

Concentric aortic arch filter and methods for use thereof

Published date: Oct. 28, 2019

Technology description

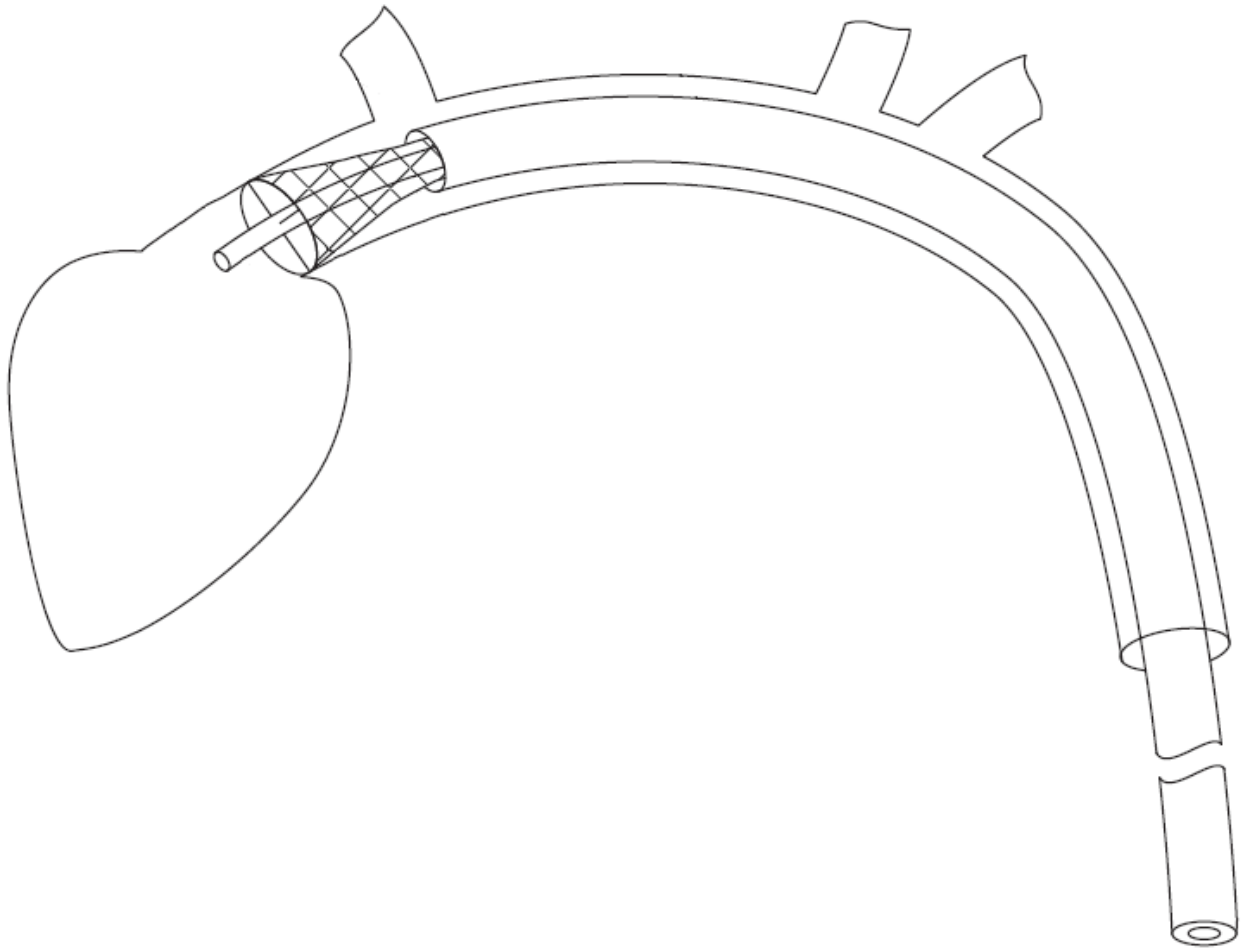
Background

Thrombus buildup is a troubling symptom in the aortic arch, usually caused by non-hemodynamic blood flow from the heart or deposition through aneurysmal dilation causing abnormal flow dynamics. If atheroma is present, the aortic arch may be a nidus for clot. In the repair of large cardiovascular structures near the heart, large, stiff catheter systems typically advance toward the outer curvature of the aortic arch and may break emboli free. Calcified deposits are also sometimes prevalent in the native aortic valve, which are sometimes knocked free from the aortic valve leaflets.

These loose emboli or thrombus may cause further complications in the bloodstream. These emboli may travel through the great vessels, the visceral branch vessels, or to the distal extremities, possibly leading to ischemia, infarction, limb necrosis, amputation, or even stroke if the emboli travel to the brain. Stroke incidence during transcatheter aortic valve replacement (TAVR) is estimated at 5%, and general cerebral embolic phenomena at 40-80%.

Technology Overview

In aortic valve replacement or ascending aortic aneurysm stent graft placement, cerebral embolic protection through use of a filter may be helpful. In this procedure, a guidewire is advanced first via femoral access through the iliac artery and aorta, and over the aortic arch. Afterward, the filter-carrying catheter is advanced over the guidewire and positioned in the aortic arch using a radiopaque marker. Finally, the filter is expanded outward through retraction of the second catheter relative to the first catheter. In doing so, this filter is useful in catching emboli of different sizes, thereby removing the threat of ischemia, infarction, limb necrosis, amputation, or stroke through embolic phenomena in various regions of the body.



Application area

- TAVR
- Mitral Clip
- Ascending aortic arch grafts

Advantages

- Potential reduced risk of stroke, limb amputation, infarction, limb necrosis, and ischemia.
- Incorporated into the TAVR delivery system, effectively simplifying the procedure.

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