Chapter 35
Reoperative Parathyroid Surgery

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Introduction

Firstly establish if this is persistent or recurrent disease:

- Persistent hyperparathyroidism is defined as a failure to correct hypercalcemia after neck exploration and/or removal of a presumed adenoma. This is most commonly due to multiglandular disease or an unsuspected second adenoma.
- Recurrent disease is defined as further evidence of hyperparathyroidism after a previously successful parathyroidectomy greater than 6 months earlier.

These are amongst the most challenging cases for the endocrine surgeon. Therefore it is important to confirm that the patient has symptoms that justify further surgery or evidence of secondary end organ damage from hyperparathyroidism by way of bone disease or renal stones.

Reoperation should only be considered if the patient is symptomatic or there is objective evidence of progressive disease, bone or renal, which justifies the risks and uncertainties of further surgery.

The operating surgeon should consider whether this could be a patient with a predisposition to multiglandular disease such as MEN1 or MEN2. A family history of endocrine syndromes or other components of these syndromes such as pituitary, adrenal, or pancreatic tumors should be sought because recurrent hyperparathyroidism raises the real possibility of an underlying predisposition syndrome.

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J.C. Watkinson, D.M. Scott-Coombes (eds.), *Tips and Tricks in Endocrine Surgery*,
DOI 10.1007/978-1-4471-2146-6_35,

Investigations

Biochemistry

The diagnosis of hyperparathyroidism should be reconfirmed. It will be important to make sure that familial hypercalcemic hypocalciuria has been excluded and that the patient is vitamin D replete. It is essential to repeat biochemical tests and ensure that the calcium is above the normal range and that there is an inappropriately detectable parathyroid hormone level.

All previous investigations including biochemistry, imaging, and most importantly the first and any subsequent operation note should be reviewed making a note of any pathology specimens sent and any results. Using this information, a "road map" of the known and unknown gland positions in the neck should be drawn and a deduction made where the most likely target could be.

Localization (See also Chap. 32)

Re-imaging the neck will then be essential. This will require an ultrasound, a MIBI scan, and an MRI. In addition, selective venous sampling can be of use in this setting. For any abnormalities that are seen on ultrasound, one should consider biopsy under ultrasound control and sending the aspirate for a PTH analysis. This can allow confirmation of any suspect nodules in accessible areas of the neck as being parathyroid tissue.

Reoperations should only be considered if there is concordant localization by at least two indirect modalities or a positive aspirate on one modality.

Preoperative Considerations

The patient should be consented carefully. Redo operations have a higher risk of complications including hemorrhage and vocal cord palsy, and in addition, imaging might be misleading and you may not find the proposed abnormality, leading to failure to cure.

Consider the possibility if extensive previous surgery has been performed [including on occasions and not to be encouraged blind hemithyroidectomy and removal of normal parathyroids] that the only remaining parathyroid tissue in the patient could be the target you intend to remove. Taking care to monitor, therefore, for severe hypoparathyroidism postoperatively will be important.

The patient should have a preoperative vocal cord inspection.

Operative Tips

The operation will be a directed surgery aiming to find only the pre-identified target. If this is in the neck, consider asking your radiologist to place a skin marker over the site of the presumed adenoma or do an on-table ultrasound yourself to guide you for your incision.

Try to approach the gland through virgin territory or tissues. The back door approach, lateral to the strap muscles, is useful if a full formal neck exploration has been previously performed through an anterior cervicotomy. Alternatively, if a focused approach or minimally invasive incision has been used for the previous parathyroid operation, then a new focused approach down to the target would be appropriate.

All tools that can confirm that you have successfully completed the operation should be used including intraoperative PTH measurement and frozen section, and consider having a colleague experienced in endocrine surgery to assist you for this difficult operation. If you do not find the expected adenoma, avoid "blind" hemithyroidectomy or the unselected resection or biopsy of normal parathyroid glands. If unsuccessful, stop the operation before any harm is done, note carefully any findings, and plan to reinvestigate another day.

Pearls and Pitfalls
Pearls

- Know what you are going for.
- Review all previous results before embarking on the operation.
- Consent for possible complications.
- Focus the operation on the target.
- Approach through virgin territory if possible.
- Do everything you can to confirm the success of the operation perioperatively.

Pitfalls

- Avoid operating on the asymptomatic patient or the patient who has no evidence of harm from their further hyperparathyroidism.
- Avoid operating without a clear target to go for.
- Ensure that you have good assistance, plenty of time, and a clear strategy in mind before you start this procedure.
- Failure to take into account the above will make the operation more ... etc.

Further Reading

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