Egyptian Society of Cardio-Thoracic Surgery

Board of Directors

PRESIDENT
Ezzeldin A. Mostafa, MD

VICE PRESIDENT
Mahmoud El-Batawi, MD

GENERAL SECRETARY
Mohamed Emara, MD

TREASURER
El-Husseiny Gamil, MD

BOARD
Abdel-Maguid Mohamed, MD
Aly Hasan, MD
Hosam El-Shehawy, MD
Khaled Karara, MD
Mohamed Abdel-Raouf Khalil, MD
Mohamed Helmy, MD
Wahid Osman, MD
Mohamed Ezzeldin Abdel-Raouf, MD
Ahmed Labib, MD
Mohamed Shoaeb, MD
Mohamed A. Nasr, MD

Egyptian Society of Cardio-Thoracic Surgery

Journal Board

EDITOR-IN-CHIEF
Mohamed Abdel-Raouf Khalil, MD

CO-EDITOR
Hossam El-Shahawy, MD
Aly Hasan Taher, MD
Abdelmaguid Mohamed Ramdan, MD
Ahmed Debees, MD

PAST EDITORS
Mohamed S. El-Fiky, MD (1997 - 2004)
Ezzeldin A. Mostafa, MD (2004 - 2008)
Yasser M. Hegazy, MD (2008 - 2011)

ETHICS EDITOR
M. Anwar Balbaa, MD

Submit Manuscripts: Editorial office
330 ElSudan Street, Embaba, Egypt
Email : jegyptscts@gmail.com
Tel.33038054 -Mob.01002327650
Why lateral muscle-sparing thoracotomy? Is it now time for new thoracotomy incision?

Hesham Mostafa Alkady

Introduction: The lateral muscle sparing incision has been used over the last years for a greater variety of procedures. This muscle-sparing thoracotomy is regarded as a reasonable alternative to the standard posterolateral approach.

Patients and Methods: This incision was used in 40 patients during the past 6 months for operations of pulmonary, pleural, and mediastinal diseases. The operations done through the lateral route consisted of 8 decortications, 6 lobectomies (4 upper lobectomies 1 middle lobectomy 1 upper & middle lobectomy), 6 lung biopsies (wedge resections), 6 excision of anterior mediastinal masses, 9 ressections of blebs or bullae, 2 mediastinal lymph node biopsies, 2 exploratory procedures for gunshots and 1 left pneumonectomy.

Results: Mean patient age at operation was 37 ± 5 years. Pathologic analysis revealed 8 malignant tumors, 29 benign lesions, and 1 carcinoid. There was no perioperative mortality. Morbidities occurred in the form of superficial wound infection in 4 patients (10%). One patient (middle lobectomy) (4%) developed late bronchial stump dehiscence with secondary hemorrhage.

Conclusion: Although no incision is ideal for all patients, we believe that this approach offers quite satisfactory results due to the advantages of minimum trauma and maximum preservation of chest wall function.

Keywords: Lateral thoracotomy, muscle-sparing, exposure, postoperative pain, earlier ambulation.

A ny surgical incision must be planned for the ease of access to the target area and must provide a sufficient working space.

Forty years ago, the usual and generally accepted thoracotomy incision was posterolateral with transection of the latissimus and serratus muscles as well as excision of a rib subperiosteally. In the intervening years there was an increasing use of an intercostal incision (without rib excision except in exceptional cases) and preservation of serratus muscle. Undoubtedly this was due to the increased technical competence and comfort of those doing thoracic operations, particularly with the advances in anesthesia in using unilateral endobronchial intubation.

But why should the latissimus dorsi muscle be transected if not necessary? That was traditional, perhaps because it was done one or two generations ago by our teachers. But this is not sufficient reason for its continued use. Why should a patient face the possibility of increased postoperative pain and a "frozen shoulder," both of which are more likely after a posterolateral incision, if these can be avoided? (1)

The lateral muscle sparing incision has been used over the last years for a greater variety of procedures and its application has received considerable recent attention with its increasing use and familiarity. (2). This muscle-sparing thoracotomy, regarded as "a reasonable alternative to the standard posterolateral approach," is associated with reduced shoulder girdle disability, less postoperative pain, and improved respiratory function. (3)
Technique:

The patient is positioned in a lateral decubitus position with pillows between the knees and padding under the elbows. Skin incision is done over the fifth interspace curving posteriorly into the axilla. The latissimus dorsi is then retracted posteriorly and the serratus is split in the direction of its fibers with careful preservation of the long thoracic nerve. The pleural cavity is then entered by cutting only the intercostal muscles without rib resection. Two rib retractors are then used, one with two short blades to retract the muscles, over which a second retractor is placed with two deep blades for the ribs. Use of the lateral incision is considerably enhanced by unilateral endobronchial intubation.

Before closure 10cc 0.5% Xylocaine (Lidocaine) with 10cc Marcaine (Bupivacaine Hydrochloride) were used to block the intercostal nerves for two interspaces above and below the rib incision unless an epidural catheter was used before the operation. To close, the retractors are removed, heavy absorbable pericostal sutures are placed to approximate the ribs, and the digitations of Serratus muscle are approximated with continuous suture and finally subcutaneous tissue and skin are closed. (figure 1)

Results

The Mean and Standard Deviation of patient ages were 37 ± 5 years.

Pathologic analysis of the specimens sent after operations revealed 3 cases of lung cancer and 3 cases of bronchiectasis after the lobectomy operations. Carcinoid was found after the pneumonectomy operation. 6 cases of chronic pyogenic fibrous pleurisy and 2 cases of chronic tuberculous pleuritis were detected after the decortication operations. 2 cases of the anterior mediastinal masses were pericardial cyst, one case was lymphoma and one case was teratoma. The posterior mediastinal masses turned out to be a bronchogenic cyst and a benign neurogenic tumor. All cases of lung biopsies showed malignant tumors. Mediastinal lymph node biopsies revealed sarcoidosis in one case and lymphoma in the other case. (Table 1)

<table>
<thead>
<tr>
<th>Operation</th>
<th>Pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobectomy</td>
<td>3 Lung cancer</td>
</tr>
<tr>
<td></td>
<td>3 Bronchiectasis</td>
</tr>
<tr>
<td>Pneumonectomy</td>
<td>Carcinoid</td>
</tr>
<tr>
<td>Decortication</td>
<td>7 Chronic pyogenic pleurisy</td>
</tr>
<tr>
<td></td>
<td>2 Chronic Tuberculosis</td>
</tr>
<tr>
<td>Anterior mediastinal masses</td>
<td>2 Pericardial cysts</td>
</tr>
<tr>
<td></td>
<td>1 Lymphoma</td>
</tr>
<tr>
<td></td>
<td>1 Teratoma</td>
</tr>
<tr>
<td>Posterior mediastinal masses</td>
<td>1 Bronchogenic cyst</td>
</tr>
<tr>
<td></td>
<td>1 neurogenic tumor</td>
</tr>
<tr>
<td>Mediastinal LN biopsy</td>
<td>1 Sarcoidosis</td>
</tr>
<tr>
<td></td>
<td>1 Lymphoma</td>
</tr>
</tbody>
</table>

Table 1. Pathological results after operations

Patients and Methods

This incision was used in 40 patients during the past 6 months for operations of pulmonary, pleural, and mediastinal diseases carried out by multiple surgeons in multiple hospitals (Kasr Alaini Hospital, New Kasr Alaini Hospital and Almanial hospital).

The operations done through the lateral route consisted of 9 decortications, 6 lobectomies (4 upper lobectomies 1 middle lobectomy 1 upper & middle lobectomy), 4 lung biopsies (wedge resections), 6 excision of mediastinal masses (4 anterior mediastinal masses and 2 posterior mediastinal mass), 9 resections of blebs or bullae, 2 mediastinal lymph node biopsies, 3 exploratory procedures for gunshots and 1 left pneumonectomy. (Chart 1)
Only 4 patients (10%) required blood transfusion in the form of packed RBC’s in whom Hematocrit level dropped below 27.

There was no perioperative mortality. The Mean and standard deviation of operative time were 150±40 minutes. (Chart 2)

Morbidities occurred in the form of superficial wound infection in 4 patients (10%) which were managed by antibiotics and repeated dressing. The patient who underwent middle lobectomy developed late bronchial stump dehiscence with secondary hemorrhage which was managed by rethoracotomy and repair of bronchial fistula with coverage by pericardial flap.

All cases underwent resection operations (7 patients) stayed as routine in the intensive care unit for 24 hours postoperatively. Other patients remained in the recovery room for one to two hours, and then were transferred to the department.

Hospital stay postoperatively was a mean of 5±2 days.

Discussion

The standard posterolateral thoracotomy provides wide operative exposure by transection of the large muscles of the chest wall but causes marked pain and impairment of the major muscle groups of the back and shoulder⁶.

These, in elderly patients may contribute to postoperative complications. Even in young patients recovery of full activity to preoperative levels can be prolonged by the extent of muscle healing required⁷.

The vertical axillary thoracotomy gives a cosmetically acceptable result with the scar covered by the arm and is specifically indicated in patients requiring less than the maximum intra-thoracic exposure provided by the posterolateral or anterolateral thoracotomy. But still the anterior serratus muscle is divided vertically⁸.

The present study assessed early clinical results in 40 patients underwent pleural, pulmonary and mediastinal operations by lateral muscle-sparing thoracotomy. The exposure provided by this incision was more than adequate for a lobectomy or pneumonectomy, and if more exposure is required, the incision can be converted easily and rapidly to the standard posterolateral thoracotomy by dividing the Latissimus dorsi muscle. Also Lateral thoracotomy leads to anterior extension of the intercostal incision, where the distance between the ribs is larger than in the dorsal part⁹.

In none of our cases was there any compromise with regard to the extent of resection, or dissection. This incision requires the same time to open (the time from incision to retractor placement is called the opening time), but the time to close is less because time is saved in suturing the latissimus dorsi.

The blood loss and postoperative morbidity in our patients were been noticeably low. No patient developed early wound seroma, as our technique does not include skin flap as the technique of muscle sparing thoracotomy described by Daniel M. Bethencourt et al 1988 (5).

Most patients were discharged on the 5th postoperative day as a result of improved arm motion, decreased postoperative pain, and earlier ambulation as well as functional recovery.

Our experience showed that the healing of this incision is excellent may be due to the fact that the incision passes along Langer’s lines. The cosmetic result is also improved because the ridge formed by closing the latissimus is avoided.

Conclusion

Although no incision is ideal for all patients, we believe that this approach offers quite satisfactory results due to the advantages of minimum trauma and maximum preservation of chest wall function and is thus useful in selected patients to prevent the postoperative morbidity associated with posterolateral thoracotomy as in patients with severe limitation of cardiopulmonary reserve and in athletes requiring thoracotomy.

References


8. Nicolas Durrleman, MD, Maksim Pryshipov, MD, Jean-Marie Wihlm, PhD,