

A Micro-Doppler Catheter for the Detection and Aspiration of Venous Air Emboli During Sitting Craniotomy

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Technology description

Description

Venous air embolism may occur during surgical procedures when gas enters the systemic venous system at surgical sites. The present invention is designed to detect and remove air emboli from the vena cava during a sitting craniotomy. The incidence of Venous Air Embolism during sitting craniotomy may be as high as 80% and is as high as 40% in hip surgery and cesarean section. These figures are high, especially considering that Venous Air Embolism can be fatal. This device, because of its accuracy and improvements, would be considered a safety device. This invention is an improvement upon the current method of venous air emboli detection. The current method requires the use of a Doppler probe placed externally over the heart in combination with an aspiration catheter which is inserted into the vena cava via the jugular vein. Because the current method of detection is external, errors occur frequently because it is impossible to consistently place the probe in the exact proper position for the duration of surgery. The precordial Doppler probe is limited in what sounds it can detect, because the chest wall has a narrow acoustic window over the right atrium. The new design combines both parts of the current method into one device. The invention has the capability to detect air as it flows by the device, which is contained within an aspirating catheter. The external limitations of a precordial Doppler probe are reduced with this new device.

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