Francis C. Wells
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Thoracic Surgical Techniques

Second Edition

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My gratitude and loving thanks to my children Joanna, Nicholas and Olivia for their forbearance through many years of hard work allowing me to produce this and other volumes.
"filii nostra omnia"

Francis C. Wells

Preface

In the 28 years since the last edition there has been a renaissance in thoracic surgery, which has come about due to a combination of new technology and the development of thoracic surgery as a distinct subspecialty.

Built on the principles and foundations of good surgery, including anatomical understanding, exposure and gentle tissue handling modern thoracic surgery includes both open and videoscopic techniques.

Miniaturization, surgical telescopes, high-definition monitors, and many new devices allow superb illumination, magnification, and tremor reduction which helps minimum access surgery to take place. Coupled with an equally important focus on enhanced recovery, there has been a major reduction in length of stay, morbidity, and also the ability to offer surgery to frailer patients.

This edition remains true to the previous in being based on simplicity and clarity for the practicing surgeon. It is mostly about the open techniques on which the minimally invasive approaches have been built. There is liberal reference as to how the minimal access techniques differ and build upon the open.

The majority of the original excellent hand drawings by Gillian Lees and Kevin Marks have been retained.

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We are most grateful to Gillian Lees and Kevin Marks for allowing us to reproduce once again their wonderful illustrations for this text. The clear nature of the illustrations is the foundation of this work

The editors for patience and perseverance

From

Mr Aman Singh Coonar

My parents for their love, wisdom and guidance for otherwise I would not have had the chance to be a doctor; my family for their support, jokes and endurance; and, my wife for everything ☺!

From

Francis Wells, my never ending gratitude to my parents without whom none of my meagre achievments would have been possible and to my three wonderful children, Joanna, Nicholas and Olivia for their love and forebearance throughout my frenetic career

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Principles of Thoracic Surgery and Enhanced Recovery

1

1.1 Introduction

This book is about open and minimally invasive thoracic surgery for the practicing surgeon. In thoracic surgery "minimally invasive surgery" is usually described as video assisted thoracic surgery or VATS, and has become part of the work of all specialist thoracic surgeons. This development has taken place because of benefits to patients, advantages for surgeons and the overall health-economic advantages related to improved health outcomes.

As VATS has developed there has been a simultaneous change in work-up and peri-operative care, with an appreciation that consistent application of "enhanced recovery" protocols and empowerment of the patient in their personal recovery leads to better outcomes. There have also been developments in anaesthesia with an increasing number of specialist thoracic anaesthetists who are able to achieve lung isolation and use regimes that promote faster recovery.

1.2 Patient Engagement and Expectations

For example, if we tell a patient that they will go home with a chest tube within a very few days of surgery and they and their family are prepared for that in advance, it makes earlier discharge possible. By allowing the patient to be more active in their own recovery we can change their expectation of the surgical process to one in which they were a relatively passive participant to a more active and responsible role. Successful earlier discharge is very important when health care costs are increasing. If we are to treat as many people as possible, to the highest standard, those costs need to be contained whenever possible.

1.3 Enhanced Recovery

Our approach to enhanced recovery is evidence based and includes the following steps.

1. An explicit explanation to the patient of their recovery pathway and agreement on mutual expectations. This would mean that they have the facility and support to go home with a drain in and realize that their recovery will take place much more at home in their own environment than in-hospital.
2. Pre-operative exercises, physiotherapy, pulmonary rehabilitation and whenever possible same day admission with maintained mobilization of the patients including, for example, walking up to the operating theatre holding area.
3. No pre-medication other than usual drugs. Continued oral hydration and carbohydrate loaded drink to 4 h preoperatively.
4. Minimal intra-operative use of indwelling lines and catheters at the time of surgery.
5. Mobilisation on the day of surgery including sitting out of bed and walking. Day of surgery post-op physiotherapy.
6. Post operative prophylactic anticoagulation and rapid mobilization.
7. Standard post-operative medications to include oral analgesia, laxatives, antiemetic, proton pump inhibitor and minimal use of post operative antibiotics. Avoiding opiates as much as possible. Remove lines and catheter as soon as possible.
8. Use of ambulatory drainage systems whenever possible including new generation metered devices that improve accuracy of recorded measurements.
9. Culture change such that constipation, urinary catheter or drains being in situ are not seen as contraindications to discharge.

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10. Early post-operative (on ward or treatment room) review if necessary for removal of drains or trial without urinary catheter.
11. Early post-discharge clinic review for reassurance, identifying complications and planning next-stage treatments.
12. Telephone, internet and outreach or district nurse support to patients in early post-operative period.
13. Earlier pain specialist review if symptoms not significantly settling at early reviews.

1.4 Anaesthetic Considerations

Open thoracic surgery and VATS have common requirements. There needs to be fast, reliable and effective lung isolation. If an anaesthetist does not have the relevant skills or experience the results are likely to be poor. VATS is extremely difficult if the patient starts to cough during general anesthesia. The anaesthetist who forcefully overinflates the lung when not taking precautions risks barotrauma and pneumothorax. The dialogue between surgeon and anesthetist needs to be excellent, in particular when checking the airway. There has been a move away from to epidurals to extrapleural analgesia. This has led to reduced need for central lines, less infusion of postoperative vasoconstrictor and more rapid mobilization. Recently thoracic surgery including lung resection has been performed on non-intubated patients who are breathing spontaneously under general anaesthesia. This requires very close monitoring of the patient who will not be on muscle relaxants. Newer regimes avoid opiates. Such strategies may have benefits in terms of speed of recovery.

Recently complex thoracic surgery is being performed on the sedated but still spontaneously breathing patient. This requires particular skills in thoracic anaesthesia. Possible benefits are earlier mobilization of the patient.

From the surgeon's perspective a consultant anaesthetist who is skilled, interested and available during the case is an essential part of the effective partnership that contributes to excellent outcomes.