

Echo Rounds in Evolution

Martin J. London, MD*

Nikolaos Skubas, MD

Since the introduction in the early 1980s, perioperative transesophageal echocardiography (TEE) has steadily evolved from a highly specialized tool limited to practitioners at tertiary care facilities providing anesthesia for cardiac and major vascular surgery to a nearly universally available tool used routinely by thousands of anesthesiologists and critical care physicians world wide (1). As with any new technique, some initial expectations of clinical utility proved to be overblown, for example predicting postoperative myocardial infarction based on intraoperative segmental wall motion abnormalities (2). But in the case of TEE, the few unmet expectations have been more than offset by the now well accepted clinical utility of many existing indications and promising research into a wide range of new ones.

Practice guidelines for the perioperative use of TEE, first published in 1996 (3), are currently being rewritten. The new guidelines will likely list many new indications not considered in the early 1990s. The availability of desktop imaging systems for TEE and precordial imaging continues to expand the ease and range of locations in which TEE can be used even outside the traditional operative and critical care environments.

The Society of Cardiovascular Anesthesiologists (SCA) has championed the orderly and systematic evolution of perioperative TEE through its longstanding internationally recognized education programs at its Annual Meetings, its freestanding Annual Comprehensive Review & Update of Perioperative Echo meeting, and its joint authorship and publication of TEE guidelines (4,5). Pioneering efforts by SCA members, in conjunction with cardiologists, have resulted in a formal certification process that is well accepted by the anesthesiology community (6–8). Most recently, the SCA has developed standards for Continuous Quality Improvement (CQI) in TEE. Indeed, the SCA's new online CME program in the Journal will feature echo content frequently to provide easy completion of the 5 CME credits in TEE required by the CQI guidelines (9). SCA members continue to push the boundaries in development and application of emerging echo technologies (e.g., tissue Doppler imaging and three-dimensional imaging). The SCA is also active in facilitating safe and effective use of TEE by less experienced practitioners, typically anesthesiologists not involved in major cardiac or vascular procedures. These efforts also include research to identify predictors of rare but potentially life-threatening adverse events associated with TEE that can potentially lead to medicolegal actions (10).

In late 2003, the SCA Executive Leadership and the SCA Section Editors of Anesthesia & Analgesia proposed inclusion of an Echo Rounds section in the Journal. Echo Rounds were envisioned as a very short (<500 words) presentation of an interesting case supported by a single TEE video clip. The response has been overwhelming, with interesting cases submitted from prominent tertiary centers as well as community-based practitioners. Echo Rounds were officially off and running with the publication of the first two Echo Rounds in May 2005 (11,12). Anesthesia & Analgesia has published nearly 40 Echo Rounds since then, and more are in press.

As the new program was launched, "big picture" strategic questions arose. What was the primary focus? Was the intent to just highlight "spectacular" echo findings? Was the intent to publish only those cases in which TEE was absolutely instrumental in management? If so, were the minute details of clinical management required? How could that fit into

From the *Department of Anesthesiology, University of CA, San Francisco, San Francisco, CA, and the †Department of Anesthesiology, Weill Medical College of Cornell University, NY, NY.

Address correspondence to Martin J. London, MD, Anesthesia (129), Veterans Affairs Medical Center, 150 Clement St., San Francisco, CA 94121. Address e-mail to londonm@anesthesia.ucsf.edu. No reprints will be available.

Copyright © 2007 International Anesthesia Research Society

DOI: 10.1213/01.ane.0000270103.52810.3c

500 words? Did the TEE case have to be absolutely unique in the literature? How would the Journal balance its focus on original science with the SCA's need to provide "bread and butter" TEE teaching for its membership?

After the initial wave of submissions came the realization that the focus was at times slanted towards esoterica that few practitioners might ever see. Additionally, in those cases where TEE "saved the day," clinical management prior to TEE was often questionable, which distracted from the focus on TEE didactics. It also became apparent that Echo Rounds were a valuable resource (quite literally as textbook prices increase!) for SCA and IARS members. The growing number of cases provides an instantly accessible library for day-to-day clinical decision making. In response, we retooled the Echo Rounds to focus on TEE didactics. The main focus is differential diagnoses, followed closely by precise presentation of technical issues such as relevant imaging planes, image optimization, and measurements, formulas, and calculations. As a result, the clinical details of the case have become less important unless they directly impacted on the echo issues being considered. Of course, authors always have the option of submitting an experience involving TEE as a formal case report (which must be "truly exceptional" to be accepted by the Journal) or as a Letter to the Editor (13).

During the past year, technical issues related to the video clips became apparent. What is the proper video format? What size image? How many megabytes? How many seconds? The past 18 months have seen a huge change in the cost and availability of computer hardware and software for video editing, making it simple for authors to concatenate, annotate, edit, encode, and transcode (change video formats) their video clips. Video editing software also facilitates removal of protected health information (including dates!), a requirement rigorously enforced in the review process. Given that Internet bandwidth is less and less of a constraint, Anesthesia & Analgesia now focuses on presentation excellence rather than video size. Thus, we require adequately sized (preferably 640 × 480 pixels) video clips of the highest quality. "Postage stamp" video clips (320 × 240 pixels or smaller) are no longer acceptable for publication. Indeed, video quality is the sine qua non for publication of Echo Rounds in the Journal.

The new Guide for Authors that appears in this edition (14) includes completely reworked and expanded information on exactly what is required for Echo Rounds. We have increased the suggested word count (although brevity is strongly encouraged) and the number of video clips. Indeed, with sequential segments in each clip, the amount of video that can be presented in an Echo Rounds is nearly unlimited. We have also created a step-by-step checklist (available at <http://www.anesthesia-analgesia.org/misc/EchoRoundsCheckList.doc>) to help novice and experienced authors maximize

their chances for success in the review process. Indeed, Echo Rounds are an excellent venue for junior practitioners (including residents) to garner their first publication.

As published Echo Rounds cases accumulate, how can an author know if his or her case is truly novel prior to submission to the Journal? Early last year it became evident that a database of Echo Rounds cases would be required. To that end, our expert Educational Liaison Editors adapted and expanded existing taxonomy terms used by the National Board of Echocardiography for TEE board preparation to code each Echo Rounds using multiple keywords according to multiple parameters. These results, along with other identifying information, the PDF file, and the video clips, can now be accessed from the SCA's Web site (www.scahq.org). Those looking for an in depth discussion on a particular topic will find direct links to PubMed's "related article search." Prospective authors and interested readers can perform free text or complex and/or searches on multiple parameters (e.g., specific anatomic structure, type of valve pathology, particular calculation or formula's used, etc.) to find multiple relevant cases. The database is freely accessible, although only SCA members will be able to access PDF files and video clips. Non-SCA IARS members can access these via the Journal's Web site at www.anesthesia-analgesia.org. In addition, "in press" manuscripts will be available on the SCA Web site shortly after they are accepted. Thus, prospective authors will be able to know exactly what Echo Rounds have been published, or will soon be published, to help guide their deciding whether to submit a case to the Journal¹.

The Journal encourages all authors to "think outside the box." This applies to authors considering submission of Echo Rounds. As long as you have excellent images and precise didactics, nearly any topic is fair game. Indeed, Echo Rounds do not necessarily require a video clip, for example if the focus is exclusively on a static image (e.g., spectral or tissue Doppler) although we strongly suggest "dynamic" media be submitted whenever possible.

We expect to publish several Echo Rounds every month. Over several years this will produce a sizeable library of high quality, carefully edited TEE videos. The success of this effort reflects the expert and dedicated input of many SCA reviewers who have graciously volunteered their time. In the past 2 years, these experts have provided constructive reviews that are often mini-educational tomes themselves. They have also helped behind the scenes building the SCA Echo Rounds database. Our readers are fortunate to

¹ Echo rounds that are under review or in revision will not be listed in the database so there is a small possibility that a particular case may already be under consideration.

have the considerable expertise of these SCA reviewers reflected in every Echo Rounds published by the Journal.

We look forward to a long and productive collaboration with the TEE community. Like the Journal itself, Echo Rounds is a work in progress. We welcome thoughts and suggestions from our readers and colleagues.

REFERENCES

1. Cahalan MK, Litt L, Botvinick EH, Schiller NB. Advances in noninvasive cardiovascular imaging: implications for the anesthesiologist. *Anesthesiology* 1987;66:356–72.
2. London MJ, Tubau JF, Wong MG, et al. The natural history of segmental wall motion abnormalities in patients undergoing noncardiac surgery. *Anesthesiology* 1990;73:644–55.
3. ASA and the SCA Task Force on TEE. A report by the Am Society of Anesthesiologists and the Society of Cardiovascular Anesthesiologists Task Force on Transesophageal Echocardiography. *Anesthesiology* 1996;84:986–1006.
4. Shanewise JS, Cheung AT, Aronson S, et al. ASE/SCA guidelines for performing a comprehensive intraoperative multiplane transesophageal echocardiography examination: recommendations of the Am Society of Echocardiography Council for Intraoperative Echocardiography and the Society of Cardiovascular Anesthesiologists Task Force for Certification in Perioperative Transesophageal Echocardiography. *Anesth Analg* 1999; 89:870–84.
5. Lang RM, Bierig M, Devereux RB, et al. Recommendations for chamber quantification: a report from the Am Society of Echocardiography's Guidelines and Standards Committee and the Chamber Quantification Writing Group, developed in conjunction with the Eur Association of Echocardiography, a branch of the Eur Society of Cardiology. *J Am Soc Echocardiogr* 2005;18: 1440–63.
6. Aronson S, Butler A, Subhiyah R, et al. Development and analysis of a new certifying examination in perioperative transesophageal echocardiography. *Anesth Analg* 2002;95:1476–82.
7. Cahalan MK, Abel M, Goldman M, et al. Am Society of Echocardiography and Society of Cardiovascular Anesthesiologists task force guidelines for training in perioperative echocardiography. *Anesth Analg* 2002;94:1384–8.
8. Aronson S, Thys DM. Training and certification in perioperative transesophageal echocardiography: a historical perspective. *Anesth Analg* 2001;93:1422–7.
9. Mathew JP, Glas K, Troianos CA, et al. ASE/SCA recommendations and guidelines for continuous quality improvement in perioperative echocardiography. *Anesth Analg* 2006;103: 1416–25.
10. Augoustides JG, Hosalkar HH, Milas BL, et al. Upper gastrointestinal injuries related to perioperative transesophageal echocardiography: index case, literature review, classification proposal, and call for a registry. *J Cardiothorac Vasc Anesth* 2006;20:379–84.
11. Brzezinski M, Keller R, Grichnik KP, Swaminathan M. Persistent left superior vena cava in a patient with a history of tetralogy of Fallot. *Anesth Analg* 2005;100:1269–70.
12. Peterson MJ, Havemann LM, McKenzie ED, Miller-Hance WC. Unusual presentation of postcardiotomy hemorrhage in an infant with congenital heart disease. *Anesth Analg* 2005;100: 1267–8.
13. Saidman LJ. Let Us Hear from You! *Anesth Analg* 2006;103: 1347–8.
14. 2007 Anesthesia & Analgesia Guide for Authors. *Anesth Analg* 2007;105:187–99.