

Foreword

The fact that my medical career started back in the first half of the last century means, of course, that I must be very old, which I am—well past 80—but it also means that for over 60 years I have been both witness to and participant in the spectacular advances that have revolutionized the understanding and practice of medicine in general and of pulmonary medicine in particular. Certainly, this experience provides an advantageous perspective from which to write a foreword to this edition of *Medical Thoracoscopy/Pleuroscopy: Manual and Atlas*, a thoroughly revised and updated book about a resurgent procedure that is both underappreciated and underutilized in many countries, including the United States, and that is gaining importance in the diagnosis and treatment of a variety of pleuropulmonary diseases.

In the 1950s, at the beginning of my career as a pulmonologist, I cared for many patients with tuberculosis, the signature disease of the specialty. But during the ensuing decade, tuberculosis began to decrease in incidence and became mostly a curable instead of a chronic and often fatal condition; in addition, the focus of its care shifted from the hospital (or sanatorium) to the clinic (or office). Pulmonary physicians, however, became even busier than before as their responsibilities shifted from patients with tuberculosis to those with diseases that were by no means new but which we began to see in increasing numbers—asthma, chronic obstructive pulmonary disease, and cancer of the lung; a trend that to a large extent continues today.

By the mid-1960s, I took advantage of the steadily diminishing number of patients with tuberculosis that required hospitalization in my 158-bed “TB Building” at San Francisco General Hospital by converting one of the newly emptied wards into an intensive care unit for patients with respiratory disease. The burgeoning number of intensive care units at the time provided a welcome home to physicians trained in pulmonary medicine, not only because of the frequency with which serious lung conditions—such as community-acquired pneumonia, status asthmaticus, and exacerbations of COPD—were the cause of admission, but because of the recurring need for mechanically assisted ventilation in desperately ill patients. Pulmonary specialists were well-versed in respiratory physiology, including the mechanics of breathing, which was a subject of much research and academic activity, and which coincided with considerable corporate interest in the development and marketing of ventilators. Soon, my

dedicated “respiratory” facility became a full-fledged “medical” intensive care unit, and I became more and more involved in critical care, becoming an expert in a subspecialty that did not even exist when I was certified in pulmonary medicine.

Today’s clinicians—skilled in contemporary medical practices and in the use of life-saving pharmacology and technology—take for granted what older physicians appreciate and still marvel at. And this is true not just in the practice of intensive care or pulmonology, but in each one of the many branches of medicine. Everyone agrees: remarkable discoveries have improved the lives of both patients and their doctors. Consider only one example: the spectacular advances that have occurred in diagnostic methodology. Currently, not many diseases escape definitive diagnosis by available microbiological, biochemical, and pathological analyses of specimens obtained from all the usual sources and, when needed, from hard-to-reach, formerly inaccessible sites. Moreover, application of highly advanced diagnostic methods quickly identified previously unknown and important clinical scourges, such as Legionnaire’s disease, hantavirus pulmonary infection, human immunodeficiency virus infection and its partner in death and disability the acquired immunodeficiency syndrome, mad cow disease, and, more recently, severe acute respiratory syndrome (SARS): all of which have come to light during my professional lifetime.

Modern practitioners are blessed with imaging techniques of exceptional clarity and precision, which have replaced older sometimes dangerous and always unpleasant diagnostic methods: my father nearly died from an air encephalogram; today he would have been easily diagnosed by magnetic resonance imaging. Not many practicing pulmonary specialists realize how difficult bronchography was for doctors to perform and for patients to endure; now, when we need to map the extent and severity of bronchiectasis, we simply write an order for high-resolution computed tomography of the lungs. All of us welcomed ultrasonography into our diagnostic armamentarium, a convenient and noninvasive way of looking—for the first time—deep inside the heart, blood vessels, abdomen, and pelvis to identify anatomical and functional abnormalities, including the presence and location of pleural fluid in the chest.

Within the last decade or so, we have witnessed the flourishing of a breed of subspecialists called interventionists, descendants of a group of intrepid pioneers who,

as the authors of this *Manual and Atlas* tell us, started probing body cavities around a century ago. Now, however, endowed with ultra-modern high-tech instruments, interventionists not only examine the insides of various cavities and organs, but they are able to do something about the abnormalities they find there. Surgeons are, without doubt, the consummate interventionists, but the practice has broadened to other chiefly “medical” specialists. Currently, we have interventional radiologists, interventional cardiologists, and interventional gastroenterologists. Plus, there is a scattering of interventional pulmonologists but, as the authors of this *Manual and Atlas*, who come from Europe, North America, and Asia, persuasively state, there should be many more. After proper training and experience in medical thoracoscopy or pleuroscopy (interchangeable terms), pulmonary specialists have much to offer in the diagnosis and management of patients with lung disease, especially those with pleural effusions, but including those with pneumothorax, empyema, and other conditions as well.

A brief review of my 60-plus years of repeated frustrations trying to diagnose and manage patients who presented with pleural effusions of uncertain etiology underscores the valuable additions to pulmonary medicine now provided by medical thoracoscopy. Traditionally, in teaching hospitals, thoracenteses are performed by interns and residents, and I did my share, although I don’t remember doing very many. I also carried out a few artificial pneumothoraces, including one induction, for collapse therapy of pulmonary tuberculosis, although pneumoperitoneum was the preferred treatment in both hospitals I trained in.

Back then, the fluid we aspirated was not of much diagnostic value; measurements of the numbers and types of white blood cells and the protein concentration seldom altered clinical thinking, and cultures were only occasionally positive. The availability of cytology helped considerably, and we were even more delighted when, practically simultaneously, the Cope and Abrams needles appeared: here at last was a chance of making a definitive diagnosis. But not always. The report of one of my first biopsies, which provoked a brisk hemorrhage, showed a “fragment of arterial wall.” Later, we profited from the diagnostic orientation afforded by Light’s criteria, greatly improved culture methods, including for anaerobic organisms, and the development of biochemical tests such as N-terminal pro-brain natriuretic peptide (NT-BNP), adenosine deaminase, and gamma-interferon.

Obviously, all these additions and refinements helped. Although it is hard to generalize because of differences in technical approaches and in clinical settings, the yield from analysis and culture of thoracentesis fluid plus histo-

logical examination and culture of specimens obtained by closed pleural biopsy establish a diagnosis of tuberculous pleurisy with effusion in 70–80% of cases. (Even though finding a high level of adenosine deaminase or gamma-interferon in blood or discovering caseating granulomas in pleural tissue provides a satisfactory working diagnosis, it remains important—and increasingly so—in some settings to culture *Mycobacterium tuberculosis* and to identify drug-resistant strains.) Image-guided pleural biopsy undoubtedly raises the diagnostic yield above 80% in patients with tuberculous pleural effusion, but it is close to 100% with thoracoscopy and the result of culture of thoracoscopic specimens is higher than from any other source. Sadly, these more sensitive procedures are seldom available where they are needed most: in resource-poor countries where the incidence of tuberculosis is extremely high.

Studies in patients who turn out to have malignant pleural effusions typically show a low diagnostic return from closed pleural biopsy when pleural fluid cytology is negative. Here again, the yield is increased by image-guided pleural biopsy, but raised even higher by thoracoscopy, which is clearly the best way of diagnosing pleural malignancies when suspicion is high and simpler approaches are unrevealing; thoracoscopy also furnishes the opportunity for performing talc poudrage under direct vision for optimum pleurodesis: when the procedure is indicated.

So for more than half a century, the work-up of patients with pleural effusion of unknown etiology has steadily improved, always in the direction of more reliable and safer ways of making an accurate diagnosis, thus paving the way for effective treatment. The point is that diagnostic algorithms are constantly evolving and that they now include medical thoracoscopy.

The appearance of this *Manual and Atlas* is timely, and the book fills a pressing need: it details the latest methodology; it offers numerous photographs of the various abnormalities that may be encountered during medical thoracoscopy; and it discusses controversial issues regarding indications and provides evidence-based recommendations for when the procedure should be carried out. And there is more. As stated earlier, medical thoracoscopy has been used and is being tried in patients with conditions other than pleural effusion, and the book deals with what these conditions are and how the procedure may help. Here at last is an excellent way for pulmonary specialists to start taking advantage of the diagnostic and therapeutic benefits of medical thoracoscopy.

John F. Murray, MD, FRCP
Professor Emeritus of Medicine
University of California, San Francisco

Preface

Exactly a hundred years ago, Hans-Christian Jacobaeus published his pioneering article on the use of the cystoscope for examination of serous cavities, which he called thoracoscopy and laparoscopy. Although he developed thoracoscopy primarily as a diagnostic method in pleural effusions, he soon used and propagated it for lysis of pleural adhesions, by means of thoracocautery, to accomplish an artificial pneumothorax. The technique became very popular in the preantibiotic era for collapse treatment of pulmonary tuberculosis.

Around 1950, with the advent of antibiotic treatment for tuberculosis, the era of pneumothorax therapy came to an end and other diseases became increasingly important to the chest physician. Consequently, a generation of physicians already familiar with therapeutic application of thoracoscopy, mainly in Europe, began to use this technique on a much broader basis for evaluation of many pleuropulmonary diseases. The *Atlas of Diagnostic Thoracoscopy*, published in 1985, summarized these experiences.

However, during the last 25 years, many new developments have had an enormous impact on the application of thoracoscopy. Imaging techniques such as CT and MRI very often deliver the diagnosis in localized chest lesions. Transbronchial lung biopsies and bronchoalveolar lavage (BAL) in combination with HRCT frequently allow the differentiation of diffuse lung diseases. In the early 1990s, tremendous advances in endoscopic technologies stimulated the development from thoracoscopy to minimally invasive thoracic surgery/video-assisted thoracic surgery (VATS). For better distinction from “surgical thoracoscopy,” the term “medical thoracoscopy” was introduced. With the introduction of the semirigid (semiflexible)

pleuroscope, the term “pleuroscopy” became popular. Talc poudrage, performed during thoracoscopy, has now become widely accepted as the preferred method for pleurodesis, and medical thoracoscopy/pleuroscopy (MT/P) is meanwhile considered to be one of the main areas of interventional pulmonology.

All these changes during the last 25 years gave us reason to edit this new *Manual and Atlas*, which describes in detail the different technical approaches as well as today’s diagnostic and therapeutic indications. We hope that this update on the various techniques, described by editors from Europe, North America, and Asia, together with the endoscopic photographs and the accompanying DVD with videos of typical cases, will further promote the use of this easy-to-learn technique.

We thank Olympus Europa Holding GmbH for support in the production of this book and the permission to use the procedural video of medical thoracoscopy under local anesthesia. We would also like to thank Angelika Findgott, Anne Lampater, Elisabeth Kurz, and Clifford Bergman for careful handling and aid in editing the book.

We are especially grateful to John F. Murray, Professor Emeritus of Medicine, University of California, San Francisco, and one of today’s most preeminent pulmonologists, for his foreword in which he puts the method into the context of the whole field of respiratory medicine.

Robert Loddenkemper
Praveen Mathur
Marc Noppen
Pyng Lee