Day-case minimally invasive excision of a giant mediastinal parathyroid adenoma

A Haldar, A Thapar, S Khan, S Jenkins

Princess Alexandra Hospital NHS Trust, UK

ABSTRACT

Inferior parathyroid adenomas in the mediastinum can be a troublesome cause for hypercalcaemia, requiring a full collar incision or, occasionally, a sternotomy. We report a case of a giant parathyroid adenoma in a 61-year-old woman on warfarin, which we excised via a minimally invasive transcervical approach after radiological localisation. The procedure was performed as a day case and, at six weeks, the patient had recovered fully with biochemical resolution of hypercalcaemia. This case demonstrates that focused transcervical excision of giant parathyroid adenomas is a viable option and should be considered prior to neck exploration or sternotomy.

KEYWORDS

Giant parathyroid adenoma – Day surgery – Minimally invasive

Accepted 1 March 2014; published online XXX

CORRESPONDENCE TO

Anil Haldar, Core Trainee in General Surgery, Princess Alexandra Hospital, Hamstel Road, Harlow, Essex CM20 1QX, UK
T: +44 (0)1279 827 069; E: drahalder@doctors.org.uk

Case History

A 61-year-old woman was found to have asymptomatic hypercalcaemia and raised parathyroid hormone levels after a hospital admission for colitis (Table 1). Her past medical history included a left renal agenesis, open abdominal aortic aneurysm repair and coronary artery bypass grafting. She was prescribed lifelong warfarin following an aortic graft thrombosis. She was referred for surgical assessment because her serum corrected calcium level was 3.2mmol/l and owing to her history of a solitary kidney. The practice in our unit is radiological localisation and selective parathyroidectomy.

Ultrasonography demonstrated a 6cm maximum diameter mass in a left inferior cervical location, posterior to the lower pole of the thyroid (Fig 1). Technetium sestamibi imaging demonstrated persisting activity in the left inferior cervical location, two hours following isotope injection (Fig 2). Subsequent single photon emission computed tomography demonstrated a 1.3cm × 5.2cm × 2.2cm tubular structure in the superior mediastinum medial to the left common carotid artery (Fig 3). These findings, coupled with primary hyperparathyroidism, strongly suggested a parathyroid neoplasm.

Following discussion at our local head and neck multidisciplinary team meeting, the patient was scheduled for a selective left inferior parathyroidectomy. Preoperative vocal cord assessment was normal and warfarin was stopped five days before surgery. The operation was performed through a 4cm left collar neck incision and a 6.5cm × 3.0cm × 1.5cm mass weighing 12g was removed (Fig 4). The recurrent laryngeal nerve was preserved and the total operating

time was 30 minutes. She went home the same day on her normal dose of warfarin.

At the six-week follow-up appointment, the patient's serum corrected calcium was at 2.4mmol/l. She had a normal voice and a well healed incision. Histology confirmed a benign parathyroid adenoma. She was discharged from follow-up.

Discussion

Giant parathyroid adenomas are defined as greater than 3g and they are traditionally removed via a large collar incision.¹ Those in the superior mediastinum may require a sternotomy.² This case highlights that giant parathyroid adenomas can be removed safely through a small collar incision, even when in the mediastinum.

Table 1 Serum biochemistry on initial presentation

	Patient	Normal range
Corrected calcium	3.16mmol/l	2.10–2.55mmol/l
Parathyroid hormone	19.0pmol/l	1.2–9.3pmol/l
Phosphate	0.81mmol/l	0.74–1.50mmol/l
25-hydroxyvitamin D	57nmol/l	50–150nmol/l
Creatinine	66µmol/l	53–97µmol/l

Figure 1 Ultrasonography of the neck showing a large mass in a left inferior cervical location, which at its cranial limit lies posterior to the lower pole of the thyroid and at its caudal limit enters the superior mediastinum

Ectopic parathyroid tissue is not uncommon; 1–3% of parathyroid glands are found in ectopic locations.² The most common ectopic site is in the mediastinum, with as many as 25% of parathyroid adenomas arising there.³ The reason for this is the embryological descent of the inferior parathyroid glands, which accompany the thymus from the third pharyngeal pouch to the lower neck and superior mediastinum. Ectopic parathyroid tissue can therefore be seen from the angle of the jaw to the pericardium, following this route of development.²

Our patient had a superior mediastinal adenoma. Two other centres have reported removing a giant parathyroid adenoma with similar dimensions to our case from the superior mediastinum. In 2002 Masako *et al* removed a 75g parathyroid adenoma measuring 6.0cm × 5.0cm × 5.0cm from the

Figure 2 Technetium sestamibi imaging showing persisting activity in a left inferior cervical location

Figure 3 Single photon emission computed tomography showing a large retrothyroid mass, with a craniocaudal measurement of 6cm. It extends inferiorly in a left paratracheal position to just reach the level of the aortic arch.

right upper mediastinum via a neck incision.⁴ Another group performed an image localised unilateral neck exploration to remove a 110g right-sided superior mediastinal parathyroid adenoma measuring 8.0cm × 5.0cm × 3.5cm.⁵

Caporale *et al* described a 2.5cm U-shaped transcervical incision and vertical manubriotomy to remove an adenoma placed similarly to our patient’s tumour.² Our approach was also via a small skin incision but it did not require a manubriotomy. Other alternative approaches to mediastinal adenomas include median sternotomies and thoracotomies, which are reserved for large inaccessible masses.²

Figure 4 Left inferior parathyroid adenoma specimen measuring 6.5cm × 3.0cm × 1.5cm

Conclusions

Our case highlights that some giant adenomas in the superior mediastinum can be removed safely via a minimally invasive transcervical technique. This can be performed as a day-case procedure with good cosmesis and low morbidity, even in patients with complex medical histories and those on warfarin.

References

1. Christakis I, Michas S, Mouziouras V *et al.* Minimally invasive techniques for giant parathyroid tumours; an oxymoron? *Hell J Surg* 2012; **84**: 220–224.
2. Caporale DM, Bobbio A, Accordini R *et al.* Ectopic mediastinal parathyroid adenoma. *Acta Biomed* 2003; **74**: 157–159.
3. Cupisti K, Dotzenrath C, Simon D *et al.* Therapy of suspected intrathoracic parathyroid adenomas. *Langenbecks Arch Surg* 2002; **386**: 488–493.
4. Masako I, Tetsuaki K, Kazuo M *et al.* A case of giant parathyroid adenoma. *Practica Otologica* 2002; **109**: 119–123.
5. Power C, Kavanagh D, Hill AD *et al.* Unusual presentation of a giant parathyroid adenoma: report of a case. *Surg Today* 2005; **35**: 235–237.