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978-0-521-73161-4 - Core Topics in Transesophageal Echocardiography

Edited by Robert Feneck, John Kneeshaw and Marco Ranucci

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Preface

There has been a substantial increase in the use of transesophageal echocardiography (TEE) in the last 10 years. Much of this has been due to the increase in perioperative echocardiography in patients undergoing cardiac and major non-cardiac surgery, and in intensive care. Knowledge and skills in echocardiography are now part of the fundamental training of not only cardiologists but also cardiac anesthesiologists and intensivists, and indeed are commonly acquired by all specialists who care for patients undergoing cardiac surgery.

This book is the result of a frequently asked question, 'Which book would you recommend that will cover the necessary topics required for the accreditation exams, but will also help the reader in daily TEE practice?'

The first section covers topics that are essential reading for those who require a basic grounding in TEE for both their clinical practice and preparation for accreditation exams. The second section covers practical issues which will be relevant to the more experienced practitioner. These include mitral valve repair, transcatheter procedures such as septal defect

closure and aortic valve surgery, and off-pump cardiac surgery. These are relevant to specialists from either a cardiology or an anesthesiology background. The speed with which new technology is made available to TEE suggests that the chapters on 3D imaging, myocardial velocity imaging, and speckle tracking will constitute a valuable introduction to these techniques.

The contributing authors are not only experts in TEE but also have a long and proven track record in education and training in echocardiography. We are grateful to them all for their excellent and timely contributions.

It is said that a picture is worth a thousand words. In echocardiography, that is a conservative estimate! We are therefore grateful to the publishers for agreeing to make available video files that provide examples of information referred to in the text. We believe this will be of substantial value to the reader, experts and novices alike.

Finally, we would like to thank the publishers for their patience and perseverance, and for their faith in our ability to deliver the finished article.

Addendum to Chapter 1: updated indications for perioperative TEE

Robert Feneck, John Kneeshaw, Marco Ranucci

The evidence supporting the indications for perioperative TEE has evolved over time. The lack of randomized controlled trials and meta-analyses has previously justified a cautious approach. The earlier North American guidelines referred to in Chapter 1 identified separate classes of indications, including recommendations on those conditions where TEE is recommended for use, and on those where it is not (see Table 1.2) [1]. Previously published European Guidelines made no mention of separate indications for perioperative echocardiography [2].

Very recently, guidelines and recommendations for the use of perioperative TEE from North America and Europe have been updated [3,4]. Both groups have produced similar recommendations, which differ from previously published guidelines in some important respects. We believe that these new recommendations are sufficiently important to justify this addendum.

The new guidelines from North America make a number of recommendations, as shown in Table 1. Most strikingly, they recommend that “for adult patients without contraindications, TEE should be used in all open heart (e.g., valvular procedures) and thoracic aortic surgical procedures, and should be considered in CABG surgeries as well.”

In addition to a survey of the literature, these authors took opinion from expert consultants and experienced practitioners. Of the 58 experts, 96% agreed with the proposition that “TEE should be used for *all* cardiac and thoracic aortic surgical patients.” For the small number who disagreed, CABG surgery in patients with normal ventricular function, and surgery to the descending thoracic aorta were notable exceptions. When considered as a whole, these new guidelines were assessed by a sample of the responding experts as being in accordance with their current practice, and therefore not requiring any change in practice on their part.

In these circumstances, contraindications to perioperative TEE became even more important, and the new North American guidelines have given some thought to this issue also (Table 1). Apart from previous esophageal surgery, the authors found little consensus on absolute contraindications, although the document correctly highlights the concept of “relative risk” and makes recommendations accordingly.

Recommendations from the European Association of Echocardiography are, at the time of writing, still in press and must therefore be considered as provisional. They state that “TEE should be used in adult patients undergoing cardiac surgery or surgery to the thoracic aorta under general anaesthesia, in particular in valve repair procedures.”

Table 1. Indications and contraindications for perioperative TEE [3]

Indications: recommendations
1. For adult patients without contraindications, TEE should be used in all open heart (e.g., valvular procedures) and thoracic aortic surgical procedures, and should be considered in CABG surgeries as well.
2. For patients undergoing transcatheter intracardiac procedures, TEE may be used.
3. In non-cardiac surgery, TEE may be used when the nature of the planned surgery or the patient’s known or suspected cardiovascular pathology might result in severe hemodynamic, pulmonary, or neurologic compromise. If equipment and expertise are available, TEE should be used when unexplained life-threatening circulatory instability persists despite corrective therapy.
4. For critical care patients, TEE should be used when diagnostic information that is expected to alter management cannot be obtained by TTE or other modalities in a timely manner.
Contraindications: recommendations
1. TEE may be used for patients with oral, esophageal, or gastric disease, if the expected benefit outweighs the potential risk, and provided the appropriate precautions are applied. These precautions may include: considering other imaging modalities (e.g., epicardial echocardiography), obtaining a gastroenterology consultation, using a smaller probe, limiting the examination, avoiding unnecessary probe manipulation, and employing the most experienced operator.

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The authors noted that these recommendations are dependent on the fact that “there is appropriate technology available, and that those charged with undertaking TEE have the knowledge and skills appropriate to the task.”

In non-cardiac surgery, the authors recommend that TEE “may be used in patients undergoing specific types of major surgery where its value has been repeatedly documented,” including “neurosurgery at risk from venous thromboembolism, liver transplantation, lung transplantation and major vascular surgery, including vascular trauma.” It may also be used in “patients undergoing major non-cardiac surgery in whom severe or life-threatening haemodynamic disturbance is either present or threatened,” and “patients who are at a high cardiac risk, including severe cardiac valve disease, severe coronary heart disease or heart failure.”

In critical care the authors recommend that TEE may be used “in the patient in whom severe or life threatening haemodynamic disturbance is present and unresponsive to treatment, or in patients in whom new or ongoing cardiac disease is suspected and who are not adequately assessed by transthoracic imaging or other diagnostic tests.”

These new recommendations represent a significant enhancement of the role of perioperative TEE, particularly in adult cardiac surgery. Given these recommendations, it is clear that a perioperative TEE service should be available in every adult cardiac sur-

gery unit, and that training in TEE should be regarded as an essential part of the training of the modern cardiac anesthesiologist.

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