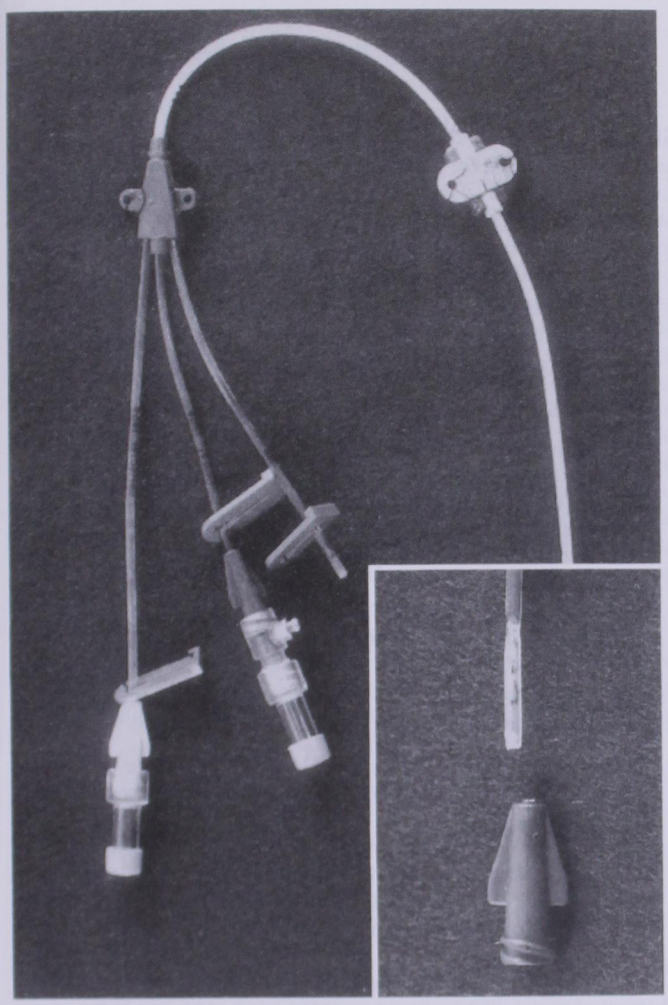

Fig. 1. Triple lumen catheter. Inset: The clear plastic tubing has separated cleanly from the hub.

(VAE). Therefore, our anesthetic plan included the insertion of a central catheter for intravenous access, aspiration of air bubbles, and monitoring of central venous pressure. After the induction of general anesthesia, a triple-lumen catheter (Arrow-Howes Multilumen Catheter, Arrow International, Reading, PA) was atraumatically inserted into the right internal jugular vein, using Seldinger's technique. The tip of the catheter was advanced into the right atrium, using electrocardiographic guidance. All three ports were aspirated and flushed with normal saline. The patient was placed carefully into the sitting position, and surgery commenced uneventfully.

Approximately 3 h after the start of surgery, a small amount of blood was noted on the patient's chest. The blood was seeping from the connection between the blue (medial) hub and the clear tubing connected to it. The clear tubing was immediately crimped off, and during this manipulation, the hub detached completely from the tubing. The total amount of blood loss from this catheter was less than 10 ml, and there was no evidence of VAE by precordial Doppler or end tidal nitrogen analysis. The surgery was completed without further incident, and the catheter was removed after patient emergence from anesthesia. The patient suffered no sequelae from the catheter hub dislodgment, and recovered uneventfully.

This hub would not have been subject to possible damage during insertion of the catheter, because the guide wire passes through the distal (brown) hub. Also, aside from the initial aspiration and flushing, this lumen was unattached to any intravenous tubing that may have placed shearing forces on it. The central venous pressure at the time of the incident was 5 mmHg (zeroed at the level of the right atrium). We credit this for the retrograde flow of blood through the catheter, rather than an occult entrainment of air into the patient's vascular system. Had this occurred, it would have been extremely difficult to determine the source of the air, and the patient may have been at significant risk for VAE or for the premature conclusion of surgery.

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In Reply:—Hub separation in Arrow's triple lumen catheter is an extremely rare occurrence, as documented by our statistical quality assurance data and by the millions of multi-lumen catheters used successfully each year. Arrow encourages immediate reporting of any incidents involving our products and the return of the product for analysis, so that the appropriate engineering or manufacturing intervention can be made as quickly as possible.

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