

Case Report

Cervical mediastinoscope: a cardiothoracic training centre experience in Malaysia

Karthigesu Aimanan^{1*}, Mohamad Arif Bin Muhammad Nor², Balaji Padmanaban²

¹Department of General Surgery, National University of Malaysia, Malaysia

²Department of Cardiothoracic, Hospital Serdang, Malaysia

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***Correspondence:**

Dr Karthigesu Aimanan,

E-mail: karthi_abim@yahoo.com

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ABSTRACT

Mediastinoscopy since the introduction in year 1959 has remained a useful investigation tool for mediastinal lymphadenopathies. It is also commonly used for preop staging of lung carcinoma. However with the introduction of non-invasive methods, mediastinoscopy technique became least preferred by surgeons and training centres. We have reported a case serie of thirty mediastinoscopies performed in our setting, highlighting on diagnostic accuracy and safety. We believe mediastinoscopy still has a beneficial role for investigation of mediastinal lesions despite availability of minimally invasive methods.

Keywords: Mediastinoscopy, Complication, Lung ca staging

INTRODUCTION

Mediastinum is a complex anatomical area with various possible pathologies. The main complexity in dealing with this area is to obtain a diagnostic pathology. Mediastinoscope since its introduction has remained a useful tool for investigation. Evolution in medical with the introduction of non-invasive modalities has made this technique being underappreciated in cardiothoracic training. We report a case series of mediastinoscopes in our centre describing on its advantage over non-invasive modalities with an aim to well accustom trainees with this technique.

CASE REPORT

We conducted a retrospective review of all mediastinal masses underwent open biopsies in our centre focusing on mediastinoscopes from 2011 to 2013. Data were collected from operation theatre census and patients registry. The preferred mode of biopsy in each case was

decided after discussion in the multidisciplinary meeting. Mediastinoscope was carried out by an experienced cardiothoracic surgeon. Patients HPE were reported by two experienced pathologists.

A total of 66 cases (n=66) underwent an open mediastinal mass biopsy in our centre over a period of 3 years from March 2011 till March 2013. Cervical mediastinoscope was performed in 45% of cases, sternotomy in 21% cases, and anterior chest mediastinotomy in 17% of cases and thoracotomy in 17% of cases. Total numbers of mediastinoscopes performed over this period were 30. The study population comprises of 17 (57%) men and 13 (53%) women. We carried out these procedures for undiagnosed mediastinal lymphadenopathies for 24 (77%) patients and lung cancer staging purpose in 6 patients (20%). (Table 1) Among the undiagnosed lymphadenopathies 12 histological specimens (65%) corresponded to granulomatous inflammation; 2 showed evidence of mediastinal malignancy (8%); 2 reactive lymphadenopathies; 1 showed thyroid tissue; no

malignancy in 6 patients and one revealed inconclusive result.

Table 1: Patient demographics

Age	Mean	55
	Median	58
Gender	Male	17 (57%)
	Female	13 (43 %)
Indication	Isolated mediastinal LN	24 (80%)
	Staging	6 (20%)

The patient with inconclusive result underwent endoscopic ultrasound guided biopsy and was diagnosed as lower lobe carcinoma. Five patients in the undiagnosed mediastinal lymphadenopathies group have been referred following inconclusive TBNA results. Mediastinoscope showed conclusive histological interpretation in all of them.

Table 2: Histopathological result post mediastinoscope

Indication	Cases	Histopathological diagnosis	Cases
Isolated mediastinal lymphadenopathy	24	Tuberculosis	12
		Reactive lymphadenopathies	2
		Malignant lymphoma	1
		Small cell Ca	1
		Thyroid tissue	1
		Inconclusive	1
		No malignancy	6
Staging	6	Metastasis	3
		No metastasis	3
Inconclusive TBNA	5	Tuberculosis	2
		Thyroid tissue	1
		No malignancy	2

(Table 2) Among six patients that underwent mediastinoscope for staging purpose, three patients were confirmed as metastatic disease and referred to oncology for chemotherapy. The other three patients have ruled out metastasis and underwent curable resection. The mean duration of stay inward following mediastinoscope was two days. We have never encountered any complications from the procedure.

DISCUSSION

Mediastinoscope was first described in the year 1959 by Carlens from Karolinka Institute Sweden. It was a great procedure since the introduction, but recently its use has been limited due to fear of associated complications and availability of less invasive modalities. Mediastinoscope generally can be utilized to obtain samples from superior and middle mediastinum.¹ Choosing the mode of mediastinoscope is influenced by the location of the node for biopsy. Conventional mediastinoscope can be used to

sample para tracheal nodes and subcarinal nodes. Extended mediastinoscope allows us to access sub aortic and para aortic lymph nodes stations.

In our centre mediastinoscope is considered a preferred approach due to less complication and high yield of a conclusive result. Overall, mediastinoscope has a reported sensitivity of 87% and specificity of 100%.² Review of literature reveal careful patient selection after multidisciplinary discussion before procedure, and regular practice of mediastinoscopes are the contributing factors for high yield. Common complications following mediastinoscope are haemorrhage, recurrent palsy, pneumothorax, tracheal laceration, oesophageal injury, wound infection and general anaesthesia related causes. Even though the reported complication rates are minimal 0.6-3.7%, the possibility of these dreadful complications remains a significant drawback for routine use of mediastinoscope in many centres. A better teaching and routine practice of mediastinoscope can reduce these fears among surgeons. Walles et al. in their paper concluded video-assisted technique can significantly improve the learning of mediastinoscope techniques in training centres.³

There is still debate as to perform mediastinoscope for all operable non-small cell lung cancer with or without evidence of enlarged lymph nodes on CT. According to Meyers et al, routine mediastinoscope may not be suggested for all NSCLC, with the introduction of PET for imaging of the mediastinum.⁴ A comparison of PET scans with histopathological results found that 86% of patients were correctly staged with a PET scan, although the positive predictive value was low (46%) and the negative predictive value was high (97%).⁵ This result shows a possibility of higher false positive rate with this imaging technique. Due to these limitations of PET scan, mediastinoscope should be considered as an essential pre-operative assessment in lung cancer to plan a better treatment strategy.

EBUS- TBNA is another mode of a minimally invasive technique for undiagnosed mediastinal lymphadenopathies. There have been two prospective trials compared EBUS-TBNA and mediastinoscope for mediastinal lymph node staging.⁶ These studies favoured towards EBUS-TBNA as superior in term of high yield and less complication. However, because of the possibility of micrometastases, mediastinoscope is still preferable in few centres.

CONCLUSION

Regular use of mediastinoscope is of value in managing thoracic diseases given its diagnostic accuracy and safety. Better teaching remains essential in incorporating these techniques in many centres. Careful patient selection and multidisciplinary discussion will assure its superiority over other alternative techniques.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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