

A Novel Approach of Videothoroscopic Surgery for Posterior Mediastinal Goiter

PRK Bhargav, SK Uday, V Amar

ABSTRACT

Intrathoracic extension of large goiters occasionally requires thoracic approaches, such as sternotomy, anterior or posterolateral thoracotomy. Videothoroscopic technique is a minimally invasive approach, but usually done under single lung ventilation with double lumen endotracheal tube anesthesia. But, this newer technique of thoracoscopic dissection and delivery of posterior mediastinal goiter with partial lung collapse minimizes the postoperative morbidity and pulmonary complications.

Keywords: Thoracoscopic thyroidectomy, Intrathoracic goiter, Posterior mediastinal extension.

How to cite this article: Bhargav PRK, Uday SK, Amar V. A Novel Approach of Videothoroscopic Surgery for Posterior Mediastinal Goiter. *World J Endoc Surg* 2012;4(2):83-84.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

A 53-year-old man presented with a history of progressive goiter of 10 years duration with no features of hyper- or hypothyroidism. There was history of pressure symptoms in the form of dysphagia. On clinical examination, it is a large multinodular goiter (MNG) with nonpalpable lower border and Pemberton's sign was positive. Computerized tomogram (CT) revealed a posterior mediastinal extension (PME) on right side. With the diagnosis of nontoxic MNG and retrosternal extension, thyroidectomy was planned. For anesthesia, single lumen endotracheal tube and double lung ventilation was used. Cervical goiter was operated through conventional neck approach for thyroidectomy. We attempted digital delivery of mediastinal extension on right side with blunt dissection of the prevertebral space after identification of the recurrent laryngeal nerve. We abandoned this attempt of cervical delivery of intrathoracic goiter for fear of intrathoracic vascular injury as it was necessitating undue force. We utilized an alternative procedure of videothoroscopic dissection assisted by terminal digital delivery through the neck incision. Three thoracic ports were used and pneumothorax with CO₂ insufflation of 6 mm Hg pressure assisted by hypoventilation till adequate working space is created (Fig. 1). Figure 2 shows the thoracoscopic view of the intrathoracic goiter and surrounding structures. The schematic diagram of thoracoscopic view is depicted in Figure 3 for clarity. PME was dissected thoracoscopically

from the surrounding mediastinal pleura, fascia and vascular adhesions. Terminal part of the dissection was assisted by the left index finger placed through the neck. After delivery of the PME, total thyroidectomy specimen was retrieved through the neck. Postoperative period was uneventful. Biopsy report of the specimen was benign colloid MNG. At follow-up of 6 months, he was asymptomatic with no sequela.

Majority of intrathoracic goiters can be operated and delivered through the cervical approach, but rarely require alternative thoracic approaches.¹ PME can be operated by sternotomy, anterior thoracotomy, posterolateral thoracotomy or by video-assisted thoracoscopy. But, thoracic approach requires a double lumen endotracheal tube

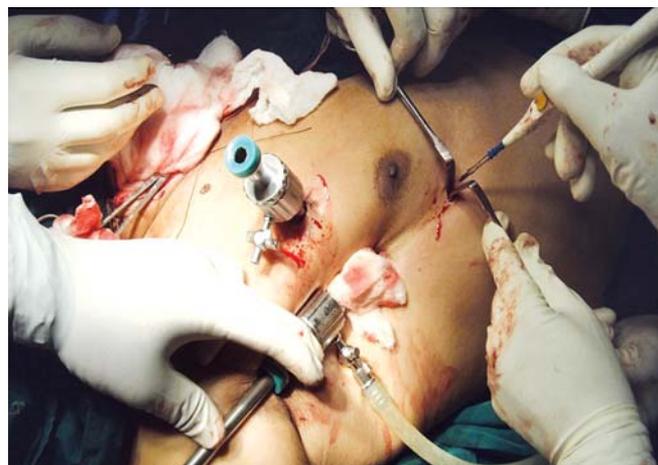


Fig. 1: Port placements for thoracoscopic thyroidectomy

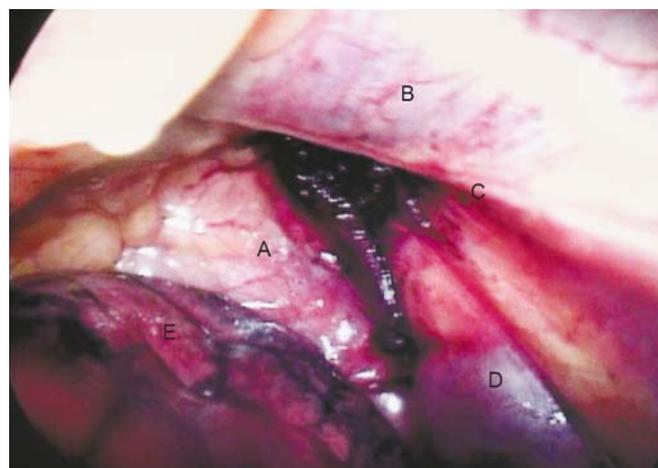


Fig. 2: Thoracoscopic view of the posterior mediastinal goiter: (A) Goiter; (B) superior vena cava; (C) phrenic nerve; (D) azygos vein; (E) apex of lung

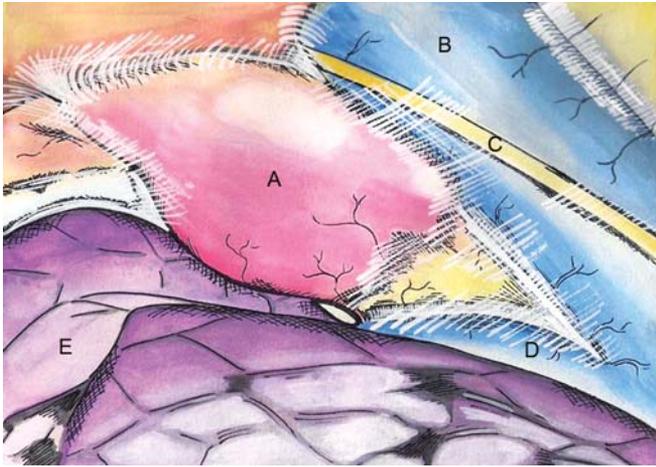


Fig. 3: Schematic diagram of thoracoscopic view of the intrathoracic goiter: (A) Goiter; (B) superior vena cava; (C) phrenic nerve; (D) azygos vein; (E) apex of lung

and single lung ventilation with attended high cost and technical complexity and complications.² Complications, such as postoperative atelectasis and hypoxia can occur, especially in the presence of preexisting lung disease.³ Thoracoscopic surgery using single lumen endotracheal tube was successfully utilized in various procedures like esophagectomy, pneumonectomy, empyema.⁴ As majority of mediastinal goiters require thoracoscopic space in upper third of thorax only, we utilized the similar technique of partial lung collapse with low pressure carbothorax using conventional anesthetic technique. We used similar technique successfully in three more cases and detailed technique is described in our paper.⁵ The advantages of this minimally invasive approach as we found were, minimal anesthetic complexity, low cost and shorter operative time as patient lies supine throughout the procedure without frequent change in position. Moreover, thoracoscopic dissection facilitates delivery of the goiter under vision without the fear of damage to vital mediastinal structures and vasculature, which can occur with blind digital delivery.⁶ There was no report on this technique in the published literature, we searched. This paper shows images of a simplified and minimally morbid videothoracoscopic

technique for mediastinal goiter, which is not deliverable by conventional cervical approach after adequate efforts.

REFERENCES

1. Monchik JM, Materazzi G. The necessity for a thoracic approach in thyroid surgery. *Arch Surg* 2000;135:467-71.
2. Whitson BA, Andrade RS, Boettcher A, Bardales R, Kratzke RA, Dahlberg PS, Maddaus MA. Video-assisted thoracoscopic surgery is more favorable than thoracotomy for resection of clinical stage I non-small cell lung cancer. *Ann Thorac Surg* 2007;83:1965-70.
3. Kaseda S, Aoki T, Hangai N, Shimizu K. Better pulmonary function and prognosis with video-assisted thoracic surgery than with thoracotomy. *Ann Thorac Surg* 2000;70:1644-46.
4. Palanivelu C, Prakash A, Senthilkumar R, Senthilnathan P, Parthasarathi R, Rajan PS, Venkatachlam S. Minimally invasive esophagectomy: Thoracoscopic mobilization of the esophagus and mediastinal lymphadenectomy in prone position—experience of 130 patients. *J Am Coll Surg* 2006; 203(1):7-16.
5. Bhargav PRK, Kishan rao, Murthy SGK, Bhagat SD, Amar V. Combined cervical and video-assisted thoracoscopic thyroidectomy (CAVATT): A simplified and innovative approach for goiter with posterior mediastinal extension. *Indian J Surgery* 2010;72(4):336.
6. Houck WV, Kaplan AJ, Reed CE, Cole DJ. Intrathoracic aberrant thyroid: Identification critical for appropriate operative approach. *Am Surg* 1998;64:360-62.

ABOUT THE AUTHORS

PRK Bhargav (Corresponding Author)

Assistant Professor, Department of Endocrine Surgery Mamata Medical College and Hospital, Khammam-507002 Andhra Pradesh, India, Phone: 91-9490130798, 08742-252010 e-mail: kingbhargav@gmail.com

SK Uday

Associate Professor, Department of General Surgery, Mamata Medical College and Hospital, Khammam, Andhra Pradesh, India

V Amar

Consultant, Department of Advanced Laparoscopic and Bariatric Surgery, Mamata Medical College and Hospital, Khammam, Andhra Pradesh, India