Laparotomy for ruptured appendicitis in the third trimester of pregnancy

A.Violaris, R. Hryniv, J. Westwood, K.Brown → Anaesthetic department, Princess of Wales Hospital

Introduction

Non obstetric surgery during pregnancy is complicated by the need to balance the clinical requirements of two patients during each case. Understanding the changes in maternal physiology and how that can affect the conduct of anaesthesia is of utmost importance to ensure the safe care of both the mother and foetus during these cases. (1)
Non obstetric surgery during pregnancy is common, occurring in between 0.75% and 2% of all patients and acute appendicitis is the most common pathology identified in these cases, however experience of these cases in non specialist centres will be limited. (2)
We present a case of a ruptured appendicitis requiring emergency laparotomy during the third trimester at a district general hospital

Challenges of Anaesthesia in the third trimester (3)

Maternal	Foetal
• Airway- Tissue oedema and increased blood supply, along with more difficult positioning mean increased likelihood of difficult airway.	• Majority of anaesthetic agents are lipid soluble so will be transferred across the placenta. No teratogenicity risk in third trimester.
• Respiratory - Increase abdominal pressure leads to decrease in FRC and there is an increase in maternal oxygen consumption throughout pregnancy	• Major risk is inducing preterm labour
• Cardiovascular - Decrease SVR leads to hypotension but may be masked by 50% increase in cardiac output by term. Physiological anaemia present by 3rd trimester	• No evidence of toxicity for aneasthetic drugs on the foetus.
• Renal - Increase renal blood flow may lead to increase clearance of anaesthetic drugs	• Avoidance of maternal hypoxia, hypotension and acidosis are essential to maintain uterine blood flow.
• GI - Delayed gastric emptying increases risk of aspiration. Risk of gestational diabetes.	
• Positioning - Supine position will decrease venous return via IVC compression	

Case Report

SR, a 28 year old G3P2 of 34 weeks gestation presented to the emergency department with abdominal pain. She had had 2 previous normal deliveries and an uncomplicated medical and obstetric history for this pregnancy.
She was initially thought to be suffering from a urinary tract infection and started on antibiotics and admitted under the obstetric team. She had a normal renal USS but despite treatment had rising inflammatory markers and continued to spike temperatures .
After surgical review an MRI was performed which showed ruptured appendicitis and likely four quadrant contamination.(Fig 1) She was listed for urgent laparotomy.

After an extensive multidisciplinary discussion including obstetrics, surgical and anaesthetic teams it was decided that it was safe to proceed in our local centre, a DGH without specialist services. Concerns raised at the MDT included whether we should deliver the feotus at time of laparotomy but the obstetric and neonatal team were happy to proceed without elective delivery unless surgical access was impaired by the gravid uterus or there were signs of preterm labour. Baseline CTG was normal at this point

Our anaesthetic approach

Preoperative
- Early MDT involvement including senior decision makers from surgery, obstetrics and anesthetics and liaison with neonatal team.
- Conversations were had about priorities in the clinical course-> Anaesthetist in best place to lead these discussions as best placed to have overall picture in view.
- Adequate fluid resuscitation, sodium citrate and invasive monitoring prior to induction.

Intra operative
- Rapid sequence induction with cricoid pressure and videolaryngoscopy as first line.
- Maintenance of normotension, normothermia and oxygenation as priority
- Depth of anaesthesia monitoring.
- Left lateral position maintained as much as surgical access allowed.

Post operative
- Awake extubation
- Avoidance of suggamadex→ concerns re: preterm labour
- HDU care in immediate postoperative period
- Fentanyl PCA
- Rectus sheath catheters
- Foetal monitoring every 24 hours

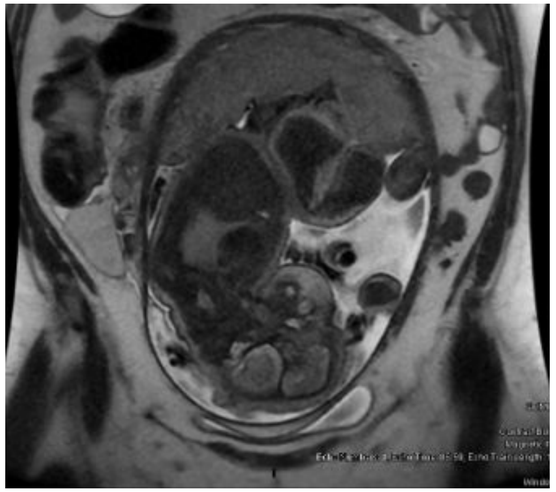


Figure 1 : MRI showing gravid uterus and ruptured appendix

Discussions/conclusions

Anaesthesia for non-obstetric surgery in late pregnancy can be a daunting prospect for the anesethetic team involved. However by going back to the anatomical and physiological changes during pregnancy a safe outcome can easily achieved.
We also feel it is essential to get input from all teams involved early on and the preoperatively discussions involving surgical, obstetric and anaesthetic teams was crucial in delivering good, patient centered care for this lady. An understanding of each teams priorities was established early on in these discussions and therefore a sensible plan was agreed upon and in particular that each team was happy to proceed without the need to refer to a more specialist centre.
Our anaesthetic plan was devised to counteract the changes that occur during late pregnancy and was successful in enabling a smooth anaesthetic.
Our patient was discharged from ITU after 24 hours and from hospital within a few days postoperatively. She has subsequently gone on to deliver via a LSCS with no complications.

References

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