

STENT SYSTEM FOR THE TREATMENT OF AORTO-ILIAC OCCLUSIVE DISEASE

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Technology Description

Researchers at Washington University in St. Louis developed an improved stent system to treat aorto-iliac occlusive disease. Aorto-iliac occlusive disease is caused by atherosclerotic plaque accumulation in the abdominal aorta where it connects to the common iliac arteries. The plaque accumulation can significantly reduce blood flow to lower extremities and pelvic organs, resulting in high morbidity, disability and increased risk of amputation.

There are two methods to treat this disease- open bypass surgery or stenting the aorto-iliac arterial segment. The stenting approach is commonly used as it is non-invasive. However, the inverted Y shape of this arterial segment complicates the stenting procedure. It is common 'off-label' practice to place two adjacent stents in a "kissing" configuration in order to provide flow from the aorta into each of the common iliac arteries. However, this is often suboptimal and has limited long-term patency.

To overcome the limitations associated with the 'off-label' use of "kissing" stents in the aortic bifurcation, the inventors have developed a new aorto-iliac fenestrated (AIFEN) stent system. This is comprised of a balloon-expandable, tapered, covered stent with a fenestration (an outlet opening) that can be placed across the distal aortic bifurcation from one iliac artery, and the fenestration aligned with the inflow of the opposite iliac artery. A secondary stent can be placed in the opposite iliac artery to facilitate unobstructed flow from the AIFEN if needed. The AIFEN technology has the potential to enable tailored, percutaneous, and effective endovascular treatment of aorto-iliac occlusive disease.

Stage of Research

Prototype has been developed and validation is ongoing.

Publications

Cashin, J. Wirtz, A., Williams, D., Zayed, M. [Abstract 658: Fenestrated Balloon Expandable Stent System for the Treatment of Aortoiliac Occlusive Disease](#). Arteriosclerosis, Thrombosis, and Vascular Biology. 2019;39:A658

Applications

- Treatment of aorto-iliac occlusive disease

Key Advantages

- System provides a percutaneous solution for the treatment of the entire aorto-iliac bifurcation
- Stents and associated openings will have radiopaque markings to track placement
- System is designed to reduce stress on the aorta and be deployed from either a femoral or arm endovascular approach
- Design significantly improves flow properties compared to the current ‘off-label’ use of “kissing” stents:
 - Reduces flow stagnation and thrombus formation
 - Outlet flow velocities and mass flow rates are superior
- Provides an alternative solution for the treatment of aorto-iliac occlusive disease that is far less morbid than open surgical bypass

Patents

- [US 11,304,832](#)

Related Web Links

- [Dr. Zayed profile](#)