Posterolateral thoracotomy (PLT) has been frequently used for non-cardiac thoracic surgery. Although this procedure provides excellent access for lung cancer surgery, it requires the transection of large muscles which contributes to postoperative pulmonary insufficiency and postoperative chest pain. In an attempt to decrease these shortcomings, minimally invasive thoracotomy procedures, such as muscle-sparing thoracotomy (MST), limited thoracotomy and video-assisted thoracoscopic surgery (VATS) have been used with some success [1–5]. However, although VATS involves a more limited thoracic incision than the MST or limited thoracotomy, the difference in impairment of postoperative pulmonary function between these techniques is still controversial [1,2].

Between 1991 and 2000, we conducted lobectomy and lymph node dissection for 220 patients with lung cancer. We have changed the PLT to a more limited approach as follows: PLT without muscle sparing from 1991 to 1994, antero-axillary thoracotomy (AAT) from January 1995 to December 1996 [3], anterior limited thoracotomy (ALT) from January 1997 to July 1999 [4], and VATS since August 1999 [5]. To compare the difference in impairment of pulmonary function and walking capacity in patients undergoing lobectomy by those procedures, we compared postoperative vital capacity (VC) and the 6-min walking (6MW) test.

The study was a retrospective analysis. The 28 patients in each group were consecutively selected in order of the most recent patients to match for sex and age (±5 years). VC was measured before surgery and 1, 2, 4, 12 and 24 weeks after surgery. The distance covered during the 6MW test (6MWD) was measured before surgery and in a postoperative test 1 week after surgery. The percentage changes in postoperative VC and 6MWD compared with those preoperative values were evaluated.

No significant differences were observed between the groups in terms of preoperative pulmonary function, 6MW, lobectomy site or pathologic tumor stage. Because the chest tubes were removed within 5 days of surgery in all patients, postoperative VC and 6MWD values were measured without chest tubes in situ. Compared with the VATS, ALT and AAT groups, PLT patients showed a significant impairment of VC from 1 to 24 weeks after surgery (P < 0.05–0.001) and also a significant impairment of 6MWD 1 week after surgery (P < 0.01–0.001). The AAT group showed a significant impairment of 6MWD 1 week after surgery compared with the VATS and ALT groups (P < 0.001 and P < 0.05, respectively). There was no significant difference in impairment of either VC or 6MWD between VATS and ALT.

These results indicate that transection of a large muscle group and the wide intercostal space opened up in the PLT procedure impaired walking capacity and pulmonary function, not only early after surgery but also long after, compared with the other minimally invasive thoracotomy procedures. The PLT therefore could not be recommended for general lung cancer surgery. VATS and ALT are better procedures than AAT in terms of recovery of walking capacity early after surgery, VATS and ALT are similar to each other in terms of impairment of pulmonary function and walking capacity after surgery.

References


Letter to the Editor

Sternal dehiscence after cardiac surgery and ACE type 1 inhibition

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We read with interest the case report “Sternal dehiscence after cardiac surgery and ACE type 1 inhibition” by Qamar Abid and associates (Eur J Cardiothorac Surg 2001;20:203-204).

Sternal dehiscence is a serious complication of cardiac surgery with devastating consequences. We have had a large number of patients on lisinopril and a few with intractable cough either as a side effect of lisinopril or because of chronic obstructive airways disease or recent smoking prior to surgery. We have never experienced sternal dehiscence as a consequence of these causes of intractable cough. The difference in our results seem to be that by Qamar Abid and associates (Eur J Cardiothorac Surg 2001;20:203-204).

We use three manubrium and five or six wires for the body of sternum depending on the size of the patient. Meticulous wound
opening and closing technique also contribute to favourable outcome [1]. In addition great care is taken to ensure that there is tight apposition of the sternum with no step deformity. We have also adopted techniques of skeletonized left internal thoracic artery (ITA) with the dual purpose of preserving sternal blood flow [2] and achieving increased ITA length. Bical et al. [3] observed similar results to ours by using bilateral ITA. Use of more sternal wires offers more stability to the sternum and avoids dehiscence despite the excessive stresses applied to the sternum during coughing. Moreover many of the patients at risk are subjected to intensive chest physiotherapy and the sternum should not weaken if adequate stability is supplied by sternal wires.

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Reply to the Letter to the Editor

Reply to Nyawo and Sarkar

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We are grateful to Mr Nyomo and Mr Sarkar for their interest in our paper. Their results are excellent with no incidence of sternal dehiscence due to intractable coughing. It would be interesting to know their overall incidence of sternal dehiscence, sternal wound infection and the necessity for the removal of troublesome wires. To our knowledge there is no evidence that routine closure with eight to nine wires is significantly better for patients [1].

Our current series of 2623 consecutive patients, with an incidence of 0.23% for sternal dehiscence, support sternal closure with six wires. Five patients (0.19%) have had sternal wound infection successfully treated with antibiotics and 17 (0.6%) patients have required removal of their wires.

The message of our paper is that ACE inhibitors can cause severe coughing post-operatively predisposing to sternal dehiscence. The coughing alone is distressing for the patients and we have demonstrated successful treatment by changing ACE inhibitor to angiotensin II receptor antagonist, as proven in different studies [2].

In the patients that we have reported it was not possible to predict their severe coughing but we agree with Mr Nyomo and Mr Sarkar, as recommended in our paper [3], that extra wires may be indicated where post-operative problem can be predicted.

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Letter to the Editor

The approach does not disqualify prosthesis–patient mismatch

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We have read with interest the article by Knez et al. [1] and we thank these authors for their kind comments with regards to our previous work. However, we cannot agree with their conclusion as reflected in the title of the paper.

We and others [2] have always defined prosthesis-patient mismatch on the basis of the indexed effective orifice area (EOA) whereas Knez et al. [1] have divided their patients between expected mismatch (EXMIS) and no mismatch (NOMIS) on the basis of the indexed geometric orifice area (GOA) which is a measurement derived from the internal diameter of the prosthesis measured in vitro by the manufacturer. Indeed, we have recently shown that the indexed GOA is poorly