Invited Lecture 2

Lung volume reduction surgery in Europe

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Chronic obstructive pulmonary disease (COPD) is one of the most prevalent diseases in industrialised nations and is accompanied by lung emphysema in its advanced stage. The abnormal enlargement of the air spaces and the destruction of the parenchyma lead to obstruction in airflow and distinctive abnormality of chest wall mechanics, gas exchange and distribution of the pulmonary circulation in certain cases.

In patients who continue to be short of breath despite optimal conservative treatment, two surgical treatment modalities—lung-transplantation and lung-volume-reduction surgery (LVRS)—are potential options.

LVRS was reintroduced in the early nineties and several centres from the United States, Europe and Japan reported improvement of dyspnoea, lung function and quality of life in patients operated either by thoracoscopy (VATS), median sternotomy or thoracotomy. In Europe the procedure was and is preferentially done by VATS. Best results were achieved in patients with markedly heterogeneous emphysema and distinct areas of destroyed parenchyma preferentially in the upper lobe accompanied by relatively well preserved regions of lung parenchyma. However, we and others were able to show that selected patients with homogeneous destruction of the lungs could profit as well. The perioperative mortality was around 3-5% in dedicated centres with an expertise in the surgical management of patients with end-stage lung disease.

However, the enthusiasm for LVRS became dampened due to reports on unacceptable high surgical mortality rates of up to 16%. Therefore, at the end of the nineties it was not surprising that an American Health Insurance Company stopped paying for LVRS in the US. They initiated a National Emphysema Treatment Trial (NETT). The negative reports about high perioperative mortality rates, uncertain improvements and unclear indications for surgery influenced although further developments of LVRS in Europe in the last several years. Mainly pulmonologists stopped referring patients for surgery except in a few centres in which they were directly involved in projects for the development of LVRS. At Zurich University we were able to continue our prospective study on lung volume reduction surgery throughout this period and evaluated among various other questions the role of different emphysema morphology on early and late outcome. Specifically we continued to operate on selected patients with homogeneous emphysema as well. Other groups in Europe were interested in the question of unilateral vs. bilateral LVRS or very recently the possibility of LVRS in the awake-patient. One year ago the final results from the NETT trial were published which confirmed results which were already obtained from single centres studies such as the improvement of lung function, quality of life and exercise capacity mainly in patients with upper lobe disease. Additionally they were able to show for the first time that some subgroups of patients although experienced a survival benefit compared to medically treated patients. Currently we are planning to organise a focus meeting in Europe in order to revitalise LVRS in further specialized centres.