Surgical Treatment of Hyperparathyroidism due to Mediastinal Ectopic Parathyroid Lesions.

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Introduction

Primary hyperparathyroidism is a condition usually caused by parathyroid adenomas and to a lesser proportion by parathyroid hyperplasia and parathyroid carcinoma; some cases may be originated from ectopic parathyroid glands. We aim to present the experience of our institution in the management of primary hyperparathyroidism originating in ectopic parathyroid glands by means of video-assisted thoracoscopic surgery (VATS) resection.

Methods

A case series of 3 primary hyperthyroidisms originated from a single ectopic parathyroid gland undergoing resection by VATS in a 10-year period.

Results

The diagnosis was established in all patients by serum parathyroid hormone measurements and corroborated with SPECT and 99mTc sestamibi scintigraphy (Image 1). Demographic data is presented in table 1. All the patients were treated by the same surgical approach, through a left VATS (video-assisted thoracoscopic surgery approach), using three ports. All resections were corroborated with intraoperative histopathological assessment, confirming parathyroid tissue. One intraoperative morbidity event was recorded, due to an injury to a branch of the inferior bronchial artery. No mortality events occurred; and median length of stay in the hospital was 16 days (16 and 25). The principal cause of long hospital stay was the presence of symptomatic hypocalcemia which required intravenous administration of calcium gluconate (table 2).

Discussion

The mediastinal ectopic parathyroid adenoma is a rare disease (MEPAs). Up to 20% of the general population have ectopic parathyroid glands, the most frequent localization for the upper parathyroid glands are: hyoid bone, carotid artery sheet, inside the thyroid gland, mediastinum, and inside the thymus, and for the lower parathyroid gland are: behind the esophagus, tracheal-esophageal notch, carotid artery sheet or the posterior superior mediastinum; an even-rarer location is in the aortopulmonary window (image1) (8). The traditional surgical approach for MEPAs was the median sternotomy or thoracotomy. Both methods provide a wide view for the performing surgeon but has serious drawbacks that imply a big scar as well as painful and slow recovery (9).

The current incorporation VATS offers a minimally invasive treatment with the same results. We used a conventional approach in decubitus lateralis to have access to the aortopulmonary window, using three ports. The first port was located in the anterior to the mid axillary line in the seventh to eighth intercostal space, the access port was placed in the fifth intercostal space using an alexis retractor and an accessory port at the eighth intercostal space; a direct vision of the aortopulmonary window was achieved.



Image 1. single-photon emission computed tomography. Shows a hypermetabolic area in the mediastinum

Case	Age	Gender	Classification	Clinical presentation
1	59	Female	Tertiary hyperparathyroidism.	Chronic renal failure, nephrolithiasis, Kidney transplant, Arterial hypertension
2	51	Female	Primary hyperparathyroidism.	Nephrolithiasis, thyroidectomy
3	54	Female	Primary hyperparathyroidism.	Chronic renal failure, nephrolithiasis, arterial hypertension

Table 1. Demographics of patients with hyperparathyroidism.

This surgical approach to the mid mediastinum provides a lower trauma to the patient´s body and a better visualization of the great vessels and the left phrenic and laryngeal recurrent nerves.

In concern to surgery time, it is similar in comparison to what is reported in thoracotomy, nonetheless, the post-operative pain management requires fewer and milder analgesics as well as a sooner recovery and hospital egress. The mean drain dwell time was two days and there were no life-threatening situations during surgery. There was no hungry bone syndrome in any of the cases (10).

Conclusions

The traditional surgical approach for MEPAs was the median sternotomy or thoracotomy. Both methods provide a wide view for the performing surgery but has serious drawbacks that imply a big scar as well as painful and slow recovery.The incorporation of VATs offers a minimally invasive treatment option with good results, for which diagnostic imaging is a key element.We recommend to use this minimal invasive approach only after corroborating the diagnosis and localization of the affected gland, because surgical exploration of parathyroid glands is limited by this approach.

Case	1	2	3
Preoperative serum calcium level (mg/dl)	9,7	15,1	10,02
Preoperative PTH (pg/dl)	182	302,9	1382
Location	Aorto-pulmonary window	Aorto-pulmonary window	Aorto-pulmonary window
Pathology report	Adenoma	Hyperplasia	Adenoma
Dimension of the tumor	18x14mm	Multifragmented	29x35x27 mm
PO serum calcium (mg/dl)	9	10,40	8,30
PO PTH levels (pg/dl)	37,2	74,50	25,6
Incidents/accidents during surgery	No	Accidental injury to a branch of inferior Bronchial artery.	No
Surgical time (minutes)	180	160	140
Length of hospital stay	16	25	16

Table 2. Characteristics of patients undergoing VATS resection of mediastinal ectopic parathyroid adenoma

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