# Anaesthesia for incidental surgery during pregnancy (GL751)

## Approval

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<tr>
<th>Approval Group</th>
<th>Job Title, Chair of Committee</th>
<th>Date</th>
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<tbody>
<tr>
<td>Maternity &amp; Children’s Services Clinical Governance Committee</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>5th January 2018</td>
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## Change History

<table>
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<tr>
<th>Version</th>
<th>Date</th>
<th>Author, job title</th>
<th>Reason</th>
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<tbody>
<tr>
<td>1.0</td>
<td>Sept 2004</td>
<td>Dr R Jones (Consultant Anaesthetist) and Dr G Sinclair, (Staff Grade Anaesthetist)</td>
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<td>2.0</td>
<td>Oct 2006</td>
<td>Dr R Jones (Consultant Anaesthetist) and Dr G Sinclair, (Staff Grade Anaesthetist)</td>
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<td>3.0</td>
<td>Oct 2008</td>
<td>Dr C Skinner (Consultant Anaesthetist)</td>
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Overview: Surgery and anaesthesia during pregnancy can expose both the mother and fetus to potent stresses. The effects may be on fetal development or on precipitating preterm labour. Truly elective surgery should therefore be postponed until after pregnancy.

Issues to address pre-operatively

Identify pregnant women? All women of childbearing age should be asked about the possibility of pregnancy during pre-clerking. This must not be ignored. The named surgical consultant should be aware of the proposal to operate on a pregnant woman.

Is the surgery necessary? Elective surgery should be postponed until after pregnancy.

What is the gestation? Organogenesis is almost complete by sixteen weeks gestation. It may be appropriate to postpone surgery until the second trimester.

Is the obstetric department aware of this case? There are separate guidelines about informing the duty obstetricians of admission of pregnant women to hospital.

Is there a midwife available to assess fetal wellbeing pre-operatively? Discuss with the labour ward coordinator on extension 7303.

Is it likely that delivery may need to occur at the same time as the operation? Obstetric consultation is essential.

The most senior anaesthetist and surgeon available should be involved in the care of pregnant women.

Take care to increase gastric pH. Give 150 mg Ranitidine at least one hour pre-operatively. Give sodium citrate just prior to induction.

Risk

The pregnant woman may wish to discuss the risks to the foetus regarding anaesthesia and surgery.

In all likelihood anaesthesia is not associated with an increase in congenital abnormalities even if administered during the weeks of organogenesis. However there may be a slight increased risk of miscarriage in the first trimester (25% vs. 30%) or premature labour (5.13% vs. 7.4%) The most likely reason for the increase in these risks is not the anaesthesia or surgery themselves but the underlying illness or stress and trauma.

There is no evidence that regional anaesthesia reduces the risk of miscarriage or premature labour. Regional anaesthesia may reduce the risks to the mother but the choice of anaesthesia should be appropriate to the surgery, e.g. appendicectomy is best undertaken under general anaesthesia unless significant airway problems are anticipated.
**X-rays**

Pregnancy is not a contraindication to radiographical imaging if clinically indicated. The accepted cumulative dose of ionizing radiation to the fetus during pregnancy is 5 rad. The amount of exposure to the foetus from a chest x-ray is 0.00007 rad.

**Blood Results**

Remember that normal biochemical values reduce by 40% in pregnancy. Urea should be less than 5, Creatinine less than 70.

**Pre-operative management**

Is it possible to perform the procedure under a regional block? As mentioned above regional blockade may reduce the stresses of airway management. It will not, however, completely abolish the stress of anticipating surgery or reduce the risks to the foetus.

**Airway management.** The reduction in tone of the lower oesophageal sphincter occurs early in pregnancy. Regurgitation and aspiration are more likely as the mass of the enlarging uterus increases the intra-abdominal pressure. Consider endotracheal intubation after 13 weeks gestation. It is difficult to justify not intubating someone after 20 weeks.

**Never perform a nasal intubation in pregnancy**

**Avoid aortocaval compression.** This will occur from the second trimester (that is from 16/40). Ask about symptoms of supine hypotension during pre-operative assessment. Be extra vigilant in multiple pregnancies or the obese (See guideline for Twins & Multiple Pregnancy GL928). Remember to use a left tilt or a wedge. If possible use the left lateral position. Be careful about abdominal compression if using the prone position.

Laparoscopy may also cause problems by increasing intra-abdominal pressure. It may be necessary to limit the pressure rise.

**Propofol is unlicensed for use in pregnancy.** However, it may be the most appropriate drug to use.

**Think about your drugs. AVOID:**

- Non-Steroidal Anti-inflammatory Drugs (premature ductus closure)
- Cocaine (risk of abruption)
- Ketamine (risk of uterine hypertonus and premature labour)
- Nitrous Oxide

There is increasing evidence that Nitrous Oxide should be avoided in the third trimester as it is associated with apoptotic neuro-degeneration of the foetal brain\(^3\).
BE CAREFUL WITH:

Neostigmine. Always give slowly – even with anti-cholinergics there have been reports of stimulation of preterm labour if bolus given rapidly.

Consider using: Local anaesthetic as adjuncts both per and post-operatively. Anti-emetics

Ventilation. By 10/40 PaCO2 reduces to 4-4.5 Kpa. Increase minute ventilation by increasing tidal volume primarily and not just respiratory rate.

Blood Pressure. Maintain blood pressure within 10% of the preoperative value.

Laparoscopic Surgery

During prolonged laparoscopic surgery an arterial line is warranted as end tidal CO2 values will significantly underestimate arterial CO2 values

Make sure insufflation pressures do not exceed 15mmHg. Ensure good muscle relaxation.

Fluid management. You must be meticulous as all pregnant women are relatively hypervolaemic and it is not difficult to tip them into pulmonary oedema.

CTG monitoring. After 26 weeks it is possible to perform continuous CTG monitoring peri-operatively where appropriate.

Post-operative arrangements:

Post-operative analgesia. Regular paracetamol plus codeine or tramadol should be used as a basis. Morphine can also be used. If in doubt contact the pain team.

Arrange midwifery follow-up. Contact the Labour Ward co-ordinator on 7303. The fetal heart rate should be monitored post-operatively. Before 24 weeks this will be assessed with a handheld device on a daily basis. After 24 weeks the senior midwives and obstetricians will decide upon the most appropriate method and frequency of observation.

Recovery and post-operative care. If there is a risk of precipitating premature labour or the necessity of a rapid delivery it may be appropriate for the woman return to the maternity unit after surgery. This is especially important if there is a significant element of sepsis or inflammation.

Venous thromboembolism prophylaxis. Hypercoagulability develops early in pregnancy. Prophylaxis should be used for all cases. There is a local guideline which is available on the intranet about which methods should be employed.
Ongoing care:

Obstetric follow up

The obstetricians should be informed of the outcome of surgery and of discharge from hospital.

The surgery may lead to implications for analgesia and anaesthesia and delivery. Please inform the obstetric anaesthetists if there are likely to be persistent problems.

References