

Minimally Invasive Radio-guided Parathyroidectomy

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Citation

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Abstract

We report two cases of hyperparathyroidism treated by minimally invasive radio-guided parathyroidectomy.

INTRODUCTION

Minimally Invasive Parathyroidectomy for the treatment of hyperparathyroidism is a relatively new procedure which may be performed as an out-patient procedure under local anaesthesia. This can result in substantial savings to the Health System. In patients with a known single adenoma pre-operative localisation of the adenoma with ^{99m}Tc-Sestamibi imaging allows a limited dissection.

Dellbridge et al reported their experience with minimally invasive parathyroidectomy (1) and concluded that it is a feasible procedure though there are concerns about the complication rate. In radio-guided surgery pre operative localisation is combined with intraoperative localisation with a gamma probe using a technique similar to that used for sentinel-node mapping and biopsy (2). In addition this technique has an added advantage - further imaging can confirm removal of the adenoma and detect residual functioning tissue. Norman (3) and others have advocated minimally invasive radio-guided parathyroidectomy for the treatment of hyperparathyroidism in patients who have a single adenoma localised with sestamibi scintigraphy.

We report two cases of hyperparathyroidism treated by minimally invasive radioguided parathyroidectomy at this institution.

CASE REPORTS

A 62-year-old New Caledonian man was referred for a parathyroid study to investigate his hyperparathyroidism. He had a complex history of chronic renal failure of unknown cause managed by peritoneal dialysis for 12 years and more recently haemodialysis.

The previous year he underwent surgery for hyperparathyroidism associated with his chronic renal

insufficiency. Two foci of papillary carcinoma of the thyroid were discovered. Three hyperplastic parathyroid glands were identified and removed. He subsequently underwent radioiodine ablation of the remainder of the gland.

His calcium remained high with an elevated parathyroid hormone level of 63.4 mmol per litre (normal range 2.5 - 7.0 mmol per litre). Subsequently a parathyroid scan with SPECT using Sestamibi was performed which identified a focus above the right sternoclavicular joint consistent with a parathyroid adenoma (fig 1 and 2). This area would not have been explored in his original parathyroid surgery. A CT and ultrasound failed to demonstrate an adenoma. In view of the risks of major surgery to a man with advanced renal disease on maintenance dialysis, minimally invasive radio-guided parathyroid surgery was considered. The patient received a repeat injection of Sestamibi and images were taken to confirm the site of the adenoma. The patient was then transferred to the operating theatre. Following a small incision a well encapsulated nodule measuring 7 x 10mm in the region identified on the Sestamibi Study was located by the gamma probe and removed. Histological examination confirmed a parathyroid adenoma. An image was obtained following removal of the adenoma confirming excision of the area of abnormal sestamibi uptake. (fig 3) Post-operatively the serum calcium level fell to 1.84 mmol/litre (normal range 2.15-2.55 mmol/litre).

Figure 1

Fig 1: Pre-operative localisation of adenoma



Figure 2

Fig 2: Pre-operative SPECT image (Coronal Slice)

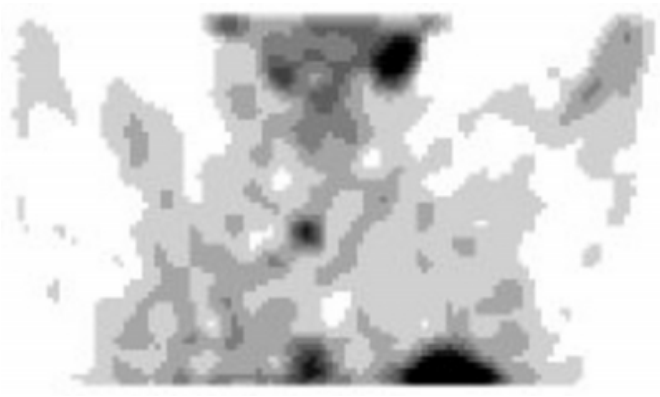
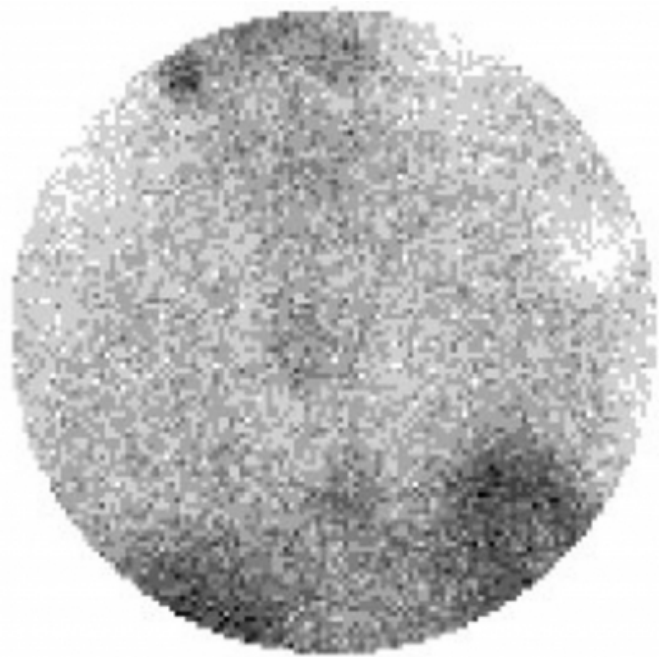


Figure 3

Fig 3: Intra-operative image confirming excision of adenoma



The second patient was a frail 76 old female who presented with hypercalcaemia on a background of hypertension, diabetes, polymyalgia rheumatica and ischaemic heart disease. A parathyroid sestamibi scan demonstrated an area of uptake consistent with a parathyroid adenoma inferior to the lower pole of the left lobe of the thyroid. The patient was reluctant to have major surgery and minimally invasive radio-guided surgery was planned. The patient was injected with sestamibi and pre-operative imaging confirmed the site of the adenoma. Using the gamma probe a nodule was located at the site of the scintigraphic abnormality and excised. Post-operative imaging confirmed complete excision of the functioning region. Histopathological examination revealed a nodule of hyperplastic parathyroid tissue within a normally adipose parathyroid gland, consistent with parathyroid adenoma. The serum Calcium fell from 2.78 mmol/l pre-operatively to 2.07 mmol/l 2days later.

DISCUSSION

These cases illustrate how minimally invasive radio-guided surgery can be utilised in those patients with a single adenoma who are unsuitable due to age or medical condition for a standard neck dissection. In addition the use of radio-guided surgery allows intra or post operative imaging to confirm complete excision.

References

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