Cardiothoracic Anesthesia Guide
To Transesophageal Echocardiography Rotation
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Introduction
Welcome to the transesophageal echocardiography rotation at UCSD. This guide will serve as an introduction to the cardiothoracic anesthesia service, perioperative transesophageal echocardiography training as well as some general points regarding UCSD Department of Anesthesia. The UCSD CT Anesthesia service covers the elective cardiac and thoracic cases occurring at Thornton Hospital & Sulpizio Cardiovascular Center in La Jolla for UCSD and at the VA Hospital for the VAMC as well as emergent cases occurring at the Hillcrest UCSD Hospital. Intraoperative TEE training involves utilizing TEE during cardiac cases at all institutions as well as mandatory TEE reviews / lectures. The rotation is concluded by a combined written and video examination.

Transesophageal Echocardiography Rotation
This is a month that will be dedicated to learning intraoperative TEE with intense hands on experience, as well as self-directed reading. You are expected to perform the echo exam at all locations, Thornton and the VA as well as the occasional case at Hillcrest. There is a lot to learn during this time, but as an echo resident there are certain clerical and clinical responsibilities which you are expected to perform.

The day starts between 6:30 to 7:00 am, preparing for the day’s studies (except Wednesdays which start at 7:30 to 8:00 am). Probe placement is soon after anesthetic induction and intubation, and before line placement which is by 7:30 am (8:30 am Wednesday). You are expected to be available for all the echo studies in each of the locations. After the morning studies you can use your free time to read, review echo loops, etc. You should be available by beeper and it is helpful to monitor the progress of the OR rooms from time to time. You should be readily available for post bypass studies, particularly valvular cases. Frequently there are afternoon cases which will need a TEE examination performed as well. Your availability for the late cases should be discussed with the attending that day, as well as any other times during the day that you won’t be available (i.e. traveling to Hillcrest for an add-on case).

Special Notes:
• Make sure an echo probe and machine are present in each room that the anesthesia team intends to perform a study.
• Make sure that each echo exam is recorded. At Thornton Philips TEE machines with a digital recording system is in place that stores the images onto the TEE machine hard drive. The Clip Store (Acquire) function will save a clip (please save a loop for each view, plus applicable Color & Spectral Doppler views). Hillcrest utilizes a Siemens machine also with a digital recording system. The VA utilizes and HP TEE Machine with VCR record function. You should ask the anesthesia technician for empty tapes if
needed. When a new tape or disc is started it needs to be labeled appropriately and sequentially.

- Prior to beginning any study, please ensure the patient information needs to be entered into the echo machine (often but not always performed by our anesthesia technician).

- Determine which patients will have an echo exam by discussing the case with the cardiac anesthesia team.

- Ascertain if the patient has any absolute or relative contradictions to TEE Probe placement (see below guidelines). This information can usually be found on the pre-op assessment sheet in the patient’s chart, but if not, then the patient needs to be asked specifically about esophageal or swallowing abnormalities.

- Probe placement should occur immediately following induction of anesthesia, to aide in central line and pulmonary artery catheterization. The probe should not be manipulated while the surgical prep is in progress, i.e., perform your study prior to the prep has started or after it has been completed.

- Do not interfere with the anesthesia team for the sake of probe placement or echo study. The anesthetic management of the patient takes priority over all echo studies.

- All patients should have a complete echo study regardless of their pathology. As you progress you will function more independently, and we expect that by the end of the month you will be able to do an entire study by yourself and review it with the echo attending when it is complete.

- All studies are fully documented on a TEE report sheet. Information will include operator(s) of the probe, type of anesthesia (almost always GA), indication(s) for study, and with who the findings of the study were discussed (i.e. surgeon). This is followed by an organized, concise and complete report of your findings. Initially it is important you write the note with your attending so you can learn the appropriate reporting of echo findings.

- On an approximately weekly to twice a week basis, you will meet with an anesthesia attending and the two cardiac fellows for a TEE review session. This is an opportunity to review TEEs outside of the OR in a relaxed setting as to allow time for questions and review.

**CONTRAINDICATIONS TO TRANSESOPHAGEAL ECHOCARDIOGRAPHY**

The distinction between absolute and relative contraindication to transesophageal echocardiography is somewhat blurred and represents a continuum of pathology and pathophysiology where the risks of the exam must be weighted against the benefits of the
information gained by performing the exam. With that said, below are a list of relative and absolute contraindications to transesophageal echocardiography:

Relative Contraindications:

1. Esophageal varices/hematemeses
2. Active upper gastrointestinal bleeding
3. Barretts’ esophagus
4. Zenker’s diverticulum
5. Schatzke’s ring
6. Prior mediastinal radication
7. Severe cervical spine arthritis/instability
8. Dysphagia
9. Odynophagia
10. Remote pharyngeal, esophageal or gastric surgery
11. Difficult endotracheal intubation

Absolute Contraindications:

1. Esophageal tumor
2. Esophageal stricture causing obstruction
3. Esophageal laceration or perforation
4. Recent pharyngeal, esophageal or gastric surgery
5. Inability or refusal of patient to give informed consent.

Textbook Recommendations
There are a multitude of excellent cardiac and echocardiography texts. Some recommendations include:

Hensley’s Practical Approach to Cardiac Anesthesia – a concise cardiac review text
Sidebotham’s Practical Perioperative Transesophageal Echocardiography - the basis of your TEE reading

Conclusion
Hopefully this guide serves as a concise introduction and reference to your transesophageal echocardiography rotation at UCSD. Feel free to contact me at any point along the way.