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Clinical Image
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Novel Scalp Cooling Method during Deep Hypothermic Circulatory Arrest

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Clinical Image

Deep Hypothermic Circulatory Arrest (DHCA) is used during aortic arch surgery to improve cerebral protection. This reduces metabolic rate and oxygen requirements of the brain allowing interruption of blood supply necessary to undertake surgery. Cardiopulmonary bypass cools patients' blood to 20 degrees Celsius prior to cessation of flow. The head is traditionally packed in ice to prevent any gradual temperature rise during the no flow period which may last up to 30 minutes. It is difficult to achieve complete surface contact using this method, particularly in the posterior cerebral territory.

The Paxman cooling cap is a device licensed for preventing hair loss during chemotherapy. Ethylene glycol at -4 degrees Celsius circulates continually around the entire scalp surface providing uniform cooling.

We have employed this technology in a novel way during DHCA to provide improved scalp cooling compared to traditional methods in our institution for the last 18 months (Figure 1). It has been successfully used with existing monitoring without compromise in over 30 patients and has not been associated with any untoward events.

Figure 1: Paxman cooling cap in position prior to start of surgery.

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