A Multidisciplinary Checklist for Management of Suspected Placenta Accreta

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Abstract

Rates of abnormally invasive placentation have been escalating. The condition requires meticulous planning to ensure safety at delivery. Although placenta accreta remains the most common reason for Caesarean hysterectomy in developed nations, medical and surgical therapies have allowed fertility preservation. Most planning strategies start with risk factor assessment and diagnostic imaging. Early planning of arrangements for antepartum and intrapartum management is preferable to late planning, when emergency situations are more likely to occur. Based on maternal and fetal morbidities, and published evidence of factors that may diminish these risks, we have developed a checklist to aid the antepartum and intrapartum management of potentially challenging cases of invasive placentation or to aid in considering tertiary care consultation and transfer. The proposed checklist may best benefit physicians working in primary and secondary levels of care in Canada. Ideally, this checklist would be available in electronic form, with alerts as needed; a copy of the checklist should be kept in the patient's medical chart, with periodic updates.

Résumé

Les taux de placentation anormalement invasive augmentent en flèche. La présence d'une telle pathologie nécessite la mise en œuvre d'une planification méticuleuse pour assurer la sûreté au moment de l'accouchement. Bien que le placenta accreta demeure la raison la plus courante de procéder à une hystérectomie par césarienne au sein des pays développés, la mise en œuvre de traitements médicaux et chirurgicaux ont permis la préservation de la fertilité. La plupart des stratégies de planification débutent par une évaluation des facteurs de risque et la tenue d'une imagerie diagnostique. Il est préférable de procéder rapidement à la planification des dispositions de la prise en charge antepartum et intrapartum plutôt que de la remettre à plus tard (lorsque les situations d'urgence sont plus susceptibles de se manifester). En fonction des morbidités maternelles et fœtales et des données publiées quant aux facteurs pouvant atténuer ces risques, nous avons élaboré une liste de vérification visant à faciliter la prise en charge antepartum et intrapartum des cas potentiellement difficiles de placentation invasive ou, encore, à faciliter la mise en œuvre d'une consultation et d'un transfert en soins tertiaires. Les médecins œuvrant au sein d'établissements de soins primaires et secondaires au Canada pourraient être ceux qui seraient à même de tirer le plus d'avantages de la liste de vérification proposée. Idéalement, cette liste de vérification serait offerte sous forme électronique et s'accompagnerait d'alertes, au besoin; un exemplaire de la liste de vérification devrait être conservé dans le dossier médical de la patiente et faire l'objet de mises à jour périodiques.

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INTRODUCTION

Rates of invasive placentation have been escalating over the past three decades, from 1 in 2510 noted in a large centre between 1985 and 1994[1] to the recently reported 1 in 533.[2] In 2009, Shellhaas et al. showed that despite rising rates of invasive placentation, rates of Caesarean hysterectomy have declined modestly in the past decade.[3] Medical and surgical therapies have been developed to maximize conservative management and preservation of fertility in these cases. Nonetheless, placenta accreta remains the most common reason for Caesarean hysterectomy in developed countries.[3,4] The increasing incidence of Caesarean section, with its possible complications in the presence of aberrant placentation,[5] requires that the health care team be adequately prepared for unforeseen developments. Preoperative planning strategies are paramount for improving outcomes.

Gawande has shown how a simple surgical checklist applied in both developed and developing nations significantly reduced the frequency of major postoperative complications in different patient populations.[6] Because of the serious morbidity and risk of mortality imposed by obstetric hemorrhage, patient safety initiatives have recently been developed, including standardized protocols and rapid response teams.[7–10] Duff recently proposed an evidence-based eight-item checklist to enable obstetricians to reduce major complications associated with Caesarean section, including endometritis, wound infection, wound disruption, thrombophlebitis, and uterine scar dehiscence.[11]

We propose the use of a checklist for planning the antenatal and intrapartum management of cases suspected of abnormally invasive placentation (Table). We believe that our proposed checklist will be of greatest benefit to Canadian physicians working in primary and secondary care. Ideally, the checklist would be available in electronic form, with warning flags as needed; a copy should be kept in the patient's medical chart, allowing periodic updates as delivery approaches. By providing such an outline for antenatal and intrapartum management this checklist should, depending on the availability of resources in smaller hospital centres, help initiate tertiary care consultation or transfer of care before critical developments occur.

PERTINENT CLINICAL HISTORY

The risk of abnormal placentation increases with the number of prior Caesarean sections: the risk is approximately one in 50 after one CS and increases to one in two after five.[12] Uterine scarring may predispose to placental implantation in the lower segment, giving rise to placenta previa. This is due to the relatively poor decidualization and is associated with a thin or absent decidua basalis.[13]

The clinical history should always include other factors that can contribute to uterine scarring, such as prior uterine curettage, myomectomy, and manual removal of the placenta.[14] The incidence of abnormal placentation in patients with gestational trophoblastic disease is not known.[12]

Although obesity is not a risk factor for placenta accreta, increased maternal body mass imposes intraoperative and postoperative risks of morbidity and mortality.

ULTRASOUND AND DETAILS OF PLACENTATION

Prenatal diagnosis of suspected placenta accreta is critical for optimizing maternal/fetal management and outcome. Although not all women with abnormally invasive placentation found at delivery have antecedent risk factors, those known to be at risk warrant careful imaging in a centre with experience in its diagnosis.[15] Warshak et al.[15] have shown that the excess morbidity and mortality associated with placenta accreta may not only reflect the condition itself, but may also be a result of suboptimal diagnostic imaging and subsequent resource planning. Pelvic sonography has held a primary role in screening women at risk for placenta accreta.[16–19] Ultrasound signs associated with placenta accreta include (a) absent of echolucency between the uterus and placenta, (b) placental lacunae, (c) interrupted uterine wall–bladder interface, and (d) placental focal exophytic mass.[20] Colour flow Doppler ultrasound has also been helpful in sonographic assessment.[21] Most of these sonographic signs may be detected at as early as 15 to 20 weeks,[21] advocating early second trimester screening in women at risk. Opinions of the sonographic accuracy of diagnosing placenta accreta have been mixed, with reported sensitivity ranging from 33% to 93% and specificity from 71% to 100%.[16,22–25]

MAGNETIC RESONANCE IMAGING

The applicability of MRI for the diagnosis of placenta accreta is still debated,[16,25,26] although MRI appears to be effective at detecting the depth of invasion of placenta accreta.[27] Until more definitive data become available, we agree with the authors who recommend performing MRI when ultrasound findings are uncertain.[16,24,26,28] Use of MRI is included in our checklist for consideration in individual cases.

CONSULTATIONS

Eller et al. reported a significant reduction in maternal morbidity associated with placenta accreta when care and delivery were instituted in a tertiary care hospital rather than elsewhere.[29] Patients managed in a multidisciplinary care setting had significant reductions in large-volume blood transfusions ($\geq$ 4 units of packed red blood cells) and need for reoperation for bleeding complications within seven days of delivery. These authors also showed significant reductions in composite early morbidity in terms of prolonged maternal admission to ICU (over 24 hours), large-volume blood transfusion, coagulopathy (platelet concentration $\leq 100 \times 10^9$/L, INR $\geq$ 1.2, or serum fibrinogen $\leq$ 2 g/L), ureteral injury, and early reoperation. ICU availability is a crucial component of our checklist; Esakoff et al. found significantly more patients with placenta accreta requiring ICU admission than patients with placenta previa alone.[22] It is therefore justifiable either to care for these clinically