

**Case
Report**

Excision of Ectopic Mediastinal Parathyroid Adenoma via Parasternal Videomediastinoscopy

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Mediastinum is one of the place in which ectopic parathyroid adenomas can be located. Here, an ectopic mediastinal parathyroid adenoma, which was excised via parasternal videomediastinoscopy was presented. The patient with chronic renal insufficiency had increased calcium levels persistence after the surgery for cervical parathyroid adenoma. Radiologic and scintigraphic examinations revealed a focal intense nodule in anterior mediastinum. Parasternal videomediastinoscopy was performed via parasternal incision through the second intercostal space. Ex-vivo specimen radioactivity measurements and frozen examination confirmed parathyroid adenoma. Calcium levels were decreased dramatically after the operation. Parasternal videomediastinoscopy could be an alternative surgical way in anterior mediastinal small masses such as ectopic parathyroid adenoma. It is the first case in which parasternal videomediastinoscopy was used for excision of mediastinal parathyroid adenoma.

Keywords: parasternal, videomediastinoscopy, parathyroid adenoma, mediastinal, surgical excision

Introduction

Primary hyperparathyroidism is characterized by over-secretion of parathormone causing hypercalcemia and hypophosphatemia. The major reason of primary hyperparathyroidism is parathyroid adenomas. In some patients, adenomas can be found ectopically. Mediastinum is one of the ectopic locations of parathyroid adenomas.¹⁾ Here, a case with ectopic mediastinal

parathyroid adenoma that could be excised via parasternal videomediastinoscopy (PSVM) was presented.

Case

The 48-year-old male patient had been suffering from chronic renal insufficiency for 11 years. He was operated for cervical parathyroid adenoma 6 months ago. But blood calcium and parathyroid hormone levels were getting increased gradually after surgery. Ectopic parathyroid adenoma was suspected. CT and MR studies of thorax revealed a nodule located anterior mediastinum in front of the brachiocephalic vein. Tc 99m MIBI parathyroid scintigraphy demonstrated that, the nodule was seen as an intense focus in anterior mediastinum, ectopic parathyroid adenoma was diagnosed.

The patient was given 10 mCi Tc 99m MIBI intravenously in the operating room just before starting the operation. Left parasternal 3 cm-long-incision was performed. After excision of 2 cm-long-cartilage from second rib, PSV mediastinoscope was inserted in mediastinum through the second cartilage perosteum (**Fig. 1**). Videomediastinoscope has a wide inner

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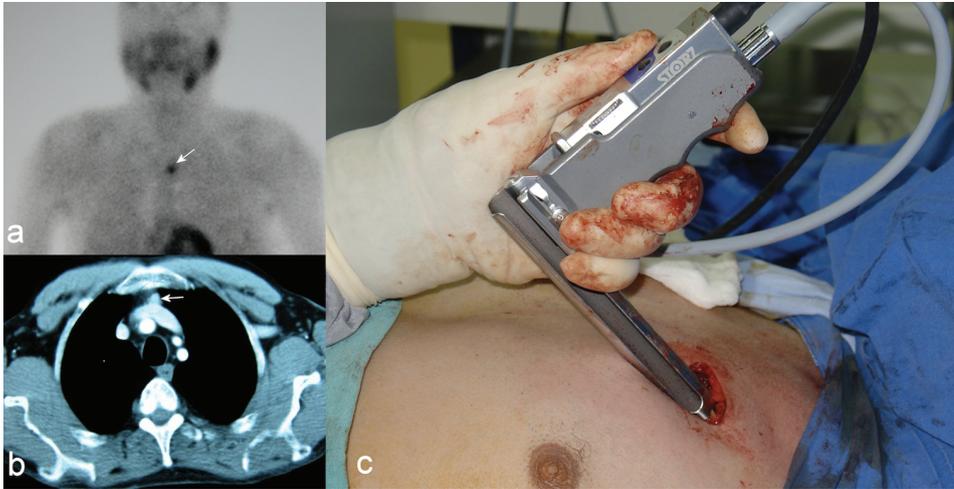


Fig. 1 (a) Tc 99m MIBI parathyroid scintigraphy, an intense focus in mediastinum, (b) thorax CT, a small mass located in front of the left brachiocephalic vein, (c) operative view, parasternal video mediastinoscopy via parasternal incision.

diameter compared the standard ones for working in it. We could also performed bimanual dissection. When we put the videomediastinoscope into the fatty tissue of mediastinum, it was difficult to perform a cleavage because there were no anatomical landmarks to use as a guide. That's why bimanual dissection was very important in that stage. We used forceps, small gauze tampons and aspiration cannula for blunt dissection. There were also coated scissors designed for both for cutting and coagulated. That equipment made the dissection easier. Gamma probe was used though this incision to facilitate to find the nodule but it did not work because of massive signals coming from heart. Depending upon the CT findings, we directed the mediastinoscope to the brachiocephalic vein. The nodule, which was purple, was found in mediastinal fat tissue easily. Both gamma probe examination at operating room and frozen section examination of the specimen revealed that the nodule was parathyroid adenoma. No complications were seen and internal mammary artery was not injured while the operation. Calcium levels were decreased immediately after the operation.

Discussion

Primary hyperparathyroidism is characterized by hypersecretion of parathyroid hormone resulting in hypercalcemia and hypophosphatemia. Parathyroid adenoma is the major reason in most of the cases.

In 11%–25% of those cases, ectopic mediastinal hyperfunctional parathyroid tissue can be found.¹⁾ Surgery is the treatment of choice. Surgical excision should be planned depending upon thorax CT and parathyroid scintigraphy findings.

If parathyroid adenoma is located in mediastinum, median sternotomy, thoracotomy, mediastinotomy, mediastinoscopy or thoracoscopy may be needed to resect like the other mediastinal masses.^{2–5)} Mediastinoscopy is one of the less invasive methods among them. In that kind of case, cervical incision could also have been used. But because of the patients' previous cervical operation, we did not choose that way due to the probability of fibrosis in operation field. Our case was the first case in English literature that PSVM was performed in the excision of mediastinal parathyroid adenoma. This way has risks of opening pleura, pneumothorax, and injury to arteria thoracica interna, especially when performed by inexperienced thoracic surgeons. Careful dissection and large experience in mediastinoscopy or mediastinotomy will prevent those complications. Because videomediastinoscopes have larger diameters, the dissection can be performed bimanually and that makes the surgery easier.

Here we would like to point out that PSVM might be an option for excision of small anterior mediastinal masses. It is safe and minimally invasive method either for excision or biopsy of mediastinal masses.

Disclosure Statement

We have not any financial or other interest in the manufacture or distribution of the device. We have not any conflict of interest.

References

- 1) Boushey RP, Todd TR. Middle mediastinal parathyroid: diagnosis and surgical approach. *Ann Thorac Surg* 2001; **71**: 699-701.
- 2) Ott MC, Malthaner RA, Reid R. Intraoperative radioguided thoracoscopic removal of ectopic parathyroid adenoma. *Ann Thorac Surg* 2001; **72**: 1758-60.
- 3) Tcherveniakov P, Menon A, Milton R, et al. Video-assisted mediastinoscopy (VAM) for surgical resection of ectopic parathyroid adenoma. *J Cardiothorac Surg* 2007; **2**: 41.
- 4) Hutter J, Junger W, Miller K, et al. Subxiphoidal videomediastinoscopy for diagnostic access to the anterior mediastinum. *Ann Thorac Surg* 1998; **66**: 1427-8.
- 5) Semik M, Netz B, Schmidt C, et al. Surgical exploration of the mediastinum: mediastinoscopy and intraoperative staging. *Lung Cancer* 2004; **45**: S55-61.