

Diagnosis and Management of Placenta Previa

This guideline has been reviewed by the Clinical Obstetrics Committee and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

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Abstract

Objective: To review the use of transvaginal ultrasound for the diagnosis of placenta previa and recommend management based on accurate placental localization.

Options: Transvaginal sonography (TVS) versus transabdominal sonography for the diagnosis of placenta previa; route of delivery, based on placenta edge to internal cervical os distance; in-patient versus out-patient antenatal care; cerclage to prevent bleeding; regional versus general anaesthesia; prenatal diagnosis of placenta accreta.

Outcome: Proven clinical benefit in the use of TVS for diagnosing and planning management of placenta previa.

Evidence: MEDLINE search for "placenta previa" and bibliographic review.

Benefits, Harms, and Costs: Accurate diagnosis of placenta previa may reduce hospital stays and unnecessary interventions.

Recommendations:

1. Transvaginal sonography, if available, may be used to investigate placental location at any time in pregnancy when the placenta is thought to be low-lying. It is significantly more accurate than transabdominal sonography, and its safety is well established. (11–2A)

2. Sonographers are encouraged to report the actual distance from the placental edge to the internal cervical os at TVS, using standard terminology of millimetres away from the os or millimetres of overlap. A placental edge exactly reaching the internal os is described as 0 mm. When the placental edge reaches or overlaps the internal os on TVS between 18 and 24 weeks' gestation (incidence 2–4%), a follow-up examination for placental location in the third trimester is recommended. Overlap of more than 15 mm is associated with an increased likelihood of placenta previa at term. (II-2A)
 3. When the placental edge lies between 20 mm away from the internal os and 20 mm of overlap after 26 weeks' gestation, ultrasound should be repeated at regular intervals depending on the gestational age, distance from the internal os, and clinical features such as bleeding, because continued change in placental location is likely. Overlap of 20 mm or more at any time in the third trimester is highly predictive of the need for Caesarean section (CS). (III-B)
 4. The os–placental edge distance on TVS after 35 weeks' gestation is valuable in planning route of delivery. When the placental edge lies > 20 mm away from the internal cervical os, women can be offered a trial of labour with a high expectation of success. A distance of 20 to 0 mm away from the os is associated with a higher CS rate, although vaginal delivery is still possible depending on the clinical circumstances. (II-2A)
 5. In general, any degree of overlap (> 0 mm) after 35 weeks is an indication for Caesarean section as the route of delivery. (II-2A)
 6. Outpatient management of placenta previa may be appropriate for stable women with home support, close proximity to a hospital, and readily available transportation and telephone communication. (II-2C)
 7. There is insufficient evidence to recommend the practice of cervical cerclage to reduce bleeding in placenta previa. (III-D)
 8. Regional anaesthesia may be employed for CS in the presence of placenta previa. (II-2B)
 9. Women with a placenta previa and a prior CS are at high risk for placenta accreta. If there is imaging evidence of pathological adherence of the placenta, delivery should be planned in an appropriate setting with adequate resources. (II-2B)
- Validation:** Comparison with Placenta previa and placenta previa accreta: diagnosis and management. Royal College of Obstetricians and Gynaecologists, Guideline No. 27, October 2005.

The level of evidence and quality of recommendations are described using the criteria and classifications of the Canadian Task Force on Preventive Health Care (Table).

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Key Words: Placenta previa, Caesarean section, transvaginal ultrasonography, low-lying placenta

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Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care

Quality of Evidence Assessment*	Classification of Recommendations†
I: Evidence obtained from at least one properly randomized controlled trial	A. There is good evidence to recommend the clinical preventive action
II-1: Evidence from well-designed controlled trials without randomization	B. There is fair evidence to recommend the clinical preventive action
II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group	C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making
II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	D. There is fair evidence to recommend against the clinical preventive action
III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	E. There is good evidence to recommend against the clinical preventive action
	I. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

*The quality of evidence reported in these guidelines has been adapted from the Evaluation of Evidence criteria described in the Canadian Task Force on the Periodic Preventive Health Exam Care.⁵⁹

†Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the Canadian Task Force on the Periodic Preventive Health Exam Care.⁵⁹

INTRODUCTION

Placenta previa is defined as a placenta implanted in the lower segment of the uterus, presenting ahead of the leading pole of the fetus. It occurs in 2.8/1000 singleton pregnancies and 3.9/1000 twin pregnancies¹ and represents a significant clinical problem, because the patient may need to be admitted to hospital for observation, she may need blood transfusion, and she is at risk for premature delivery. The incidence of hysterectomy after Caesarean section (CS) for placenta previa is 5.3% (relative risk compared with those undergoing CS without placenta previa is 33).² Perinatal mortality rates are three to four times higher than in normal pregnancies.^{3,4}

The traditional classification of placenta previa describes the degree to which the placenta encroaches upon the cervix in labour and is divided into low-lying, marginal, partial, or complete placenta previa.⁵ In recent years, publications have described the diagnosis and outcome of placenta previa on the basis of localization, using transvaginal sonography (TVS) when the exact relationship of the placental edge to the internal cervical os can be accurately measured. The increased prognostic value of TVS diagnosis has rendered the imprecise terminology of the traditional classification obsolete.⁶ This guideline describes the current diagnosis and management of placenta previa and is based largely on studies using TVS.

DIAGNOSIS OF PLACENTA PREVIA

Transvaginal sonography is now well established as the preferred method for the accurate localization of a low-lying placenta. Sixty percent of women who undergo transabdominal sonography (TAS) may have a reclassification of placental position when they undergo TVS.⁷⁻¹⁰ With TAS, there is poor visualization of the posterior placenta,¹¹ the fetal head can interfere with the visualization of the lower segment,¹² and obesity¹³ and underfilling or overfilling of the bladder^{14,15} also interfere with accuracy. For these reasons, TAS is associated with a false positive rate for the diagnosis of placenta previa of up to 25%.¹⁶ Accuracy rates for TVS are high (sensitivity 87.5%, specificity 98.8%, positive predictive value 93.3%, negative predictive value 97.6%), establishing TVS as the gold standard for the diagnosis of placenta previa.¹⁷ The only randomized trial to date comparing TVS and TAS confirmed that TVS is more beneficial.¹⁸ TVS has also been shown to be safe in the presence of placenta previa,^{17,19} even when there is established vaginal bleeding. Magnetic resonance imaging (MRI) will also accurately image the placenta and is superior to TAS.²⁰ It is unlikely that it confers any benefit over TVS for placental localization, but this has not been properly evaluated. Furthermore, MRI is not readily available in most units.

Recommendation

1. Transvaginal sonography, if available, may be used to investigate placental location at any time in pregnancy when the placenta is thought to be low-lying. It is

significantly more accurate than transabdominal sonography, and its safety is well established. (II-2A)

PREDICTION OF PLACENTA PREVIA AT DELIVERY

The occurrence of placenta previa is common in the first half of pregnancy, and its persistence to term will depend on the gestational age and the definition employed for the exact relationship of the internal cervical os to the placental edge on TVS.^{21–26} In this guideline, the following terminology is recommended to describe this relationship: when the placental edge does not reach the internal os, the distance is reported in millimetres away from the internal os; when the placental edge overlaps the internal os by any amount, the distance is described as millimetres of overlap. A placental edge that exactly reaches the internal os is described by a measurement of 0 mm.

For a placental edge reaching or overlapping the internal os, Mustafa et al.²¹ found in a longitudinal study an incidence of 42% between 11 and 14 weeks, 3.9% between 20 and 24 weeks, and 1.9% at term. With overlap of 23 mm between 11 and 14 weeks, they estimated that the probability of placenta previa at term was 8%. Similarly, Hill et al.²² reported an incidence of 6.2% for a placenta extending over the internal os between 9 and 13 weeks. In their series of 1252 patients, 20 (1.6%) had overlap of the placental edge of 16 mm or more, and only 4 of these had placenta previa persisting to term (0.3%). Two additional studies that have examined various distances of overlap between 9 and 16 weeks^{23,24} agreed that persistence of placenta previa is extremely unlikely if the degree of placental overlap is no more than 10 mm. Two studies examined cut-off values at 18 to 23 weeks' gestation.^{25,26} These found a similar incidence of the placenta reaching or overlapping the internal os of up to 2%, and overall less than 20% of these persisted as placenta previa. The likelihood of persistent placenta previa was effectively zero when the placental edge reached but did not overlap the os (0 mm) and increased significantly beyond 15 mm overlap such that a distance of > 25 mm overlap had a likelihood of placenta previa at delivery of between 40% and 100%.

The process of placental "migration" or relative upward shift of the placenta due to differential growth of the lower segment is continuous into the late third trimester.^{15,18,27} Of 26 patients scanned at an average of 29 weeks' gestational age when the placenta lay between 20 mm away from the internal os and 20 mm of overlap, only 3 (11.5%) required CS for placenta previa at delivery. An average migration rate of > 1 mm per week was highly predictive of a normal outcome. An overlap of > 20 mm after 26 weeks was predictive of the need for CS.²⁷ Predanic et al.²⁸ have subsequently published similar results.

Transperineal or translabial ultrasound (using a transabdominal probe) can also improve upon the diagnostic accuracy of TAS and may be a useful alternative when TVS is not available.²⁹

Recommendations

2. Sonographers are encouraged to report the actual distance from the placental edge to the internal cervical os at TVS, using standard terminology of millimetres away from the os or millimetres of overlap. A placental edge exactly reaching the internal os is described as 0 mm. When the placental edge reaches or overlaps the internal cervical os on TVS between 18 and 24 weeks' gestation (incidence 2–4%), a follow-up examination for placental location in the third trimester is recommended. Overlap of more than 15 mm is associated with an increased likelihood of placenta previa at term. (II-2A)
3. When the placental edge lies between 20 mm away from the internal os and 20 mm overlap after 26 weeks' gestation, ultrasound should be repeated at regular intervals depending on the gestational age, distance from the internal os, and clinical features such as bleeding, because continued change in placental location is likely. Overlap of 20 mm or more at any time in the third trimester is highly predictive of the need for CS. (III-B)

ROUTE OF DELIVERY AT TERM

The need for CS at term is predicated upon the os to placental edge distance and clinical features (e.g., presence of unstable lie and/or bleeding). Five studies have examined the likelihood of CS for placenta previa on the basis of distance to the placental edge on the last ultrasound prior to delivery.^{6,27–31} The last scan was performed at a mean of 35 to 36 weeks' gestational age, and a distance of > 20 mm away from the os was associated with a high likelihood of vaginal delivery (range 63–100%). It has been suggested that this cut-off distance of > 20 mm away from the os should be defined as a low-lying placenta, rather than a placenta previa, in order to avoid the bias of physicians performing elective section based on the report of a placenta previa.³⁰ These cases can be managed in the high expectation of a vaginal delivery.

Between 20 mm and 0 mm away from the os on the last scan, CS for placenta previa varies from approximately 40% to 90% and may be driven by the exact distance from the os and physicians' prior knowledge of the ultrasound finding.^{28,30,31} In this latter group, trial of labour may be appropriate in the absence of an unstable lie or bleeding,³⁰ although more data in the form of prospective studies are required on the likelihood of antepartum and intrapartum bleeding.

When the placenta overlaps the os by any amount on the last scan prior to delivery, CS is required in all cases^{27–31}; this was previously defined as “complete placenta previa.”

Recommendations

4. The os–placental edge distance on TVS after 35 weeks' gestation is valuable in planning route of delivery. When the placental edge lies > 20 mm away from the internal cervical os, women can be offered a trial of labour with a high expectation of success. A distance of 20 to 0 mm away from the os is associated with a higher CS rate, although vaginal delivery is still possible depending on the clinical circumstances. (II-2A)
5. In general, any degree of overlap (> 0 mm) after 35 weeks is an indication for Caesarean section as the route of delivery. (II-2A)

INPATIENT VERSUS OUTPATIENT MANAGEMENT

There has been one small published randomized trial³² that explored home versus hospital management of women with placenta previa. Twenty-seven women were randomized to bed rest with minimal ambulation in hospital, and 26 women were discharged home. Recurrent bleeding occurred in 62% of subjects. Overall, there was no difference in any major outcome, and there was a significant saving of days in hospital in the outpatient group. A number of retrospective reviews have also examined this question,^{33–35} and the results of these trials also support the use of outpatient management for stable patients. However, it was found that the clinical outcomes for placenta previa are highly variable and cannot be predicted confidently from antenatal events,³² although the degree of previa may be a guide to the likelihood of complications.³⁶ Overall, the total number of women studied was small, and the statistical power of these studies to address the issue of maternal and neonatal safety was very limited. Further research is necessary to make firm conclusions, and conservative in-hospital management is the appropriate approach for women with bleeding.

Recommendation

6. Outpatient management of placenta previa may be appropriate for stable women with home support, close proximity to a hospital, and readily available transportation and telephone communication. (II-2C)

CERVICAL CERCLAGE

The benefit of cervical cerclage in the antenatal management of placenta previa has been examined in a systematic review.³⁷ Two trials were identified.^{38,39} A total of 64 women were randomized, and in one study³⁸ there was a reduction in the risk of delivery before 34 weeks or the birth

of the baby weighing less than 2000 g. However, randomization in this trial was by birth date, and analysis was by treatment received not intention to treat.

Recommendation

7. There is insufficient evidence to recommend the practice of cervical cerclage to reduce bleeding in placenta previa. (III-D)

METHOD OF ANAESTHESIA FOR CAESAREAN SECTION

Anaesthesiologists are divided in their opinions regarding the safest method of anaesthesia for CS with placenta previa.⁴⁰ Two retrospective studies conclude that regional anaesthesia is safe,^{41,42} and one small randomized trial suggests that epidural anaesthesia is superior to general anaesthesia with regard to maternal hemodynamics.⁴³ When prolonged surgery is anticipated in women with prenatally diagnosed placenta accreta, general anaesthesia may be preferable, and regional analgesia could be converted to general anaesthesia if undiagnosed accreta is encountered.⁴¹

Recommendation

8. Regional anaesthesia may be employed for CS in the presence of placenta previa. (II-2B)

PLACENTA PREVIA AND PLACENTA ACCRETA

The association between prior CS, placenta previa, and placenta accreta (pathological adherence of the placenta) is well recognized. The incidence of placenta previa climbs with the number of prior CS,^{44,45} and there is a suggestion that the incidence of placenta previa is rising because of the increasing CS rate.⁴⁶ The mechanism of causation of previa by a previous scar is poorly understood, but it may be due to reduced differential growth of the lower segment resulting in less upward shift in placental position as pregnancy advances.^{47,48} Certainly the increasing CS rate is driving the increasing rate of placenta accreta, which now stands at 1:2500 deliveries.⁴⁶ The relative risk of placenta accreta in the presence of placenta previa is 1:2065, which is considerably higher than the risk for women who have a normally situated placenta.⁴⁶ The risk of placenta accreta in the presence of placenta previa increases dramatically with the number of previous CS, with a 25% risk for one prior CS, and more than 40% for two prior CS.^{45,49} Placenta accreta is a significant condition with high potential for hysterectomy, and a maternal death rate reported at 7%. Prenatal diagnosis may be beneficial in preparing for delivery.⁵⁰ A number of imaging techniques, including ultrasonography,⁵¹ colour Doppler,^{52,53} and MRI,^{54,55} are helpful in making a prenatal diagnosis of placenta accreta. Conservative management of placenta accreta with preservation of the uterus is a therapeutic option. Case series^{56–58} report successes with leaving

the placenta in-situ and performing uterine artery embolization.

Recommendation

9. Women with a placenta previa and a prior CS are at high risk for placenta accreta. If there is imaging evidence of pathological adherence of the placenta, delivery should be planned in an appropriate setting with adequate resources. (II-2B)

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