



The role of pneumonectomy in thoracic surgery in the third millennium

In 1895, Macewen completed in multiple stages the first pneumonectomy in a patient with tubercular empyema. Further attempts with one-stage pneumonectomy had not met with success. In 1910, Kummel realised a pneumonectomy for lung cancer by clamping the pedicle (leaving the clamps *in situ*), but the patient died on the sixth operative day. In 1922, Hinz achieved the first individual hilar ligation, but patient succumbed on postoperative day 3. In 1930, Rudolf Nissen, in Berlin, performed in Europe the first successful left-sided pneumonectomy as a two-stage procedure. In 1933, Graham and Singer described the first effective *en bloc* left pneumonectomy for lung cancer, followed, in 1935, by Overholt, with the first right pneumonectomy (1). In these patients, the diagnosis had been made with radiography and pathology obtained from bronchoscopy (2). Individual suturing has initially been recommended for pneumonectomy, but Blades and Kent later applied in 1940 to lobectomy.

Moreover, indications for pneumonectomy changed over time and, currently, the widespread development of lung cancer is the first application. Indeed, pneumonectomy for inflammatory lung disease, bronchiectasis, tuberculosis, and other non-malignant conditions is quite uncommon in modern-day medicine. However, despite many efforts, pneumonectomy remains a challenging operation, carrying many complications and anatomic and physiologic changes (3).

Pneumonectomy, therefore, cause a disability status to treat a much more severe disease (lung cancer). Undoubtedly, extensive experience with pneumonectomy has been gained along with time and with the development of thoracic surgery. Due to an improved familiarity of cardiorespiratory physiology, more and more sophisticated methods of evaluation were developed. On the other hands, there were provided reasonable guidelines for the relative risk of a patient candidate for pneumonectomy. Nevertheless, if much has been on papers, little has been learnt (3).

This series of the *Shanghai Chest* journal aimed to describe the risks and indications of pneumonectomies in the third millennium in the light of innovative technologies and new therapies. Also, standard, intrapericardial and extrapleural pneumonectomies have been described by outleading authors along with indications for the procedures. In this perspective, the different items are not an all-encompassing reviews, but they contain the highlights along with the essential references for additional readings.

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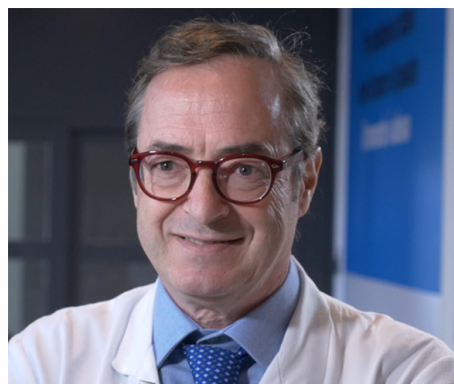
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