

# PERFUSION TECHNIQUES

## A Useful Aortic Cannula Extension Arm for Cardiopulmonary Bypass

by

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An air purge extension device incorporated in the extracorporeal bypass circuit parallel to the aortic or femoral inflow cannula has proved itself useful for CPB.

The safety and simplicity of this device in excess of over 2000 cardiac operations with CPB, have brought about a multiplicity of uses.

Not only does this device act as an effective air purge for the inflow cannula, but also, selective coronary perfusion is easier, along with a quick means of changing the direction of flow during a procedure, whereby, aortic dissection has occurred.

### METHOD

This device is simply a 15 cm. in length 1/4 inch O.D. tubing connected to a 1/4 inch 'Y' connector at the inflow cannula (Figure 1). Our extension is of Tygon tubing incorporated in our table pack.

As seen in Figure 2, this device offers easy access for selective coronary perfusion, whereby an assembly of 1/4 inch 'Y' connector for the coronary cannulas, is connected to the extension via a 31 cm. length of 1/4 inch O.D. tubing to a 1/4 inch straight connector.

Also, during antegrade or retrograde flow aortic dissection, this unit can be joined by an appropriate length of either 1/4 inch O.D. or 3/8 inch O.D. tubing to reverse the grade of flow during this deleterious condition.

We must also mention that the use of this inflow extension has brought an effective means of reducing air emboli during C.P.B. as well as a way of effectively removing air from the inflow cannula during the cannula insertion phase. Also, as seen in Figure 3, after bypass reinfusion of the remaining contents of the oxygenator is easily accomplished into an intravenous system by connecting a 124 cm. length of 3/16 inch O.D. tubing to the extension, to a 3/16 inch male luer connector.

## COMMENT

The simplicity of the cannula extension has brought a tremendous degree of effectiveness and accuracy for a C.P.B. circuit.

With the insertion of the inflow cannula, accurate means of removing air is easily accomplished by allowing the flow of blood through the arm, in conjunction with gentle tapping of the cannula, into a basin prior to bypass. We routinely direct this flow into a basin to be recovered by the internal suction to prevent blood loss.

During C.P.B., this device will also act as an effective bubble trap in capturing micro bubbles during the perfusion. In addition, this device offers an effective means of reinfusing the contents of the oxygenator to the patient through the venous system post bypass.

Also, for selective coronary perfusion, this device will further promote a degree of simplicity as well as efficiency without the need for either additional pumps or excessive tubing.

In conclusion, the use of an inflow cannula extension line has proven itself to be effective and beneficial in maintaining accuracy as well as simplicity during cardiopulmonary bypass.

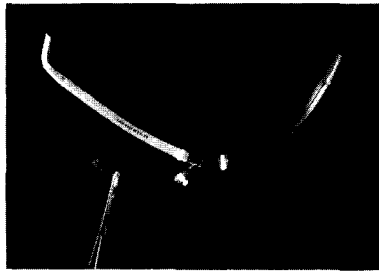


Figure 1: View of aortic inflow cannula with extension arm.

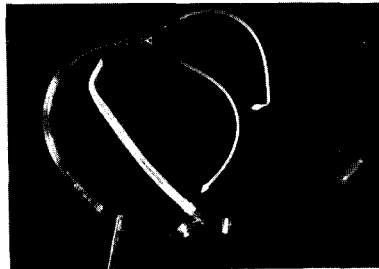


Figure 2: Set up for coronary perfusion.

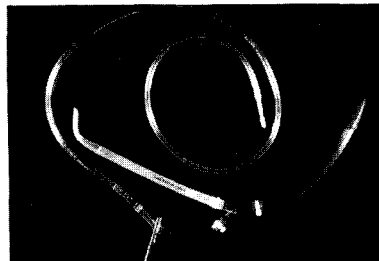


Figure 3: Photograph of extension arm with reinfusion line.