

Vascular Model Repository

Specifications Document



0161_0001

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

Clinical Significance and Background

Aortofemoral

The abdominal aorta runs from the diaphragm and ends just above the pelvis, where it divides into the iliac arteries. There are five arteries that branch from the abdominal aorta: the celiac artery, the superior mesenteric artery, the inferior mesenteric artery, the renal arteries and the iliac arteries. The celiac artery provides blood to the stomach, liver and pancreas; the superior mesenteric artery supplies blood to the small intestine; the inferior mesenteric artery supplies blood to the large intestine; and the renal arteries provide blood to the kidneys as well as the muscles of the abdominal wall and the lower spinal cord. The end of the abdominal aorta branches into the iliac arteries, which supply blood to the legs and the organs in the pelvis.

Each of the iliac arteries then branch and lead into the femoral artery, which is the main blood vessel supplying blood to the lower body. The femoral artery starts in the upper thigh, near the groin and runs down to the back of the knee. The function of the femoral artery and its branches is to supply the lower body with blood. 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.

Aortofemoral Bypass Grafting

Clinical Data

General Patient Data

Age (yrs)	67
Sex	Female

Notes

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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