Editorial

Transoral endoscopic mediastinal surgery (TOEMS)—true or false hope?

Marcin Zielinski

Department of Thoracic Surgery, Pulmonary Hospital, Zakopane, Poland

Correspondence to: Marcin Zielinski, MD, PhD. Department of Thoracic Surgery, Pulmonary Hospital, Ul. Gładkie 1, 34 500 Zakopane, Poland. Email: marcinz@mp.pl.

Comment on: Klemm W, Frese S, Leschber G, *et al*. Transoral endoscopic mediastinal surgery (TOEMS)-results of a first clinical study for scarless mediastinal lymph node biopsies. J Thorac Dis 2016;8:2717-23.

Received: 21 March 2017; Accepted: 31 March 2017; Published: 07 April 2017.

doi: 10.21037/amj.2017.03.11

View this article at: http://dx.doi.org/10.21037/amj.2017.03.11

Mediastinal lymphadenopathy include a variety of clinical entities including primary lung cancer, primary and metastatic mediastinal tumors, and multiple benign conditions. In the clinical practice, diagnosis of mediastinal lymphadenopathy includes imaging, endoscopic and surgical techniques.

The currently used imaging techniques include computer tomography (CT), positron emission tomography (PET) combined with CT (PET/CT), endoscopic/ultrasound techniques [endobronchial ultrasound/transbronchial needle aspiration (EBUS/TBNA) and endoscopic ultrasound/fine needle aspiration (EUS/FNA)] and surgical techniques [standard cervical mediastinoscopy (CM), video-assisted mediastinoscopy (VAM), extended mediastinoscopy, video-assisted mediastinoscopic lymphadenectomy (VAMLA), transcervical extended mediastinal lymphadenectomy (TEMLA), anterior mediastinotomy (Chamberlain procedure) and video-assisted thoracic surgery (VATS)] (1).

One of the most important aims of diagnostics of the mediastinal nodes is staging of NSCLC, which is currently an increasingly complex process with staging of the mediastinal nodes being a central part of this process. There is a general agreement that chest CT is insufficiently accurate to predict metastatic involvement in patients with a discrete enlargement of the nodes or normally looking mediastinum. PET/CT emerged as a standard of staging in the patients considered candidates for surgical treatment. The main value of PET/CT is discovery of possible clinically silent metastasis (2). PET/CT will probably never replace CT completely, because anatomical details of the chest are visualized much more precisely on good quality CT than on PET/CT. During the last decade the role of EBUS and EUS rose substantially. These studies are currently recognized as the second step of staging after CT and PET/CT due to the minimal invasiveness (3-5). It seems reasonable to combine endoscopic/ultrasound and surgical staging, this approach has been recently supported by results of our group (6). The results reported by the leading experts on EBUS/EUS are impressive and lead them to claim that due to the advantages and possible superiority of EBUS and EUS in comparison to mediastinoscopy the latter one is no longer necessary. However, surgical staging is not the past history. Even in some recent publication cervical mediastinoscopy was still regarded the gold standard of the mediastinal staging (7). The final step of mediastinal nodal staging is a systematic lymphadenectomy performed during pulmonary resection of preoperatively, by means of VAMLA or TEMLA (8,9).

In the light of the state-of-art described above, the Authors deserve respect for the first clinical phase I study reported on the scarless technique of mediastinal surgery which they described as transoral endoscopic mediastinal surgery (TOEMS) (10). No doubt, avoidance of the scar in the neck is an advantage of this technique as the Authors pointed-out correctly.

The other advantage is a new, interesting technique, itself.

There are several questions regarding the article by Klemm *et al.* First of all, the indications to perform TOEMS were not clearly explained. The authors mentioned that "*Patients with unclear mediastinal lymphadenopathy confirmed by CT scan were selected. All patients underwent prior bronchoscopy which was unable to provide histologically proven diagnosis of*

mediastinal lymphadenopathy". Finally there were four patients with sarcoidosis and no pathological abnormalities in four other cases.

The question is if these patients were examined by PET/CT prior to TOEMS and the other question, even more important than the previous one, if the patients couldn't have been diagnosed with EBUS and EUS instead of TOEMS or at least why wasn't EBUS or EUS performed first, before TOEMS? This is also strange why the authors omitted to mention EBUS/EUS techniques as possible tools for diagnosis of mediastinal lymphadenopathy in the Introduction and Discussion sections of their article.

As the technique of TOEMS is a brand new one, there are obviously several shortcomings which should be addressed:

(I) The procedure could be completed in 8/10 (80%) patients which is different in case of mediastinoscopy with is virtually always successful in this regard.

(II) On average, two lymph node stations were reached through TOEMS procedure (in two patients one station, in five patients two lymph node stations, in one patient three stations). Most frequently gained lymph node station was 4R (seven patients) followed by 2R (three patients) and 4 L (two patients). Although it was directly stated in the article, it seems that it was not possible to reach station 7 in any patient (maybe in one?). Because the station 7 is a critically important station for staging of NSCLC, it seems apparent that obviously, TOEMS is the procedure not suitable for staging of NSCLC, currently.

(III) TOEMS was a time consuming procedure with a mean time of 159±22 min/procedure. However, in the future this could be changed with a growing operators' experience.

It would be interesting to know what is the authors' opinion about the possible role of TOEMS for the future. I suspect that TOEMS could not be an alternative for EBUS and EUS in diagnosing of the benign lymphadenopathy like sarcoidosis which are less invasive procedures and will not replace mediastinoscopy and its derivatives as VAM, VAMLA or TEMLA in staging of NSCLC. Despite these critical remarks Klemm *et al.* deserve congratulations for the first clinical trial to perform a Natural Orifice Translumenal Endoscopic Surgery (NOTES)—like mediastinal procedure.

Acknowledgements

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned and reviewed by the Section Editor Jianfei Shen (Taizhou Hospital of Zhejiang Province, Wenzhou Medical University, China).

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/amj.2017.03.11). The author has no conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Silvestri GA, Gonzalez AV, Jantz MA, et al. Methods for staging non-small cell lung cancer: Diagnosis and management of lung cancer, 3rd ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest 2013;143:e211S-50S.
2. Fischer B, Lassen U, Mortensen J, et al. Preoperative staging of lung cancer with combined PET-CT. N Engl J Med 2009;361:32-9.
3. Herth FJ, Krasnik M, Kahn N, et al. Combined endoscopic-endobronchial ultrasound-guided fine-needle aspiration of mediastinal lymph nodes through a single bronchoscope in 150 patients with suspected lung cancer. Chest 2010;138:790-4.
4. Annema JT, van Meerbeeck JP, Rintoul RC, et al. Mediastinoscopy vs endosonography for mediastinal nodal staging of lung cancer: a randomized trial. JAMA 2010;304:2245-52.
5. De Leyn P, Dooms C, Kuzdzal J, 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.
6. Zielinski M, Szlubowski A, Kołodziej M, et al. Comparison of endobronchial ultrasound and/or endoesophageal ultrasound with transcervical extended mediastinal lymphadenectomy for staging and restaging of non-small-cell lung cancer. J Thorac Oncol 2013;8:630-6.
7. Shrager JB. Mediastinoscopy: Still the Gold Standard. Ann Thorac Surg 2010;89:S2084-9.
8. Hürtgen M, Friedel G, Toomes H, et al. Radical video-assisted mediastinoscopic lymphadenectomy (VAMLA)--technique and first results. Eur J Cardiothorac Surg 2002;21:348-51.
9. Zielinski M. Transcervical extended mediastinal lymphadenectomy: results of staging in two hundred fifty-six patients with non-small cell lung cancer. J Thorac Oncol 2007;2:370-2.
10. Klemm W, Frese S, Leschber G, et al. Transoral endoscopic mediastinal surgery (TOEMS)—results of a first clinical study for scarless mediastinal lymph node biopsies. J Thorac Dis 2016;8:2717-23.

doi: 10.21037/amj.2017.03.11
Cite this article as: Zielinski M. Transoral endoscopic mediastinal surgery (TOEMS)—true or false hope? AME Med J 2017;2:41.

