Antegrade Femoral Artery Entry Device and Sheath

Inventors:

Jeffrey P. Carpenter MD, Jeffrey P. Carpenter, MD | Cooper University Health Care (cooperhealth.org)

Katherine K. McMackin MD,MS Katherine K. McMackin, MD, MS | Cooper University Health Care (cooperhealth.org)

Brief Description

To facilitate easy access and more ergonomic completion of an angiogram, the Inventors designed an artery entry device and sheath system, which enables rotating the position and angle of a wire and sheath from a retrograde to antegrade approach.

Problem

More than a million cardiac catheterizations and angiographic procedures are done every year in the United States. The traditional method for doing an angiogram from an antegrade approach requires the operator to contend with the patient's body when trying to access the femoral artery. The abdominal wall, which can include an overlying pannus, can make access very difficult. Access can be easily lost, which can result in the patient bleeding or inability to complete the procedure. If antegrade access is successful, the operator still has to contend with the patient's body to complete the angiogram. Wires, catheters, balloons, and stents must all go up over the abdomen and avoid contamination by the patient's face. To maintain a sterile field, the devices are curved away from the patient which makes exchanges of devices over the wire difficult. During exchanges, wires can be accidently pulled back, losing ground which may not be able to be crossed again, and leading to an inability to complete the procedure. Accordingly, there is **a long-felt need for improved devices and methods for achieving antegrade and retrograde direction of wires and other instruments.**

Solution

To facilitate easy access, the inventors designed a device which rotates the position and angle of a wire and sheath from a retrograde to antegrade approach during an angiogram, and after rotation to an antegrade orientation, has a sheath component that allows for more ergonomic completion of the angiogram

Technology

Drs. Carpenter and McMackin have designed a sheath and delivery system which enables the insertion of multiples wires in opposing directions by use of a footplate which facilitates retrograde wire guidance through one wire port and antegrade wire guidance though a second wire port. The sheath is further curved in a manner which guides wires away from the patient.

Advantages

- Enables bidirectional wire guidance through a single point of entry.
- Designed for improved ergonomics and risk of contamination during angiograms.

Stage of Development

Prototype Design stage

Partnerships

Co-Development, Licensing

Intellectual Property

US Provisional Patent Application

Contact

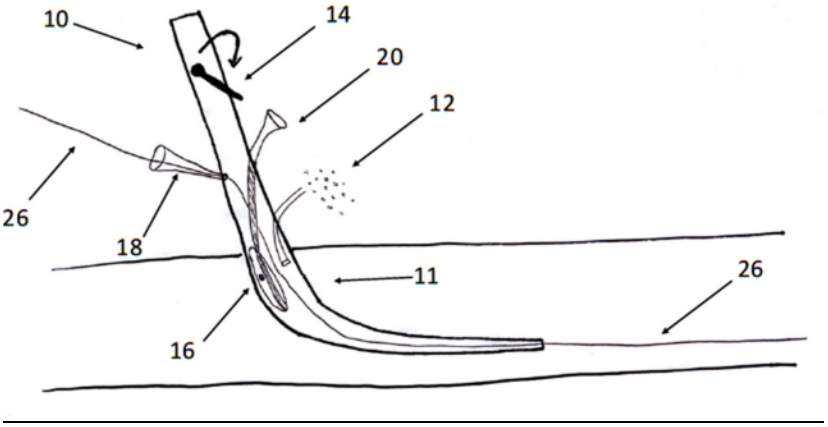
Neal Lemon, PhD, MBA

Director, Cooper Innovation Center

lemon-neal@cooperheatlh.edu

Figure 1:

A.



B.

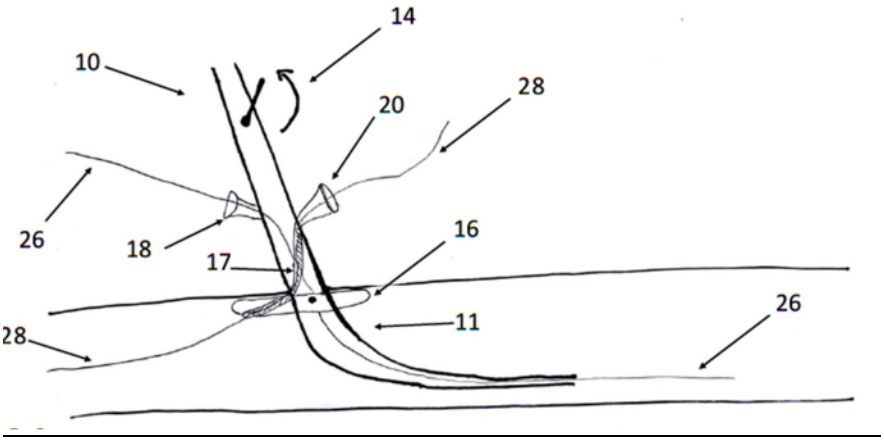


Fig 1. Illustration of the access device during insertion and deployment for one or more wires. A. Insertion of the access device for one or more wires. A retrograde wire 26 is advanced through the artery, exiting the access device 10 through the retrograde wire port 18. The access device 10 is inserted into the artery to a depth where bleeding occurs, such that blood exits the depth indicator 12. This indicates that there is adequate depth to deploy the footplate 16. The footplate 16 comes in a position where it is flush with lumen 11 of the access device 10. B. Deployment of the access device for one or more wires. The user moves the footplate control lever 14 up to deploy the footplate 16. The footplate 16 is rotated around a central axis to be generally parallel to the artery and the access device 10 is pulled towards the user, such that the footplate 16 acts as an anchor for the access device 10 in the artery. A second wire (antegrade wire 28) is inserted through the antegrade wire port 20 to move through the lumen 11 of the access device 10 and through the center bore 17 of the footplate 16 to enter the artery. The retrograde wire 26 is still inserted into the artery, but does not impact or contact the footplate 16 or the antegrade wire 28.