Correspondence


Injury from Use of Pneumatic Tourniquets

To the Editor:—The increasing use of pneumatic tourniquets to provide a bloodless field in surgery on the extremities and their use for intravenous regional anesthesia, has created new problems for the patient and anesthesiologist.

In a one-week period, we uncovered one neurologic and one vascular complication.

Case I. A 35-year-old man had a ganglion of the wrist removed under intravenous regional block. Forty ml of 0.5 per cent lidocaine were used. Tourniquet time was 75 minutes; tourniquet pressure was 250 mm Hg. The operation was without incident except for tourniquet pain after one hour. Postoperatively, marked swelling of the involved arm developed. Superficial veins were non-tender and not injected. The swelling responded well to intravenously given heparin and elevation of the arm.

Case II. A 23-year-old woman had lacerated an arm in the antecubital fossa. Repair was performed under axillary block, using 50 ml of 1.5 per cent mepvacaine. A radial nerve paresthesia was elicited, but injection was done without pain or discomfort. Tourniquet time was 90 minutes and tourniquet pressure 250 mm Hg. The following day a wrist drop was noted.

The two cases were carefully scrutinized for errors in technique or management. Nothing could be faulted. The common denominator was the pneumatic tourniquet. Both procedures had been done in the same operating room, utilizing the same tourniquet. When the gauges were checked against a mercury manometer, we discovered that the tourniquet gauge read 100 mm Hg too low. When the tourniquet was set at 100 mm Hg, it actually exerted a pressure of 200 mm Hg; at a 200-mm Hg setting, it exerted a pressure of 300 mm Hg. Several other pneumatic tourniquets in operating rooms were then checked and found to read from 25 mm Hg to 75 mm Hg too low. All gauges have since been returned to the manufacturer for recalibration.

Too often the gauges on pneumatic tourniquets are accepted as accurate and this accuracy is not questioned unless the gauge ceases to function altogether. To check the accuracy of these gauges and protect ourselves from undesirable complications secondary to excess pressure from the tourniquet, we have instituted a simple precaution. Prior to the use of any tourniquet, the pressure gauge is set at 100 mm Hg and connected to the mercury manometer on the anesthesia machine. The pressure in the tourniquet line is then released and pressure on the mercury manometer read. The procedure is repeated with the pressure gauge set at 200 mm Hg. Inaccurate gauges should be returned to the manufacturer for recalibration.

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