The Role of Video-Assisted Thoracic Surgery in Removal of Intrathoracic Foreign Bodies Secondary to Trauma: 12 Cases From War Zones in The Middle East and North Africa

Hamdi Abu Ali[1], Bahaa Shihadeh[1], Khaled Al-Asad[2], Qais Abu Ali[2], Noor Abdulbaqi[2].

[1]Istishari Hospital, Jordan, [2]Private Practice, Jordan.

OBJECTIVE

Video-assisted thoracic surgery (VATS) has been deemed an acceptable and effective minimally invasive approach to treat a multitude of intra-thoracic conditions. The use of VATS for removal of foreign bodies in hemodynamically stable thoracic trauma patients has been reported in only a few cases in the literature.

We report our experience and favorable outcome in removing traumatic foreign bodies in 12 cases from war zones in the Middle East and North Africa, representing the *largest reported cohort from this region.*

METHODS

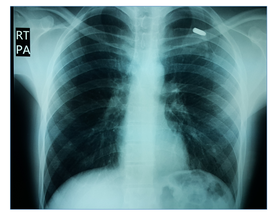
A cohort of 12 patients with war-related injuries and foreign body objects in the chest cavity were referred to our minimally invasive thoracic surgery service.

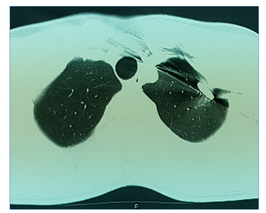
All patients were hemodynamically stable at the time of referral, but had foreign-body related complications including empyema, pneumothorax, loculated effusions and retained hemothorax. VATS was performed for all patients, without the need of open thoracotomy in any of them.

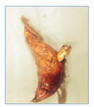
Discussion

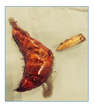
Video-assisted thoracic surgery (VATS) has been increasingly used in the hemodynamically stable thoracic trauma patients. Some of the advantages it offers compared to open thoracotomy include, less pain, faster recovery, better visualization, and quicker return to pre-surgery life style. There are also several case reports of using VATS in removal of retained metallic foreign bodies in hemodynamically stable patients. The indications of removal of such foreign bodies include but are not limited to : associated empyema, hemothorax, pneumothorax, large metallic objects/ bullets (>2cm), objects with sharp edges near major vessels, suspicion of diaphragmatic injury and addressing psychological concerns. Between August 2014 and March 2015, our group was the main referral group for air-lifted hemodynamically stable trauma patients from a neighboring war-zone country with thoracic trauma. All patients with thoracic trauma had other organ injuries such as orthopedic, neurosurgical, abdominal and other injuries. All patients had pre-operative CT scan to better localize the foreign bodies and confirm associated complications to the lung parenchyma, pleural cavity and the diaphragm. An intr-operative C-arm X-ray was used to localize the metallic bodies which were mainly bullets and shrapnels. We were successful in locating and removing the metallic foreign bodies from all 12 patients using VATS with excellent post operative results. Our group has one of the largest minimally invasive thoracic surgery experiences in the region, and we believe that VATS in our center can be considered as the first option for removal of metallic foreign bodies in carefully selected hemodynamically stable thoracic trauma patients .

Total number of patients	**N=12**
Age range	17-42 years (average 26.7 yrs)
Associated complications	Empyema n=6/12
	Hemothorax n=2/12
	Pneumothorax n=2/12
	Diapgragmatic Injury n=1/12
	Psychological n=1/12
Cases completed by VATS	12/12
Conversion to Thoracotomy	0/12









RESULTS

VATS was used to successfully remove the foreign bodies and address the associated complications in all 12 patients. All patients made excellent recovery.

CONCLUSIONS

VATS when performed by a dedicated minimally invasive thoracic surgery team can be safe and at least as effective in treating trauma related foreign bodies in the chest cavity of hemodynamically stable patients as open thoracotomy, if not better.

Further studies to compare VATS to open thoracotomy in such circumstances, are needed.

REFERENCES

Bartek JP, Grasch A, Hazelrigg SR. Thoracoscopic retrieval of foreign bodies after penetrating chest trauma. Ann Thorac Surg. 1997;63(6):1783-5.

Edil BH, Trachte AL, Knott-Craig C, Albrecht RM. Video-assisted thoracoscopic retrieval of an intrapleural foreign body after penetrating chest trauma. J Trauma 2006;61(13):1-2.

Williams CG, Haut ER, Ouyang H, Riall TS, Makary M, Efron DT, et al. Video-assisted thoracic surgery removal of foreign bodies after penetrating chest trauma. J Am Coll Surg. 2006;202(5):848-52.

Khalil MW1, Khan T, Gower S, Loubani M. Removal of a bullet in the pericardial cavity by video-assisted thoracoscopic surgery. Interact Cardiovasc Thorac Surg. 2012 Aug;15(2):297-8

Dutta R1, Kumar A, Das CJ, Jindal T.Emergency video-assisted thoracoscopic foreign body removal and decortication of lung after chest trauma. Gen Thorac Cardiovasc Surg. 2010 Mar;58(3):155-8.

Komatsu T1, Neri S, Fuziwara Y, Takahashi Y.Video-assisted thoracoscopic surgery (VATS) for penetrating chest wound: thoracoscopic exploration and removal of a penetrating foreign body. Can J Surg. 2009 Dec;52(6):E301-2.

MARSICO, Giovanni Antonio et al . Video-assisted thoracoscopic removal of foreign bodies from the pleural cavity. J. bras. pneumol., São Paulo , v. 34, n. 4, p. 241-244, Apr. 2008