

Parathyroidectomy

- Everybody has 4 parathyroid glands, 2 on each side, located on either side of the thyroid gland, low down in the neck. These glands secrete parathyroid hormone (PTH) which maintains blood calcium levels. An excess of PTH (hyperparathyroidism) may lead to excess calcium in blood, and cause symptoms or other problems, including heart problems, osteoporosis, and other bone problems.
- Most cases of hyperparathyroidism are caused by a single adenoma, which is a benign growth of one of the parathyroid glands. If this is the case, removing this adenoma should cure the condition
- In a minority of patients, hyperparathyroidism may be due to multiple adenomata or diffuse hyperplasia, meaning multiple glands were involved. Such patients have a higher risk of unsuccessful surgery if all the culprit glands are not removed.
- If the cause appears to be a single adenoma, which is locatable preoperatively based on imaging studies, then a focussed parathyroidectomy, with exploration only on one side of the thyroid, may be all that is required. However, if it not clear where the adenoma is, or if multiple adenomata/diffuse hyperplasia seems a possibility, then a 4-gland exploration, with exploration of both sides of the thyroid, will be necessary.
- Although preoperative imaging studies to try to locate the culprit adenoma can be very useful and can help to direct the surgery, these studies are not infrequently wrong, and so notwithstanding the results, it may be necessary to change the surgical plan during the operation (e.g. convert from a planned focussed parathyroidectomy to a 4-gland exploration)
- The extent of surgery can only be determined intraoperatively. Thus notwithstanding the outcome of preoperative studies, it may be necessary in any given case to proceed to full 4-gland (bilateral) exploration, +/- removal of more than one parathyroid gland; +/- partial or total thyroidectomy.
- Regardless of whether the operation is a focussed parathyroidectomy or a 4-gland exploration, or what side the exploration is done on, it is all done through the same incision, which is usually placed in the midline in a low neck crease.
- Success of the operation can be anticipated in >90% of cases, however, failure may occur due to:
 - Failure to find the adenoma
 - Removal of something which turns out not to be parathyroid (e.g enlarged lymph node or thyroid nodule)
 - Unrecognized 2nd adenoma or diffuse hyperplasia
 - Presence of a completely different cause of hyperparathyroidism (e.g. familial hypercalcaemic hypocalciuria)
- If surgery is unsuccessful, then this may lead to persistent symptoms and/or persistent risk of bone or heart disease. Thus you may require further surgery in the future, which may be now more complicated due to scarring from the first operation, and with higher risk of complications and lower success rate.
- Assuming the culprit adenoma is successfully removed, the time course of fall in calcium is variable and can take some time in some patients.
- In other patients, there is the possibility of a precipitous fall in calcium levels while still in hospital, or in the first few days after discharge, which may lead to symptoms of pins and needles or muscle spasm, a longer than expected hospital stay and/or readmission to hospital, and/or require calcium supplementation. This is usually related to hyperparathyroid bone disease and postoperative "hungry bone syndrome" and will usually resolve within a few weeks.
- Particularly in patients who end up having more than one parathyroid gland removed, there is a possibility of permanent hypoparathyroidism with requirement for lifelong calcium and/or vitamin D supplementation to maintain normal calcium levels.
- If partial or total thyroidectomy is performed, patients may require eltroxin replacement.
- Other risks and consequences:

- Haematoma (<1%);
 - Recurrent laryngeal nerve injury (<1%) leading to vocal cord paralysis, hoarseness and weak voice
 - Temporary hoarseness due to reduced vocal cord movement, even with the recurrent laryngeal nerve preserved (5%). In 90% of cases this will resolve to full normality, usually within 6-12 weeks, but can take longer on occasion
 - Hypertrophic scarring (<5%)
- Even with successful surgery, there is a risk of recurrence due to a further adenoma in the future, which is around 1-2% per year. Patients should thus get yearly calcium checks by their GP or Endocrinologist.