



# MEDIASTINO-THORACOSCOPY & PERICARDIOSCOPY

Juan Carlos Trujillo- Reyes
*Thoracic Surgery Department*
*Hospital de la Santa Creu i Sant Pau. Barcelona*

**Abstract:**

Mediastino-thoracoscopy: Surgical staging of lung and pleural cancers is crucial for planning treatment and assessing prognosis. In some cases, we need to explore both the mediastinum and the pleural cavity to confirm or rule out tumor dissemination. The combination of video-assisted mediastinoscopic lymphadenectomy (VAMLA) and thoracoscopy through a single transcervical incision allows the surgeon to widen the range of the exploration and improve the staging for lung and pleural cancers.

VAMLA consists of complete removal of the mediastinal fat and lymph nodes of the subcarinal space, the right paratracheal and pretracheal areas, and the left paratracheal space. Once this mediastinal tissue is removed, the right mediastinal pleura can be identified and incised. A 30º thoracoscope is then inserted through the video-mediastinoscope into the pleural cavity to obtain samples of pleural fluid and biopsies of the parietal pleura and lung nodules, if present. In the case of left-sided thoracoscopy the access route to the left pleural cavity is anterior to the aortic arch, as for extended cervical mediastinoscopy.

The combination of VAMLA and thoracoscopy is useful for exploring the mediastinum and the pleural space from a single incision and in the same surgical setting as the transcervical approach.

Subxiphoid pericardioscopy: Pericardial effusion may be associated with many diseases, but sometimes its etiology is not easy to elucidate. Subxiphoid video-pericardioscopy is useful for the study of the pericardial cavity. Through a subxiphoid approach, the pericardium is incised and a rigid (usually a video-mediastinoscope) or a flexible endoscope (flexible bronchoscope or flexible choledoscope) is inserted into the pericardial cavity. The inner surface of the parietal pericardium and the epicardium can be explored and biopsies can be taken under visual control. In addition, a subxiphoid pericardial window can be developed, and sclerosing agents instilled for pericardiodesis, if a malignant etiology is confirmed. In case of pericardial effusion associated

with lung cancer, video-pericardioscopy helps to confirm the absence or presence of pericardial tumor implant or infiltration, and to establish the resectability of the tumor. Other than transient arrhythmias during the procedure, video-pericardioscopy has no major complications. When compared with surgical pericardial drainage, video-pericardioscopy has higher sensitivity without specific risks. Rigid endoscopes are the best devices to explore the posterior and lateral pericardial surfaces, the pulmonary veins being the posterior limit of the exploration. Big anterior mediastinal masses and pericardial symphysis may render the exploration impossible.

**REFERENCES:**


1. Deslauriers J, Beaulieu M, Dufour C, Michaud P, Despres JP, Lemieux M. Mediastinopleuroscopy: a new approach to the diagnosis of intrathoracic diseases. Ann Thorac Surg 1976;22:265–9. PubMed Abstract |
2. Chamberlain MH, Fareed K, Nakas A, Martin-Ucar AE, Waller DA. Video-assisted cervical thoracoscopy: a novel approach for diagnosis, staging and pleurodesis of malignant pleural mesothelioma. Eur J Cardiothorac Surg 2008;34:200–3. PubMed Abstract | EJCTS Full Text
3. Dawson AG, Waller DA. Cervical mediastino-thoracoscopy. In Zieliński M, Rami-Porta R (eds). The Transcervical Approach in Thoracic Surgery, Springer-Verlag, Berlin Heidelberg; 2014;45–51.
4. Goldstraw P (ed). International Association for the Study of Lung Cancer Staging Handbook in Thoracic Oncology. Editorial Rx-Press. Florida. 2009.
5. Hürtgen M, Friedel G, Toomes H, Fritz P. Radical video-assisted mediastinoscopic lymphadenectomy (VAMLA) – technique and first results. Eur J Cardiothorac Surg. 2002;21:348–51 PubMed Abstract | EJCTS Full Text
6. Witte B, Hürtgen M. Video-assisted mediastinoscopic lymphadenectomy (VAMLA). J Thorac Oncol 2007;2:367–369. PubMed Abstract | Publisher Full Text
7. Call S, Obiols C, Rami-Porta R, Trujillo- Reyes JC, Iglesias M, Saumench R, et al. Video-assisted mediastinoscopic lymphadenectomy for staging non–small cell lung cancer. Ann Thorac Surg 2016;101:1326–33. PubMed Abstract | Publisher Full Text
8. Witte B, Huertgen M. Video-assisted mediastinoscopic lym- phadenectomy. Multimed Man Cardiothorac Surg 2007 (1018):mmcts.2006.002576. PubMed Abstract | Publisher Full Text
9. Rusch VW, Asamura H, Watanabe H, Giroux DJ, Rami-Porta R, Goldstraw P. The IASLC lung cancer staging project. A proposal for a new international lymph node map in the forthcoming seventh edition of the TNM classification for lung cancer. J Thorac Oncol. 2009;4:568–77. PubMed Abstract | Publisher Full Text
10. Call S, Rami Porta R, Serra Mitjans M, Saumench R, Bidegain C, Iglesias M, et al. Extended cervical mediastinoscopy in the staging of bronchogenic carcinoma of the left lung. Eur J Cardiothorac Surg 2008;34:1081–4. PubMed Abstract | EJCTS Full Text
11. Lopez L, Varela A, Freixinet J, Quevedo S, Lopez Pujol J, Rodriguez de Castro F, et al. Extended cervical mediastinoscopy: prospective study of fifty cases. Ann Thorac Surg 1994;57:555–8. PubMed Abstract | Publisher Full Text
12. Freixinet J, Gamez P, Rodriguez de Castro P, Rodriguez P, Santana N, Varela de Ugarte A. Extended cervical mediastinoscopy in the staging of bronchogenic carcinoma. Ann Thorac Surg 2000;70:1641–3. PubMed Abstract | Publisher Full Text
13. Obiols C, Call S, Rami-Porta R, Trujillo-Reyes JC. Utility of the transcervical approach in bilateral synchronous lung cancer. Asian Cardiovasc Thorac Ann. 2015;23:991–4. PubMed Abstract | Publisher Full Text
14. Fowkes L, Lau KKW, Shah N, Black E. A cervical approach to investigating pleural disease. Ann Thorac Surg 2009;88:315–7. PubMed Abstract | Publisher Full Text

15. De Leyn P, Dooms C, Kuzdal J, Lardinois D, Passlick B, Rami-Porta R et al. Revised ESTS guidelines for preoperative mediastinal lymph node staging for non-small-cell lung cancer. Eur J Cardiothorac Surg 2014;45:787–98. PubMed Abstract | EJCTS Full Text
16. Liberman M, Khereba M, Goudie E, Tahiri M, Forcillo J, Gauthier A, et al. Cervical video-assisted thoracoscopic surgery using a flexible endoscope for bilateral thoracoscopy. Ann Thorac Surg 2012;93:1321–3. PubMed Abstract | Publisher Full Text
17. Rusch VW, Venkatraman E. The importance of surgical staging in the treatment of malignant pleural mesothelioma. J Thorac Cardiovasc Surg. 1996;111:815–26. PubMed Abstract | Publisher Full Text
18. Y.C. Gary Lee, Michael H. Baumann, Nick A. Maskell, Grant W. Waterier, Tam E. Eaton, et al. Pleurodesis practice for malignant pleural effusions in five English-speaking countries, survey of pulmonologists. Chest, 2003;124:2229–38. PubMed Abstract | Publisher Full Text
19. Zieliński M, Pankowski J, Hauer L, Kużdżał J, Nabiałek T. The right upper lobe pulmonary resection performed through the transcervical approach. Eur J Cardiothorac Surg. 2007;32:766–9. PubMed Abstract | EJCTS Full Text
20. Widstrom A. Palsy of the recurrent nerve following mediastinoscopy. Chest 1975;67:365–6. PubMed Abstract
21. Roberts J, Wadsworth J. Recurrent laryngeal nerve monitoring during mediastinoscopy: predictors of injury. Ann Thorac Surg 2007;83:388–92. PubMed Abstract | Publisher Full Text
22. Abraham KP, Reddy V, Gattuso P. Neoplasms metastatic to the heart: review of 3314 consecutive autopsies. Am J Cardiovasc Pathol 1990;3:195–8. PubMed Abstract
23. Jama G, Scarci M, Bowden J, Marciniak S. Palliative treatment for symptomatic malignant pericardial effusion. Interact CardioVasc Thorac Surg 2014;19:1019–26. PubMed Abstract | Publisher Full Text
24. Buzaid AC, Garewal HS, Greenberg BR. Managing malignant pericardial effusion. West J Med 1989;150:174–9. PubMed Abstract | Free Full Text
25. Buchanan CL, Sullivan VV, Lampman R, Kulkarni MG. Pericardiocentesis with extended catheter drainage: an effective therapy. Ann Thorac Surg 2003;76:817–20. PubMed Abstract | Publisher Full Text
26. Gatenby RA, Hartz WH, Kessler HB. Percutaneous catheter drainage for malignant pericardial effusion. J Vasc Intervent Radiol 1991;2:151–5. PubMed Abstract | Publisher Full Text
27. Kopecky SL, Callahan JA, Tajik AJ, Seward JB. Percutaneous pericardial catheter drainage: report of 42 consecutive cases. Am J Cardiol 1986;58:633–5. PubMed Abstract | Publisher Full Text
28. Little A, Ferguson M. Pericardioscopy as adjunct to pericardial window. Chest 1986;89:1. PubMed Abstract | Publisher Full Text
29. Kondos GT, Rich S, Levitsky S. Flexible fiberoptic pericardioscopy for the diagnosis of pericardial disease. J Am Coll Cardiol 1986;7:432–4. PubMed Abstract | Publisher Full Text
30. Mack MJ, Landreneau RJ, Hazelrigg SR, Acuff TE. Video thoracoscopic management of benign and malignant pericardial effusions. Chest 1993;103:390–93. PubMed Abstract | Publisher Full Text
31. Neragi-Miandoab S, Linden PA, Ducko CT, Bueno R, Richards WG, Sugarbaker DJ et al. VATS pericardiotomy for patients with known malignancy and pericardial effusion: survival

and prognosis of positive cytology and metastatic involvement of the pericardium: a case control study. Int J Surg 2008;6:110–14. PubMed Abstract | Publisher Full Text
32. Moores DWO, Allen KB, Faber LP, Dziuban SW, Gillman DJ, Warren WH et al. Subxiphoid pericardial drainage for pericardial tamponade. J Thorac Cardiovasc Surg 1995;109:546–52. PubMed Abstract | Publisher Full Text
33. Wang N, Feikes JR, Mogensen T, Vyhmeister EE, Bailey LL. Pericardioperitoneal shunt: an alternative treatment for malignant pericardial effusion. Ann Thorac Surg 1994;57:289–92. PubMed Abstract | Publisher Full Text
34. Olson JE, Ryan MB, Blumenstock DA. Eleven years' experience with pericardial-peritoneal window in the management of malignant and benign pericardial effusions. Ann Surg Oncol 1995;2:165–9. PubMed Abstract | Publisher Full Text
35. Kallianpur A, Samra S, Nimbran V, Gupta R, Akkarappatty C, Gupta N et al. Pericardial-peritoneal window: a novel palliative treatment for malignant and recurrent cardiac tamponade. Indian J Palliat Care 2013;19:116–8. PubMed Abstract | Publisher Full Text | Free Full Text