

Newcastle Mitochondrial Clinic

At a glance guidelines:

Anaesthesia & Peri-Operative Care in Adult Patients:

Screening and Subsequent Management

For full guideline visit:

<http://www.newcastle-mitochondria.com/service/patient-care-guidelines/>

First published Dec 2014

Updated September 2015

There are many different forms of mitochondrial disease, varying greatly in their clinical features. The spectrum and severity of multi-system involvement helps guide the level of caution and preparation required in the pre and peri-operative period. All patients due to undergo significant surgery or a general anaesthetic should have their diagnosis highlighted to the anaesthetist. We recommend discussion with a specialist mitochondrial centre at the earliest opportunity and review of the full guideline (www.newcastle-mitochondria.com).

Most mitochondrial disorders have the potential for complications to arise in the peri-operative period. This also applies to asymptomatic carriers. We therefore recommend the following:

1. Pre-operative preparations:

- 1.1. **Planning and Preparation:** planning and liaison with a mitochondrial specialist will minimise risks. Routine screening programmes (see existing guidelines) ensure knowledge of multi-system involvement.
- 1.2. **Bloods:** FBC, U&Es, LFTS, Ca^{2+} , Mg^{2+} , glucose, HbA1c, CK and lactate
- 1.3. **Cardiac:** ECG and ECHO
- 1.4. **Respiratory:** FVC (erect *and* supine) to exclude respiratory muscle/diaphragmatic weakness.
- 1.5. **Bowel Care:** ensure bowel care optimised pre-op. Consider AXR pre-op for later comparison. Risk of chronic constipation or post-op paralytic ileus (esp m.3243A>G or MNGIE)

2. Pre-operative Management:

- 2.1. **Minimise Fasting:** fluids and calorific intake should be maintained in the pre-operative period. 50g carbohydrate in liquid form 2 hours pre-op (non-diabetic patients).

- 2.2. **Important drugs:** (eg AEDs) should be administered or replaced with alternative formulations
- 2.3. **Diabetes:** mitochondrial diabetes may be managed in the usual way (metformin avoided)

3. Anaesthesia:

- 3.1. Good evidence is lacking for benefit or harm specific to any anaesthetic agent. Muscle relaxants are best avoided in those with significant respiratory muscle weakness unless absolutely necessary.
- 3.2. There is no credible evidence for an increased risk of malignant hyperthermia syndrome.
- 3.3. Propofol appears safe for induction. Prolonged use for maintenance of anaesthesia may risk exacerbation of lactic acidosis.
- 3.4. Intravenous fluids: avoid lactate buffers (eg Ringer's Solution)
- 3.5. Risk appears proportionate to severity of comorbidities (esp. cardiorespiratory disease).

4. Post-operative Management:

- 4.1. **See Pre-operative Care:** minimise fasting, administer drugs, usual post-op diabetic care.
- 4.2. **Bowel Care:** constipation or paralytic ileus is common in the post-operative period (esp m.3243A>G or MNGIE). Dilated loops on AXR should be compared to pre-op AXR. Discussion with a mitochondrial specialist advised ASAP and surgical intervention avoided (see published GI guidelines).
- 4.3. **Critical Care:** consider pre-planned admission for post-op monitoring