vena cava 90 degrees from the horizontal. All catheter lumen were 0.035 inches in diameter. Both multi-orificed catheters had significantly higher aspiration efficiencies over the single-orificed catheter with the new 6 sideport configuration roughly 6% more efficient than the previous design.

These new catheter orifice specifications (six side ports, 0.025 inch) already have been incorporated into production by Cook, Inc., Bloomington, Indiana 47402, and are presently available.

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TABLE 1. Catheter Efficiency

<table>
<thead>
<tr>
<th>Catheter</th>
<th>Per Cent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single orifice</td>
<td>77.0 + 0.9</td>
</tr>
<tr>
<td>Multi-orificed</td>
<td>*</td>
</tr>
<tr>
<td>4 sideports (0.045 inch)</td>
<td>84.0 + 0.8</td>
</tr>
<tr>
<td>Multi-orificed</td>
<td>*</td>
</tr>
<tr>
<td>6 sideports (0.025 inch)</td>
<td>90.0 + 0.4</td>
</tr>
</tbody>
</table>

* P < 0.05.

REFERENCE

(accepted for publication January 4, 1985)

Flushing Solution for the Arterial Line

To the Editor:—A considerate approach to the patient is one of the basic rules in our specialty. The preparation of the patient and our invasive manipulations should cause the least amount of pain. Particularly vulnerable in this respect are patients with coronary artery disease in whom discomfort may cause chest pain with all its hemodynamic consequences.

Insertion of a radial line is part of invasive monitoring. This could be done with minimal pain if infiltration is performed with the smallest gauge needle. A problem arises when the radial cannula is connected to the tubing and the system is flushed with heparinized solution. Heparinized normal saline (N/S), lactated Ringer’s (LR), and even lidocaine cause a burning sensation, sometimes with quite severe pain, regardless of the fact that it is injected very slowly. We are now using Plasma-Lyte® A Injection (Travenol Laboratories, Inc.) (pH = 7.4), which makes quite a difference with an excellent result.

Does this have something to do with pH of the solution? (pH of N/S = 5.0, of LR = 6.5, of lidocaine = 5.0-7.0.) Plasma-Lyte® is least damaging to vascular endothelium, as proved ultramicroscopically by Roberts et al.1 during harvesting and preparation of the saphenous vein for a coronary bypass graft. We therefore strongly recommend heparinized Plasma-Lyte® as a flushing solution.

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REFERENCE
(accepted for publication January 4, 1985)

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Fentanyl “Anesthesia” in Dogs

To the Editor:—We have read the recent article by Arndt et al.1 with interest and anxiety. Our interest was aroused by the conclusion of the authors that fentanyl exerted its maximum effect (following five incremental injections totaling 167 μg/kg) on the respiratory and circulatory systems and totally obliterated all somatic responses to a supramaximal painful stimulus (in all animals) at plasma concentrations in the range of 30

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