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Another Solution to Monitoring the Electrocardiograph in Patients with Extensive Burn Injury

To the Editor:—Ravindran presented a method for monitoring the electrocardiograph (ECG) in patients with extensive burns in whom it is difficult to monitor the ECG because of the lack of natural skin and the application of protective ointments that prevent the adherence of the ECG pads.¹ We present another option.

A pacing esophageal stethoscope (Model 250 used in conjunction with the Model 3 preamplifier and the Model 7A pulse generator, Arzco Medical Systems, Inc., Tampa, FL*) permits the recording of atrial and ventricular electrograms in addition to transesophageal atrial pacing. The electrogram will usually provide sufficient information for rate and rhythm monitoring, but it is not useful for ischemia monitoring.

Potential advantages of this system compared to Ravindran's suggestion are that it is not invasive nor painful. In patients in whom there is a dysrhythmia, atrial electrograms can be superior to surface ECGs for diagnosing dysrhythmias.² Additionally, it provides a method for antibradycardia or antitachycardia atrial pacing should it become necessary.³ However, a limitation of the pacing esophageal stethoscope is that it needs to be placed after endotracheal intubation and removed before extubation; hence this ECG is not available during induction nor emergence. However, 4- and 10-French catheters that are compatible with the above-mentioned pulse generator and preamplifier and which can be inserted into and maintained in an awake patient are available (Arzco Medical Systems, Inc.); hence these elec-

trograms can be used pre-, intra-, and postoperatively. Another limitation of this suggestion is that it cannot be used in patients in whom esophageal instrumentation is contraindicated (*e.g.*, those with dysphagia, esophageal web or diverticulum, esophageal stenosis or stricture, radiation injury, or recent esophageal surgery).

I hope this information is helpful for the care of these patients.

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Transesophageal Pulse Oximetry for Monitoring Patients with Extensive Burn Injury

To the Editor:—Ravindran¹ presented a method for monitoring the surface electrocardiogram (ECG) in patients with extensive burns, in whom it is difficult to obtain a surface ECG signal because of the lack of natural skin and the application of protective ointments that prevent the adherence of ECG pads. His technique does, however, have some limitations in the clinical setting he describes: (1) inability to place electrodes optimally because of involvement in the surgical field, (2) potential loss of electrodes during the surgical procedure, and (3) lack of accessibility, which might limit the ability of the anesthesia care team to replace electrodes. We suggest another moni-

toring option, the transesophageal pulse oximeter (ESOX®) probe (ARISTO Medical, Waukesha, WI), which provides accessibility, is not affected by the surgical procedure, and provides pulse oximetry readings (an ASA-mandated standard for intraoperative monitoring), in addition to temperature and auscultation.

In a recent case report, we presented a patient in whom ESOX® was used successfully when peripheral oximetry was unobtainable because of peripheral vascular disease.² Atlee³ and Prielipp⁴ have suggested that core organ perfusion is maintained during periods of poor peripheral perfusion, and that ESOX® is, therefore, a potentially