BRITISH JOURNAL OF HOSPITAL MEDICINE

ANAESTHETIC AND CRITICAL CARE DILEMMA

Beyond the Scalpel: Unravelling the Anaesthetic Maze in Elective C-Section for Placenta Accreta Spectrum

Suraj Shah[1,*], Yasser Mandour[1]

[1]Department of Anaesthesia, University College London Hospital NHS Foundation Trust, London, UK
*Correspondence: suraj.shah2@nhs.net (Suraj Shah)

Abstract

Placenta accreta spectrum (PAS) disorders pose significant challenges in the anaesthetic management of elective caesarean section. This article explores the anaesthetic considerations for patients with PAS focusing on the optimal techniques to ensure maternal safety and surgical success. The analysis examines the advantages and disadvantages of general anaesthesia, neuraxial anaesthesia, and combined techniques to inform considerations of anaesthetic management in this high-risk population.

Key words: placenta accreta spectrum; anaesthetic management; caesarean section; general anaesthesia; neuraxial anaesthesia

Submitted: 7 July 2023 Revised: 15 September 2024 Accepted: 18 October 2024

Introduction

Placenta accreta spectrum (PAS) is a rare and potentially life-threatening obstetric condition in which the placental trophoblastic tissue abnormally attaches to into the myometrium of the uterine wall. Its severity is graded by extent of invasion where the placenta, in accreta, is adherent to myometrium; increta, invades further into myometrium; and percreta, invades through to serosa and surrounding organs. This results typically in difficulty in detachment of the placenta after delivery of the baby and therefore presents a risk of severe uncontrolled haemorrhage (Silver and Branch, 2018). Indeed, worldwide, PAS is one of the leading causes of postpartum haemorrhage and is the most common indication for peripartum hysterectomy (Huque et al, 2018). Due to this high-risk nature, elective caesarean section (CS) is the preferred mode of delivery for women (Jauniaux et al, 2019).

However, for the anaesthetist, there is a dilemma on choosing the most appropriate anaesthetic technique. The choices available are providing solely a general anaesthetic (GA) or neuraxial anaesthesia (NA) or alternatively a combination of both. Here, the authors explore the advantages and disadvantages of the anaesthetic techniques for which there is no current agreed anaesthetic approach for managing patients with PAS.

General Anaesthesia

GA is only absolutely indicated for maternal request and if NA is contraindicated (e.g., local anaesthetic allergy). GA has several advantages for the elective CS

How to cite this article:
Shah S, Mandour Y. Beyond the Scalpel: Unravelling the Anaesthetic Maze in Elective C-Section for Placenta Accreta Spectrum. Br J Hosp Med. 2024. https://doi.org/10.12968/hmed.2023.0243

in PAS. Firstly, is that it not only provides a secure airway for a high-risk procedure but also secondly results in maternal immobility and muscle relaxation delivering optimal surgical conditions (Reale and Farber, 2022). Commencing a GA from the outset eliminates the need for emergency conversion to GA if a NA procedure fails. If a significant risk of major haemorrhage is surgically pre-empted, a GA is advantageous over NA as it could be distressing to the mother to experience this emergency awake (Snegovskikh et al, 2011). It also allows the multidisciplinary team required to focus on managing the emergency with the patient asleep.

However, opting for a GA carries several disadvantages. In the obstetric population there is a known higher risk of difficult airways in the maternal population and awareness under GA (Pandit et al, 2014). In addition, there is increased risk of Mendelson syndrome—the aspiration of gastric contents and subsequent chemical pneumonitis (Salik and Doherty, 2023). These risks are all negated in opting for a purely NA technique. GA for CS has no inherent post operative analgesic profile and results typically in higher levels of postoperative pain than NA with patients requiring an opioid patient-controlled analgesia (Neall et al, 2022). Additionally, GA results in delayed initial maternal-baby bonding and the neonate may be exposed to the effects of anaesthetic agents, leading to respiratory depression and delayed neonatal adaptation (Reale and Farber, 2022).

Neuraxial Anaesthesia

NA, which includes spinal, epidural, and combined spinal-epidural (CSE) techniques, involves injecting local anaesthetic into the respective subarachnoid or epidural space and both with CSE. NA offers several advantages, such as provision of excellent maternal pain relief post operatively with centrally acting opioids administered, minimal maternal respiratory depression, and preservation of maternal consciousness during surgery thus allowing for early maternal-baby bonding (Reale and Farber, 2022). Choosing an NA technique depends on various factors, including the anticipated duration of the procedure and the expertise of the anaesthetist and obstetrician (Jauniaux et al, 2019).

However, NA has limitations. In cases of CS for PAS, major haemorrhage can frequently occur, maintaining adequate anaesthesia, pain control, optimal surgical conditions and abdominal wall relaxation may be inadequate with NA and thus an emergency conversion to GA is required (Snegovskikh et al, 2011). When hysterectomy is required in PAS, conversion to GA has been described in 21% of cases and has also required higher rate of packed red cell transfusion too (Markley et al, 2018). Conversion to GA will involve securing the airway which may be more difficult and potentially fatal in the emergency setting of worsening airway oedema from large-volume resuscitation due to massive haemorrhage (Snegovskikh et al, 2011). Additionally, coagulopathy in the presence of an epidural catheter can increase the risk of epidural hematoma and subsequent paralysis, although this risk is rare (Sage, 1990).

Combination of General and Neuraxial Anaesthesia

A combination of GA and NA, known as a "two-step technique", is sometimes considered and involves using NA (spinal or epidural) until the baby is delivered then followed by a controlled conversion to GA with the mother and multidisciplinary team aware (Snegovskikh et al, 2011). This is sometimes chosen as it combines the advantages of both approaches. NA allows the mother to witness her child's birth, helps facilitate the initial bond and provides analgesia which will act post operatively too. Subsequently moving to a controlled conversion to a GA, with the mother and surgeons agreeing when ready to do so, ensures complete maternal immobility and muscle relaxation during the critical phase of placental removal (Reale and Farber, 2022). Undertaking this conversion however, requires careful coordination between the anaesthetist and the surgical team, and potential complications associated with both techniques as described previously must be considered (Jauniaux et al, 2019).

Conclusion

Deciding the most appropriate anaesthetic technique for elective CS in pregnant women with PAS requires careful consideration of the advantages and disadvantages of each approach. GA provides optimal surgical conditions but carries risks such as airway complications and neonatal exposure to anaesthetic agents. NA offers excellent pain relief and preserves maternal consciousness but may be challenging during major haemorrhage. The combination of GA and NA combines the benefits of both techniques but requires coordination and careful patient selection. Ultimately, the decision should be made based on the individual patient's clinical condition and wishes, the expertise of the surgeon and anaesthetist and the availability of resources but mindfully always keeping the mother at the core of the clinical decision.

Availability of Data and Materials

All the data of this study are included in this article.

Author Contributions

SS and YM designed the article. SS drafted and submitted the manuscript. Both authors contributed to important editorial changes in the manuscript. Both authors read and approved the final manuscript. Both authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest.

References

Huque S, Roberts I, Fawole B, Chaudhri R, Arulkumaran S, Shakur-Still H. Risk factors for peripartum hysterectomy among women with postpartum haemorrhage: analysis of data from the WOMAN trial. BMC Pregnancy Childbirth. 2018; 18: 186. https://doi.org/10.1186/s12884-018-1829-7

Jauniaux ERM, Alfirevic Z, Bhide AG, Belfort MA, Burton GJ, Collins SL, et al. Placenta Praevia and Placenta Accreta: Diagnosis and Management. Green-top Guideline No. 27a. BJOG. 2019; 126: e1–e48. https://doi.org/10.1111/1471-0528.15306

Markley JC, Farber MK, Perlman NC, Carusi DA. Neuraxial Anesthesia During Cesarean Delivery for Placenta Previa With Suspected Morbidly Adherent Placenta: A Retrospective Analysis. Anesthesia and Analgesia. 2018; 127: 930–938. https://doi.org/10.1213/ANE.0000000000003314

Neall G, Bampoe S, Sultan P. Analgesia for Caesarean section. BJA Education. 2022; 22: 197–203. https://doi.org/10.1016/j.bjae.2021.12.008

Pandit JJ, Andrade J, Bogod DG, Hitchman JM, Jonker WR, Lucas N, et al. 5th National Audit Project (NAP5) on accidental awareness during general anaesthesia: summary of main findings and risk factors. British Journal of Anaesthesia. 2014; 113: 549–559. https://doi.org/10.1093/bja/aeu313

Reale SC, Farber MK. Management of patients with suspected placenta accreta spectrum. BJA Education. 2022; 22: 43–51. https://doi.org/10.1016/j.bjae.2021.10.002

Sage DJ. Epidurals, spinals and bleeding disorders in pregnancy: a review. Anaesthesia and Intensive Care. 1990; 18: 319–326. https://doi.org/10.1177/0310057X9001800307

Salik I, Doherty TM. Mendelson Syndrome. StatPearls. 2023. Available at: https://www.ncbi.nlm.nih.gov/books/NBK539764 (Accessed: 10 September 2024).

Silver RM, Branch DW. Placenta Accreta Spectrum. The New England Journal of Medicine. 2018; 378: 1529–1536. https://doi.org/10.1056/NEJMcp1709324

Snegovskikh D, Clebone A, Norwitz E. Anesthetic management of patients with placenta accreta and re-suscitation strategies for associated massive hemorrhage. Current Opinion in Anesthesiology. 2011; 24: 274–281. https://doi.org/10.1097/ACO.0b013e328345d8b7