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Extending video-assisted thoracoscopic surgery for trauma: The uniportal approach

To the Editor:

Burack and colleagues¹ recently demonstrated the versatility of video-assisted thoracoscopic surgery (VATS) in managing complex trauma. Like the authors, we believe that VATS has revolutionized trauma management. In addition to smaller incisions, proponents of VATS now advocate the use of fewer incisions. Did the authors initially evaluate the thoracic cavity using a single port (uniportal approach)? This would have allowed direct visualization of the knife blade, especially during withdrawal, and allowed the lung resection to be undertaken.²

We (GR) have been using uniportal VATS successfully for pathology ranging from bullectomy to biopsies for interstitial lung disease.^{3,4} Recently, we extended its role to trauma. A 19-year-old man was admitted with a single gunshot to the right hemithorax. On admission, the patient was hemodynamically stable, in no respiratory distress, and conscious. Examination revealed a 3-cm entry point 4 cm below the right scapula with no exit site. Chest radiography and computed tomography (CT) revealed a moderate right pneumothorax, with the bullet located in the lower parts of the right hemithorax. A chest drain was inserted through the fourth intercostal space in the anterior axillary line.

The patient was transferred to the operating theatre, where, during single-lung ventilation, the drain was removed, and a 5-mm 0° videothoracoscope was inserted through the same incision. The chest cavity, including the entry point, was surveyed to exclude active bleeding. A minimal amount of blood was seen, which was easily suctioned from the costophrenic recess. The diaphragm was retracted with an endoretractor inserted parallel to the videothoracoscope, revealing the bullet in the deepest part of the costophrenic recess, where it was extracted with an Endoclinch (Tyco/Auto Suture; Figure 1). A 32F drain was then placed through the same incision,

Figure 1. Retrieval of the bullet from the costophrenic recess using the Endoclinch device (Tyco/Auto Suture).

and the patient was transferred to the ward. The drain was removed on the second post-operative day, and the patient was discharged the same evening.

Could the patient have been managed with uniportal surgery, which approaches target lesions in a sagittal plane or from a craniocaudal perspective? The key to preventing interference of instruments is by use of roticulating instruments. These have the unique ability to rotate their stems in all planes and various angles. Perhaps retrospectively the combination of uniportal VATS and high epidural analgesia could have avoided general anesthesia and tracheal intubation in the absence of signs of major pulmonary or vascular involvement? This therapeutic option might represent a potential development of uniportal VATS in the future.

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Reply to the Editor:

Thank you for the invitation to respond to the letter written by Drs Jutley, Cooper, and Rocco. The worldwide interest in the application of minimally invasive techniques to patients who have sustained penetrating chest trauma is stimulating. The uniportal technique is a novel and innovative approach to thoracoscopic surgery, with the proposed benefit of a single incision and reduced pain. The reported technique requires small roticulated endoscopic instruments, a single incision in the fifth interspace and the posterior axillary line, and an operation performed in a sagittal plane. Furthermore, the reduction of post-operative pain has been documented in a small retrospective series of 16 patients.¹ However, the interspace is substantially smaller in the posterior rather than anterior thorax, and I suppose that the effect of

instrumenting a narrow posterior interspace might cause more, and not less, pain, particularly if an endoscopic clamp, a 5-mm video camera, and an 11-mm endostapler are all placed through the same incision.

Furthermore, I anticipate technical limitations with the ability to perform an exploratory thoracoscopy for traumatic injury through a single incision in the midthorax. During the course of elective surgical intervention for bullous disease, interstitial disease, or a pulmonary nodule, a mid-scapular incision is recommended for lesions in the superior or apical segments, and a posterior axillary incision is recommended for lingular or middle lobe lesions.^{1,2} There is no such preoperative target in the case of traumatic injury, and thoracoscopy is a true exploration. The entire pleural cavity must be inspected, and many times the video camera is moved from one port to another to obtain a comprehensive view. I suspect that in all but the most limited injury, it would be unwise to limit the exploration to a single point of view. However, the uniportal technique might be valuable as an initial diagnostic maneuver, and if the entire injury is comfortably visualized and if endoscopic stapled resection is not required, the uniportal technique might suffice.

Because of concerns regarding the anatomic constraints of the posterior approach and the potential for a less than complete trauma exploration, I would only consider the uniportal approach of potential value as an initial diagnostic maneuver, and I would continue to approach most patients with complex penetrating chest injury with a conventional 3-port approach or open thoracotomy.

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Anticoagulation after bioprosthetic aortic valve replacement

To the Editor:

We read with interest the letter by di Marco and associates¹ concerning anticoagulation after bioprosthetic aortic valve replacement. We also performed a survey of such anticoagulation practice among UK consultant cardiothoracic surgeons.² This highlights a similar disparity between the accepted guidelines and actual practice in the postoperative management of patients undergoing bioprosthetic aortic valve replacement, without comorbidities or risk factors that necessitate anticoagulation.

In our survey, only 16% of consultants (16/97) adhered to the comparable American College of Chest Physicians (ACCP)³ or American College of Cardiology/American Heart Association guidelines.⁴ The majority of consultants (51/97 [52%]) never used warfarin at all postoperatively, of whom 40 of 51 (78%) initiated antiplatelet therapy instead. The other 22% (11/51) used neither antiplatelet nor anticoagulation therapy postoperatively.

It is important to note that the ACCP guidelines recommending 3 months of anticoagulation postoperatively are termed a "Grade 2C Recommendation." This means that the evidence for the recommendation came from observational studies or case series. As such, the ACCP accepts that the evidence is of low quality, and that there is uncertainty in the estimates of benefits, risks, and burden. The ACCP is aware this is a very weak recommendation, and other alternatives may be equally reasonable.⁵

Given that so few surgeons seem to be following these guidelines, we await the updated European Society of Cardiology recommendations with anticipation.

Perhaps the prospective randomized clinical trial being undertaken by di Marco and associates¹ will provide stronger evidence and clarify a controversial area in the management of bioprosthetic heart valve replacement.

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