Digital Display of Endotracheal Tube Cuff Pressures Made Simple

To the Editor:—There are many situations in which monitoring endotracheal tube cuff pressure is desirable. A number of devices have been developed to allow such monitoring. However, one may obtain a continuous digital display of endotracheal tube cuff pressure in the operating room (OR) or intensive care unit using readily available equipment. An ordinary (usually disposable) air-filled pressure transducer is first connected to a pressure channel of an OR monitor, set to zero, and then hooked up to the pilot balloon/cuff inflation line of the endotracheal tube via a stopcock. A 10-mL syringe inserted in the other port of the same stopcock allows air to be added or removed from the cuff as needed. Finally, a male plug ("dead-ender") is placed in the remaining port of the pressure transducer to seal the system (ordinarily this port is hooked up to a high-pressure fluid source to make a flush system).

This concept was tested with satisfactory results in 10 cases using a Baxter (Deerfield, IL) disposable pressure transducer in conjunction with the Datex (Instrumentarium Oy; Instrumentarium, Finland) AS/3 OR monitor. However, it can be implemented on any modern OR monitor. Because one pressure transducer can be used for many cases, the system is remarkably inexpensive. If desired, the endotracheal tube cuff pressure waveform can be displayed on the OR monitor or entered into an automatic charting system. When processed appropriately, this signal may yield information related to respiratory timing and other matters.

D. John Doyle, M.D., Ph.D.
Associate Professor
Department of Anesthesia
Toronto Hospital and University of Toronto
Toronto, Canada, M4C-5N4
djdoyle@canmed.net

(Accepted for publication March 12, 1999.)

Total Blood Transfusion and Mortality after Orthotopic Liver Transplantation

To the Editor:—One-year survival after orthotopic liver transplantation (OLT) has improved to approximately 85–90%, with improvements in operative technique, anesthetic management, and patient selection. Despite these improvements, perioperative mortality is still a significant threat. A variety of contributory factors are plausible, including Child's score, preoperative UNOS status, quality of the donor organ, and comorbid conditions. We hypothesized that all of these factors, as reflected in blood requirements during the intraoperative portion of OLT, would correlate with 72-h perioperative mortality. Although clinical intuition suggests that the degree of blood loss will correlate with ultimate outcome for OLT recipients, this issue has not been examined.

Records of adult OLT recipients at three institutions (University of Maryland Hospital, Stanford University Hospital, and Johns Hopkins Hospital) were retrospectively reviewed. A total of 300 patients received OLTs from July 1993, to February 1998. Intraoperative erythrocyte requirements, including cell-saver units, were totaled. The patients were then stratified according to the categories: less than 20 U, 21–40 U, 41–60 U, 61–80 U, and more than 80 U. The 72-h postoperative mortality was determined for each category. The OLT procedure was performed in the traditional fashion with caval occlusion and excision. Venovenous bypass was used in a selective fashion as determined by the patient's hemodynamic response to a 2 min trial of portal and caval clamping.

The majority of patients (73%) received less than 20 U of blood during OLT (fig. 1). Fifteen percent of patients received 21–40 U of blood. Perioperative mortality increased in a highly significant fashion among the five categories of blood usage ($P < 0.0001$, chi-square test). Among patients who received less than 20 U, percent-