterectomy to women wish to have uterine preservation or deemed unfit by the surgical team, it is recommended to leave the placenta in situ [GRADE D]
- If the placenta is left in situ, arrangements must be in place to ensure regular review, ultrasound examination, and access to emergency care facilities if the women experience complications such as bleeding or infection [GRADE D]

- MTX adjuvant therapy: NOT TO BE USED for expectant management[8] [GRADE C]

Incidental finding of placenta percreta on opening the abdomen during elective repeat cesarean section where both mother and baby are stable → Delay the cesarean section until

↓

- Appropriate staff and resources are assembled and adequate blood products are available
- This may involve the closure of the maternal abdomen and urgent transfer to a specialist unit for delivery [GPP]

C) POSTOPERATIVE CARE

- Debriefing
- Assurance that critical care services are engaged and available for postoperative care
- Close and frequent communication between the operative team and the immediate postoperative team is strongly encouraged
- Thromboprophylaxis after risk stratification
- Continued vigilance for ongoing bleeding is particularly important and should have a low threshold for reoperation in cases of suspected ongoing bleeding

CONCLUSION

- Early history-based and ultrasound-based screening.
- Proper clinical as well as ultrasound-based follow-up.
- Timely referral to tertiary center with blood bank and NICU facility.
- Multidisciplinary team approach by the obstetrician, skilled sonologist, interventional radiologist, surgical team of expert obstetricians, and neonatologist.
- Delivery at tertiary center with all back-up facilities can improve the maternal and perinatal outcomes in cases of placenta previa and placenta accreta spectrum.
- Primary prevention by reducing number of cesarean sections can go a long way in reducing the numbers of PAS.

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