TABLE 1. Patients Requiring Blood Patch

Blood Patch	Group 1 Perpendicular	Group 2 Parallel
YES	10	4
NO	10	17

Others may have different conclusions. The authors should be congratulated for developing such a large clinical series and adding to our knowledge of risk factors for dural puncture.

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In Reply:—Dr. Dooner questions the statistical analysis of our data concerning the frequency of blood patch following dural puncture with a large-gauge needle with the bevel oriented either parallel or perpendicular to the longitudinal dural fibers. In his analysis, he tests the two-sided hypothesis $P_1 \neq P_2$ and finds insufficient evidence to reject the null hypothesis. However, as the incidence of headache was significantly less with parallel needle bevel insertion, we felt the need only to determine if the headache incidence was also less, and chose to test the one-sided hypothesis $P_1 < P_2$.[1,2] With this approach, we obtain $P = 0.0385$ with Fisher's exact test,[1] and $P = 0.039$ using a corrected one-tailed chi-square test.[3]

The clinical importance of our findings may be more pertinently determined through further studies and clinical experience.

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Routine Use of Transesophageal Echocardiography is Expensive and Time Consuming

To the Editor:—Martin and Bashein[1] once again demonstrate the excellent potential of Transesophageal Echocardiography (TEE) for intraoperative cardiac assessment. They are to be commended particularly for their candid appraisal that detailed analysis is "very time consuming" and "suitable only for research studies."

I believe that this labor intensiveness has proven to be the single most important impediment to adoption of TEE as a clinical tool in many locations. The private practice anesthesiologist views TEE not only as a capital expense, but as a continuing salary expense for the person who has to watch the TEE picture, since it is commonly felt that watching the TEE occupies too much time to allow the anesthesiologist to monitor the patient. This creates a dilemma: TEE appears desirable, but it is too expensive. I propose that there is a possible solution.

The computer used in Martin and Bashein's study, as in all other (to my knowledge) TEE studies, is a serial computer. That is, it performs one arithmetic operation at a time. This mimics the way that the human mind performs arithmetic. Unfortunately, even with the considerable speed of modern computers, the sheer mass of data involved in processing a TEE image makes it impossible to analyze a TEE image in real time.

Not all computers operate in the serial mode. Parallel computers take multiple computing elements (Central Processing Units, or CPU's) and operate them all simultaneously. While each CPU operates serially, the parallel organization of the CPU's allows a multiplication of the efficiency of the computer in performing such tasks as image analysis. This is quite similar to the way the human brain analyzes images. With proper programming, the enhanced capability can be orders of magnitude greater than the number of CPU's. By using parallel processing, it should be relatively simple to perform cardiac output, ejection fraction, and segmental wall motion analysis in real time. With electronically steered ultrasound, it should be possible to do it all in three dimensions in real time! Three dimensional real-time graphic displays could give information not yet imagined.