Author has nothing to disclose with regard to commercial support.

ARCH REPAIR: BRACHIAL ARTERY CANNULATION IS AS EFFECTIVE, BUT LESS INVASIVE AND MORE PRACTICAL

To the Editor:

We read with great interest the recent comprehensive meta-analysis by Hameed and colleagues,[1] which provides valuable insight about currently used cerebral protection strategies during aortic arch repair procedures.

As current trends move toward a more physiologically natural cerebral perfusion in terms of flow direction and hypothermia level, antegrade cerebral perfusion through the aortic arch tributaries is gaining popularity. In parallel with this concept, we would like to remind readers of the potential advantages of right brachial artery cannulation compared with the use of the axillary artery for selective unilateral antegrade perfusion of the cerebral tissues. Selective antegrade cerebral perfusion through the right brachial artery for this purpose is as safe and efficient as right axillary artery cannulation, and it is both considerably less invasive and more practical. The cannula insertion and removal are quite fast, easy, and relatively trouble free. Moreover, the cannulation with this technique distinctively does not involve the use of a prosthetic vascular graft, which is an advantage for both complication-minimizing and cost-reducing purposes.

Our group previously reported the efficiency, versatility, and simplicity of this approach in aortic arch repairs, and the details of our technique can be found elsewhere.[2] Briefly, the patient is placed in a supine position, with the right upper extremity abducted approximately 90° and rotated externally. Heparin is administrated at the full cardiopulmonary bypass (CPB) dose, and the right brachial artery is cannulated through a 5-cm longitudinal incision high in the bicipital groove near the armpit with a 16F to 18F venous return catheter without wire reinforcement. The tip of this cannula may be beveled for easy insertion and to obtain a maximum cross-sectional area. The cannula is then advanced 5 to 7 cm proximally in the vessel and connected to the CPB circuit as usual. Median sternotomy is performed, and venous cannulation is established through the right atrium.

After the reconstruction of the ascending aorta under cardioplegic arrest with full CPB, the operation may proceed with aortic arch reconstruction. First, the pump flow is decreased to 500 to 700 mL · min^{-1} (8-10 mL · kg^{-1} · min^{-1}) at 26°C to 28°C rectal temperature. The 3 brachiocephalic arteries are then individually clamped, and the aortic crossclamp is released. On completion of the arch repair, with the patient in the Trendelenburg position, the clamps on the brachiocephalic vessels are released sequentially, with special attention to evacuating the trapped air. Rewarming then begins as the flow rate is gradually increased to the full preset CPB value. During rewarming, the anastomosis between the ascending aortic and aortic arch grafts is completed.[2]

In our routine use of this variation of selective antegrade cerebral perfusion through the right brachial artery since 1996, our group has demonstrated the safety of this technique in terms of surgical and neurologic outcomes, cerebrovascular protection, preservation of neurocognitive scores, and distal organ protection.

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References

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REPLY: KEEP THE ARM IN ARMAMENTARIUM

Reply to the Editor:

Open repair of the transverse aortic arch necessitates interruption of cerebral perfusion, which leaves the brain vulnerable. The brain keeps no energy stores despite being metabolically active even at low temperature and, thus, is in constant need of replenishment. During the past couple of decades, multiple techniques have emerged to provide cerebral protection, and the vast heterogeneity of approaches makes the evaluation of any specific technique

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