Thyroid surgery: what are the options for anaesthesia?

A 29-year-old Afro-Caribbean woman delivered a healthy baby by vaginal delivery at 38 weeks following a pregnancy complicated by gestational diabetes. Three months later she returned to work and soon began to develop symptoms of lethargy, nervousness and palpitations. Following investigations she was diagnosed with Graves' disease and commenced on propylthiouracil and propranolol.

Eight weeks later the patient became jaundiced and blood tests showed that she had abnormal liver function. This was attributed to the propylthiouracil which was subsequently stopped. Unfortunately her condition continued to deteriorate and she was admitted to hospital with a diagnosis of drug-induced liver impairment. Treatment with n-acetylcysteine, carbimazole, potassium iodide and propranolol was started and an elective total thyroidectomy was planned once her liver function had returned to normal. Unfortunately before this could occur, her thyrotoxicosis worsened and the decision was made to perform an emergency total thyroidectomy. This article looks at the options for anaesthetizing this patient.

General anaesthesia supplemented with regional anaesthesia

Traditionally, patients undergoing thyroid surgery receive a general anaesthetic supplemented by either regional blockade or local anaesthetic infiltration. A general anaesthetic ensures that the patient can tolerate a prolonged period of head and neck extension and prevents coughing, swallowing and voluntary movements, providing the surgeon with an easily accessible operating field. In cases where there may be retrosternal involvement or when lateral neck dissection is needed, the surgeon can move beyond the boundaries of a regional anaesthetic block. This option is suitable for patients with dementia, learning disabilities, deafness or language difficulties who may be unable to follow instructions from the surgical team.

The use of a reinforced endotracheal tube ensures that the patient has a patent and protected airway. General anaesthetic may make it easier to control perioperative complications such as thyroid storm, bleeding and tracheomalacia (Arora et al, 2006).

Regional anaesthesia with intravenous sedation

A bilateral cervical plexus block is considered to be a safe, simple and highly efficacious block for thyroid surgery. Compared to general anaesthetic, thyroid surgery conducted under regional anaesthetic shows no differences in the rate of complications or the time it takes to complete surgery (Spanknebel et al, 2005). However, there are a number of contraindications to this technique. Absolute contraindications are local skin infection, extensive surgery, patient request and allergy to local anaesthetic agents. Relative contraindications to be aware of include obesity, gross abnormalities in neck anatomy, obstructive sleep apnoea, difficult intubation and coagulopathy.

Regional anaesthetic used in combination with intravenous sedation has some important advantages as well. Depending upon the block and local anaesthetic used, a regional anaesthetic can provide several hours of analgesia. This has two important implications in itself. Not only does it reduce the amount of intravenous and oral analgesics required but, in the case of complications such as postoperative bleeding and haematoma formation, a regional anaesthetic allows rapid early re-exploration without further anaesthetic (Snyder et al, 2006).

The absorption, distribution, metabolism and excretion of anaesthetic agents, muscle relaxants, analgesics and sedatives may all be reduced in those with hepatic impairment and therefore impact upon recovery. During general anaesthetic, mean arterial pressure can fluctuate wildly and reduce the perfusion pressure of organs such as the brain, kidneys and liver. In those with liver impairment a fall in liver perfusion has the potential to cause further liver injury and risk the development or worsening of encephalopathy in the postoperative setting.

Although transient and often minor, problems associated with general anaesthetic such as vomiting, headache, disorientation, sore throat, shivering, dizziness and drowsiness can hamper recovery. Airway instrumentation necessary for tracheal intubation can not only damage the upper respiratory tract, but in those with hyperthyroidism can also provoke a thyroid storm. Left untreated, this can lead to high-output cardiac failure, cardiac arrhythmias, seizures and coma.

Conclusions

In the case described here, surgery was performed successfully under a bilateral superficial cervical plexus block (30 ml 0.25% bupivacaine) and intravenous sedation (remifentanyl 0.06–0.09 μg/kg/min). The procedure was uneventful and lead to a rapid control in thyroid function. The patient was subsequently discharged home on lifelong thyroid replacement therapy.

In some individuals the risks associated with a general anaesthetic are considerable – where possible a regional anaesthetic approach may be preferable. **BJHM**

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Anaesthetic and critical care dilemmas are coordinated by Dr John Orr and Dr Annie Hunningher, Research Fellows at the Centre for Anaesthesia, UCL, London Ideas for future dilemmas can be sent to Rebecca Linssen bjhm@markallengroup.com