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EDITORIAL

The centenary of medical thoracoscopy

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In the 19th century, many attempts were made to look inside the cavities of the human body, first through the usual anatomic channels, in gynaecology [1], urology [2] and the upper airways [3]. However, closed cavities, such as the pleura and peritoneum, remained inaccessible until the beginning of the 20th century.

In 1910, a Swedish physician, H.C. Jacobaeus, published the first study of two cases in which he explored the pleural cavity using a cystoscope with a 90° vision optic and an electric lamp at the tip. It was introduced into the pleural cavity through a trocar [4]. He also described the technique of insufflating air to enable a complete exploration of the pleural cavity. He predicted that thoracoscopy would have great diagnostic and therapeutic potential.

This article documents the history of medical thoracoscopy, the recent development of video-asssisted thoracic surgery (VATS), and considers the future potential of medical thoracoscopy.

HISTORY OF MEDICAL THORACOSCOPY

F.R. Cruise (a urologist) and S. Gordon (an internal physician) were the first to introduce a cystoscope through a pleurocutaneous fistula of a child suffering from chronic empyema [5]. However, this was not followed by any further practical utilisation. JACOBAEUS [4] was the real initiator of thoracoscopy, and was the first to develop a clinically applicable instrument [4]. A year later, he published a series of 35 thoracoscopies (12 acute pleural effusion, seven chronic pleural effusion, five empyema and 11 pneumothorax) with a precise description of the intercostal muscles, vessels, nerves, diaphragm and other anatomical structures of the chest [6].

In 1915, JACOBAEUS [7] described the lysis of pleural adhesions to create a pneumothorax as part of collapse therapy for tuberculosis. In cavitary pulmonary tuberculosis, he performed thoracoscopy under local anaesthesia with two separate entry ports to allow electrocauterisation of adhesions under direct visual control. His many publications led to this technique being called the ''Jacobaeus operation''. It is surprising how well thoracoscopy was described in 1925 with drawings and photographs illustrating not only the use of the instrument, but also the pleural features in different diseases [8].

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In the 1950s, with the advent of antituberculosis chemotherapy, surgical collapse therapy was abandoned. Medical thoracoscopy also declined, except in continental Europe, where several centres continued under the leadership of H-J. Brandt [9] and C. Boutin [10]. They improved the instruments and developed new indications for medical thoracoscopy in recurrent spontaneous pneumothorax and malignant pleural diseases such as mesothelioma. This was timely, with the prevalence of mesothelioma sharply increasing at that time due to the extensive use of asbestos in buildings and naval yards.

Medical thoracoscopy is now an established technique on both sides of the Atlantic [11–15] for diagnosing the cause of a pleural effusion and performing talc pleurodesis in both malignant pleural effusion and recurrent spontaneous pneumothorax [16]. Medical thoracoscopy also has a role in more advanced applications, such as empyema, forceps lung biopsy and cervical sympathectomy [17].

Recent large, multicentre studies have made a strong contribution to recognition of the value and safety of medical thoracoscopy. The first randomised controlled trial on treatment of recurrent primary spontaneous pneumothorax demonstrated that simple talc poudrage under thoracoscopy prevented recurrences without prolongation of hospitalisation and is more cost-effective than conservative treatment with an intercostal tube [18]. More recently, a prospective European study of 558 patients with malignant pleural effusion proved that the use of large-size talc particles under medical thoracoscopy for obtaining pleurodesis in malignant pleural effusion is safe and not associated with acute respiratory distress syndrome [19]. The safety of the graded talc used in Europe for decades has been confirmed by a further multicentre study of talc poudrage during medical thoracoscopy to prevent recurrence of primary spontaneous pneumothorax [20], contrary to previous findings in Brazil and the USA [21, 22].

VIDEO-ASSISTED THORACIC SURGERY

The advent of video technology has been applied by thoracic surgeons, making thoracic surgery minimally invasive in VATS [23–26]. Many surgical series [27, 28] suggest that VATS offers less post-operative pain and shorter hospital stay than conventional surgical approaches. VATS differs from medical thoracoscopy in its access to the thoracic cavity [29]. There has been some debate about the relative roles of VATS and medical thoracoscopy. VATS requires an operating theatre, double lumen tube intubation and general anaesthesia allowing conversion to open thoracotomy if required. In contrast, medical thoracoscopy can be performed safely in an

endoscopy suite under local or general anaesthesia without intubation. This does limit its potential, but for many indications medical thoracoscopy is substantially more cost-effective compared with VATS.

MEDICAL THORACOSCOPY: FUTURE PERSPECTIVES

Medical thoracoscopy is undergoing further development with the wider adoption of interventional procedures [17] and improvement of equipment, such as minithoracoscopy [30] and semirigid thoracoscopy [31]. Fluorescence thoracoscopy may have a role in improved detection of pleural malignancies at an early stage [32] or helping us better understand the pathophysiology of primary spontaneous pneumothorax [33]. Medical thoracoscopy may become important in lung cancer staging, by allowing sampling of mediastinal nodes with ultrasound guidance [34]. MT could be improved further if we learn to combine optimally all these different techniques and technologies [35].

As predicted by JACOBEUS [4], medical thoracoscopy has a great potential; this is just as true now as it was 100 yrs ago. Medical thoracoscopy is one of the most important techniques in respiratory medicine and patients in every hospital should have it available to them for appropriate indications. Our patients require interventional pulmonologists worldwide to finally realise the full benefit of Jacobaeus' invention.

STATEMENT OF INTEREST

None declared.

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