Operative Techniques in
Thoracic and
Cardiovascular Surgery

Bilateral Sequential Lung Transplantation

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Introduction

First performed in 1984, lung transplantation techniques and survival have improved considerably in the last 3 decades. Advances in immunosuppression, surgical technique, postoperative care, and patient selection have resulted in more than a 500% reduction in mortality. Along with that, improvements in donor management and selection have resulted in an explosive expansion of the therapy to almost 4000 single and double lung transplants worldwide. Unfortunately, despite the expansion of this therapy, more than 100,000 patients still die each year of advanced lung disease (Figs. 1-12).

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1522-2942/$-see front matter
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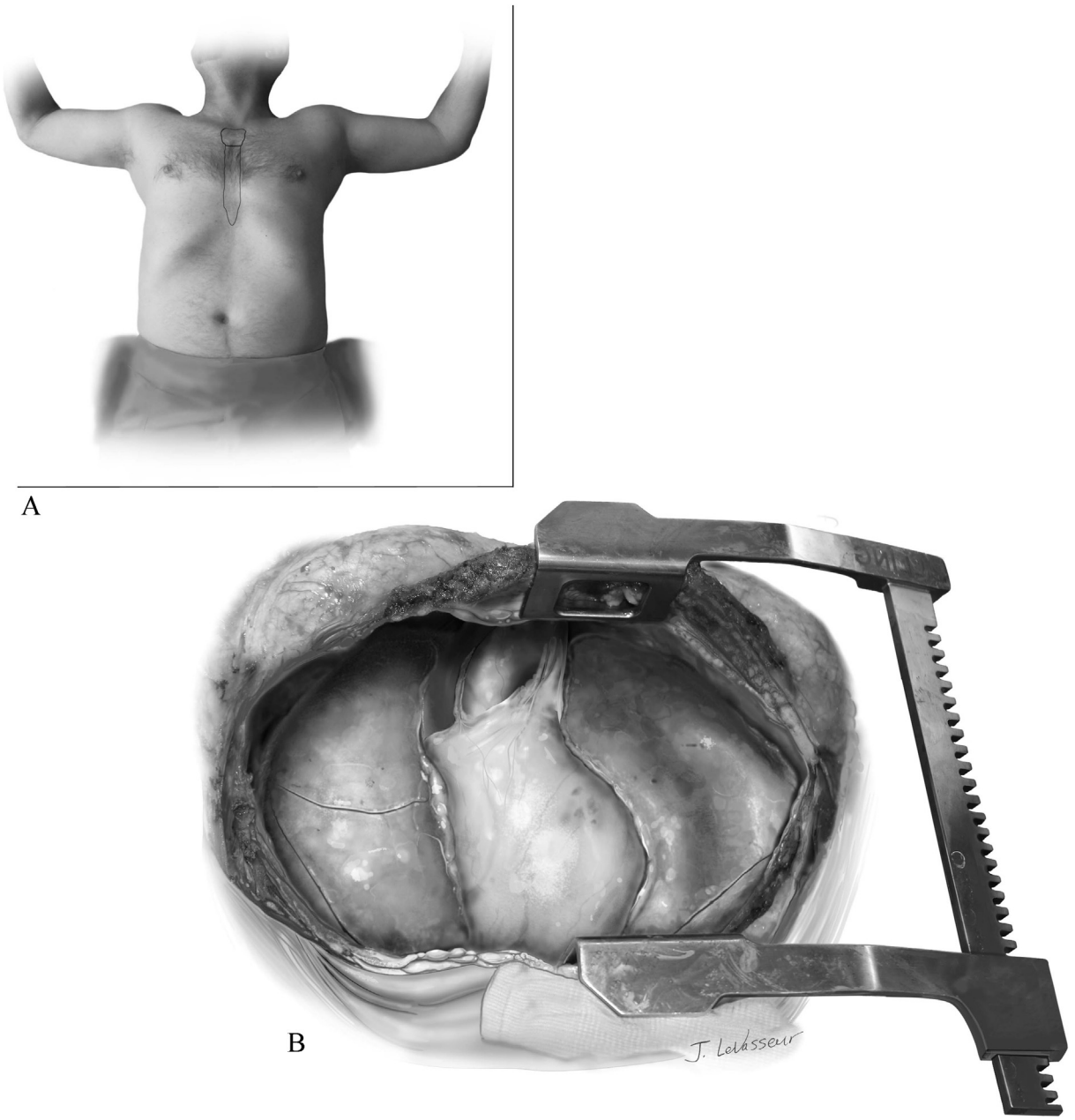

Figure 1 After induction of general anesthesia, the patient is dual-lumen intubated and monitoring lines, including a Swan-Ganz catheter and a large-bore IV access, are placed in the left neck. Two arterial lines are placed, 1 in the upper extremity and 1 in the femoral artery. The patient is positioned supine with arms elevated to almost 90° (A). This allows access to both axilla and facilitates the bilateral transsternal thoracotomy (clamshell incision). The incision starts in the right axilla and courses along the fourth interspace below the nipple in men (along the inframammary crease in women) and across the sternum to a mirror-image incision on the opposite side. The pectoralis major is divided. The latissimus dorsi is usually spared. At the level of the chest wall, the interspace that extends to the axilla is identified. This is usually the fourth interspace. The intercostal muscles are divided and both internal mammary arteries and veins are ligated and divided. The sternum is divided to connect the right and left chest. (B) The retrosternal connective tissue is dissected off the bone to the level of the innominate vein superiorly and to the diaphragmatic reflection inferiorly. A retractor is placed in the midline at the sternal edges and the clamshell incision is opened slowly. Division of the intercostal muscles is extended posteriorly within the thoracotomy to facilitate exposure and to prevent tearing of tissue. IV = intravenous.