

Vascular Model Repository

Specifications Document



0163_0001

Species	Human
Anatomy	Aortofemoral
Disease	Aortofemoral Peripheral Occlusive Disease
Procedure	Aortofemoral Bypass Grafting

Clinical Significance and Background

Aortofemoral

The largest blood vessel and the human body's primary artery, the aorta is responsible for carrying oxygenated blood pumped from the heart to rest of the body. The aorta is divided into four sections: the ascending aorta, the aortic arch, the thoracic aorta, and the abdominal aorta.

The last section of the aorta, the abdominal aorta, starts at the diaphragm and ends just above the pelvis. This section is responsible for supplying blood to the stomach, kidneys, liver, and intestines. Past the abdominal aorta, the artery branches into two separate iliac arteries, one for each leg, which are responsible for supplying oxygenated blood to the legs and lower half of the body.

Each iliac artery, in turn proceeds to branch into the external and internal iliac arteries, the former of which then becomes the main femoral artery. Again, the femoral arteries are a major component in supplying oxygenated blood to the legs and lower body. When the femoral arteries are included with the abdominal aorta, the whole system is referred to as the aortofemoral system.

Aortofemoral Peripheral Occlusive Disease

A buildup of fatty deposits in your artery is called atherosclerosis. It's called peripheral artery disease (PAD) when atherosclerosis affects the arteries leading to your arms, legs, stomach, or head. It usually affects the arteries leading to your legs. Aortofemoral peripheral occlusive disease is a manifestation of peripheral arterial disease (PAD) in which obstructing plaques caused by atherosclerotic occlusive disease occur in the infrarenal aorta and iliac arteries, ultimately resulting in partial or total vascular occlusion. The atherosclerotic plaques may induce symptoms either by obstructing blood flow or by breaking apart and embolizing atherosclerotic and/or thrombotic debris to more distal blood vessels. If the plaques are large enough to impinge on the arterial lumen, reduction of blood flow to the extremities occurs.

Clinical Data

General Patient Data

Age (yrs)	55
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Sex	Male
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Notes

Same patient from model 0162_3001, but post-operation of Aortofemoral Bypass Graft Surgery. See [DOI](#) for more details. See below for information on the image data and boundary conditions associated with the model.

Image Modality: MR

Image Type: DICOM

Image Source: TLAB

Image Manufacturer: GE MEDICAL SYSTEMS

Publications

See the following publications which include the featured model for more details:

Nathan M. Wilson, Frank R. Arko & Charles A. Taylor (2005) Predicting changes in blood flow in patient-specific operative plans for treating aortoiliac occlusive disease, *Computer Aided Surgery*, 10:4, 257-277
<http://www.doi.org/10.3109/10929080500230445>

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AND/OR

N.M. Wilson, A.K. Ortiz, and A.B. Johnson, "The Vascular Model Repository: A Public Resource of Medical Imaging Data and Blood Flow Simulation Results," J. Med. Devices 7(4), 040923 (Dec 05, 2013) doi:10.1115/1.4025983.

AND/OR

Reference the official website for this data: www.vascularmodel.com

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