



## EDITORIAL: THORACIC SURGERY ASSEMBLY

# Thoracic surgery and lung transplantation

### Thoracic Surgery Assembly contribution to the celebration of 20 years of the ERS

E. Canalis\*, A. Boehler<sup>#</sup> and D. Subotic<sup>†</sup>

**W**hen two pre-existing European respiratory societies (the Societas Europaea Physiologiae Clinicae Respirotrariae (SEPCR) and the European Society of Pneumology (SEP)) merged 20 years ago to form the European Respiratory Society (ERS) [1], the Thoracic Surgery Assembly was established within the new Society. The foundation of our Assembly was the result of founder pneumologists' and thoracic surgeons' conviction of the need for collaboration between these two medical specialties. Such collaboration occurs in everyday work and, indeed, our community is enriched when our efforts are combined to form a wider spectrum of scientific knowledge [2].

#### THORACIC SURGERY: A NON-HOMOGENEOUS SPECIALTY ACROSS EUROPE

In preparation for this Editorial, we conducted an informal survey of colleagues from different countries and from teaching, research and clinical backgrounds in thoracic surgery, and asked them how the specialty is considered, taught and organised in their country. We asked about training in thoracic surgery (whether there is a specific training programme, whether training is provided after general surgery or combined with cardiac surgery, and how trainees can enter residency programmes), working in the specialty at a professional level (time taken to gain a position after the residency period, excess or lack of specialists, and possible conflict with other surgical specialties), and finally about national and European scientific societies (whether they are only for general thoracic surgeons or shared with other specialties like pneumology, general surgery or cardiac surgery).

As a result of our colleagues' responses, we can separate thoracic surgery in Europe into three different categories: Northern Europe (including Scandinavia, Germany, the UK and France); Eastern Europe (Russia and the Newly Independent States); Southern Europe (including Spain, Italy, Serbia and Greece). Each category has distinct features in terms of training, performance and collaboration in thoracic surgery, as follows.

**Northern Europe:** In Northern Europe, training in thoracic surgery is combined with cardiac surgery (with some

differences between institutions). Scientific societies do not centre around thoracic surgery alone but are combined with other specialties, most notably cardiovascular surgery and pneumology.

**Eastern Europe:** In contrast to Northern Europe, in Eastern Europe, training is specific to general thoracic surgery but is provided after general and digestive surgery; there is little relationship with cardiac surgery. Scientific societies combine thoracic surgery with general surgery and pneumology; however, a society that is only for thoracic surgeons is currently being established.

**Southern Europe:** Training programmes focussing on general thoracic surgery (with rotations in general and cardiac surgery) are provided in Southern Europe. Scientific societies are available for general thoracic surgeons only, and others combine the specialty with pneumology and general surgery.

With regard to collaboration, in Spain and Italy there are conflicts with general surgery, and in Belgium, with interventional pneumology. Thyroid surgery is usually performed by thoracic surgeons in France, but in other countries, only retrosternal goiter resection is performed. Laser bronchoscopy and stent insertion are performed by thoracic surgeons in Spain and the UK; in other countries, these procedures are the responsibility of interventional pneumologists. In France and Italy, thoracic surgeons perform oesophageal surgery; few institutes in the UK and Spain offer this service, and it is not available at all in Russia and the Newly Independent States.

In France, thoracic surgery services are soon to be accredited according to case quantity; this has not been applied in other countries. Similarly, recertification is imminent in the UK but has still not been set up elsewhere.

Scarcity of thoracic surgeons is a fact in the UK; this is expected to become a problem in the near future in some other Northern countries. Conversely, there are too many thoracic specialists in Spain, and it is possible this could also cause unemployment in the field.

At a European level, there are three societies in which thoracic surgeons have a role: ERS, the European Society of Thoracic Surgery (ESTS) and the European Association of Cardiothoracic Surgery (EACTS). During recent years, a pretty good level of cooperation has been reached between these societies, preventing date clashes in the celebration of their annual congresses and enabling them to set up many joint task forces for guideline production.

\*Thoracic Surgery Service, IISPV, URV, Hospital Universitari Joan XXIII, Tarragona, Spain.

<sup>#</sup>Pulmonary Medicine and Lung Transplant Program, University Hospital, Zurich, Switzerland.

<sup>†</sup>Clinical Center of Serbia, Institute for Lung Diseases, Belgrade, Serbia.

CORRESPONDENCE: E. Canalis, Thoracic Surgery Service, IISPV, URV, Hospital Universitari Joan XXIII, Tarragona 4, Doctor Mallafré Guasch, 43007 Tarragona, Spain. E-mail: emilio.canalis@urv.cat

Overall, we can draw the following conclusions from our informal survey: thoracic surgery is better appreciated than ever before; it is a necessary tool in the multidisciplinary approach to chest diseases [3]; it is excellent where it is performed as general thoracic surgery alone; there is a general lack of specialists; training programmes are becoming longer; and more action is needed in terms of accreditation and continuous teaching [4, 5], in spite of the consolidation of the European Board of Thoracic Surgery.

### THORACIC SURGERY: HIGHLIGHTS OF THE LAST TWO DECADES

Perhaps the most important advances in our field have been in: video-assisted thoracic surgery; lung transplantation; the multidisciplinary approach to lung cancer diagnosis and treatment; chest trauma care in politrauma; and the incorporation of the laser energy as a surgical tool.

**Video-assisted thoracic surgery:** During the last 20 years, video-assisted operations came into general use thanks to the perfection of endoscopy optics and various other tools, especially endostaplers which allow us to perform sutures and safely cut tissues and internal vascular and bronchial structures. Nowadays, ~25% of all operations in a thoracic surgery unit are performed using videoendoscopy: mediastinoscopy; thoracoscopy; sympathectomy; bullectomy and pleurodesis; resection of mediastinal cysts and tumours; lung resection, such as lobectomies; and pneumonectomies, including adenectomy. The advantages for the patient have been proven, with less post-operative pain, early recovery from operations, and equal safety and efficacy in the procedures [6, 7].

**Lung transplantation:** This technique is now well established as the last step of treatment in severe lung diseases. The first human lung transplant was performed in 1963; however, breakthrough was only seen following the advent of cyclosporine as an immunosuppressant in the 1970s. To date, >25,000 lung transplantations have been performed all over the world, with the main indications in adults being chronic obstructive pulmonary disease, emphysema, idiopathic pulmonary fibrosis, cystic fibrosis and idiopathic pulmonary hypertension. In children, the latter two are the most common indications. Survival after lung transplantation has improved thanks to new immunosuppressant therapy and better post-operative care, but half of recipients still complain of bronchiolitis obliterans 5 years after transplantation and the 5-year survival rate is ~50%. This points to the need for more research in the fields of diagnosis and management of primary graft dysfunction, donor criteria, use of marginal donors and donors after cardiac death, new immunosuppressive agents, infectious and noninfectious complications, and any other aspect that may lead to an increase in the number of transplants and an improvement in the prognosis of patients [8, 9].

**Multidisciplinary approach to lung cancer diagnosis and treatment:** The workup for this kind of patient came through lung cancer or chest neoplasm committees in the main institutions in the 1970s; multidisciplinary committees were fully developed during the last two decades. The structure of ERS, in which the different Assemblies work together, is a reflection of the everyday work at hospitals dealing with thoracic neoplasms [10].

**Chest trauma care:** 20–25% of trauma deaths are related to thoracic traumatism. Thanks to organisational changes and new concepts like advanced trauma life support (ATLS), the mortality rate of these patients has been lowered to <4%. Of course, there is a lot of work still to be done to extend adequate trauma care across Europe. To this end, educational programmes are required in this field, and the implementation of trauma care teams is necessary, which should provide everything from primary on-the-road attention to hospital units with a focused and specialised activity.

**Laser energy as a surgical tool:** Laser application has extended from inside the airways to the lung parenchyma through thoracotomy or video-assisted surgery [5]. This not only includes the resection of lung metastasis but also the atypical resection of limited primary neoplasms. Laser resections save large amounts of lung tissue that would otherwise be unnecessarily resected together with the neoplastic tissue in standard stapler resections. This has significantly increased the number of metastasis that can be resected in a given patient.

Looking to the future, whilst we do not wish to speculate too much, development in the following areas is possible: robotics, telesurgery, tissue engineering and biotechnology, and total artificial lung [11, 12]. Research activities in these and other fields may lead to new solutions to old problems in our specialty.

### THORACIC SURGERY IN THE ERS

There are two opposing characteristics of the ERS Thoracic Surgery Assembly and its inception. ERS did not initially intend to represent thoracic surgeons, leaving this for specialty-specific thoracic surgical societies. However, the establishment of the Thoracic Surgery Assembly has come to represent collaboration between different specialties.

During each ERS Annual Congress, the Thoracic Surgery Assembly organises Postgraduate Courses, Major Symposia (almost always in collaboration with other Assemblies), Oral Presentation sessions, Thematic Poster sessions, E-Poster sessions and Meet-the-Professor Seminars. Postgraduate Courses are also regularly held outside the Congress, covering areas such as lung transplantation and updates on cancer treatment. Collaboration with other assemblies also has benefits that extend beyond the provision of courses; through the work of *ad hoc* Task Forces, the Thoracic Surgery Assembly is now assisting other Assemblies in the production of new guidelines on important issues.

Our Assembly supported the relatively recent establishment of the Thoracic Oncology Assembly, with which we maintain a growing common activity. Within our own Assembly, the growth of two groups, Thoracic Surgery and Transplantation, has been an important development in recent years. The inception of these groups also suggests the need for a change of name for the Assembly; with the membership's approval, we hope to become the "Assembly of Thoracic Surgery and Transplantation". This change will better represent both the specialty of general thoracic surgery and the collaborative work with pneumologists in the field of lung transplantation.

## AN AFTERWORD

As this brief summary of the specialty reveals, we can look to future of thoracic surgery with optimism. Thoracic surgery is now firmly established in Central and Southern Europe, prominent schools have been set up across the continent, and a trend is developing for the separation of thoracic surgery from cardiac surgery in places in which these two specialties were previously considered to be together; the USA and Canada, for example. The consolidation of the European Board of Thoracic Surgery, and the teaching and recertification criteria for general thoracic surgery also deserve to be highlighted.

## STATEMENT OF INTEREST

None declared.

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