

Prevention of Foreign Body Embolization Associated with Arterial Cannulation during Open-Heart Surgery

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Abstract

Prevention of embolic complications during institution of cardiopulmonary bypass requires constant attention. The detection of fragments of arterial cannula formed during the insertion of a $\frac{3}{8}$ " $\times$ $\frac{3}{8}$ " hard plastic connector is reported.

Every year an increasing number of patients undergo open-heart surgery. Therefore, the prevention of embolic complications requires constant vigilance and attention. We would like to share a possible complication that may arise during institution of cardiopulmonary bypass.

At the Division of Cardiothoracic Surgery of Cooper Hospital/University Medical Center, cannulation for arterial return via either the aorta or a femoral artery is made using a polyvinyl chloride cannula^a into which a $\frac{3}{8}$ " $\times$ $\frac{3}{8}$ " hard plastic (polycarbonate) connector^b is inserted. During insertion of the connector, shards of the cannula can be sheared off and remain in the lumen. If unnoticed, these fragments can embolize into the systemic circulation. One of the fragments is shown in Figure 1. Fragments of the PVC cannula have been observed by the surgeon before arterial cannulation 8 times in approximately 900 surgical procedures. As far as we know, fragment embolization has not occurred. Careful inspection of the cannula-connector combination for loose intraluminal fragments prevents possible embolization.

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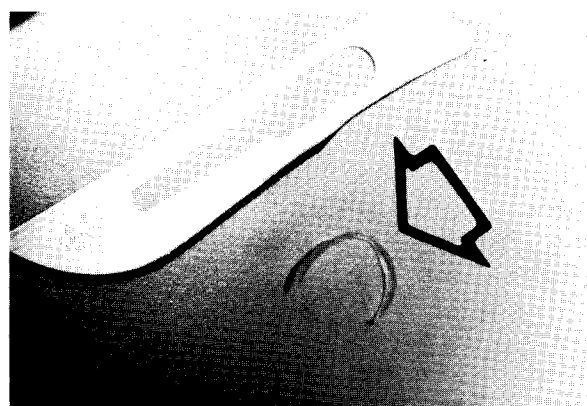


Figure 1. The arrow indicates a fragment detected in the lumen of an arterial cannula after insertion of the plastic connector. A No. 20 blade was included for size comparison.

We recommend lubricating the plastic connector with a minute amount of sterile mineral oil before inserting it into the arterial cannula; this satisfactorily prevents the formation of fragments. Reinforcement with plastic ties will further insure a firm cannula to connector bond. Despite this precaution, the surgeon must always be aware of the possibility of fragments in the lumen of the cannula and carefully inspect the apparatus prior to either aortic or femoral insertion.

Editor's Note:

Dr. Velardi et al. present one method to minimize particulate embolization. Additional steps may be taken including thorough rinsing of the cannula in saline prior to connection.

The effect of embolization of mineral oil probably is not known. Tie-banding of the lubricated connection may be necessary.

Lubrication with saline may be just as effective and perhaps safer.