AAA Tutorials

7. Create and mesh AAA and ILT volumes

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Software installation

Copy the folder containing AAA_CreateWall.exe to a location on your drive.
Copy the folder containing gmsh.exe to a location on your drive.
Copy the folders Meshing_var_thickness and Meshing_const_thickness to the AAA case folder.

Software configuration

In the folder Meshing_var_thickness edit AAA_CreateWall.bat and set the path to AAA_CreateWall.exe.

In the folder Meshing_var_thickness\Meshing edit AAA_mesh.bat and set the path to gmsh.exe.

Do the above in the folder Meshing_const_thickness.
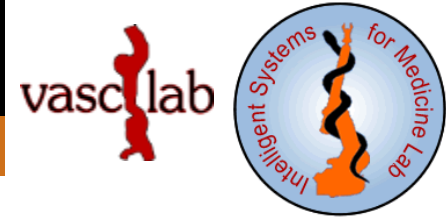
Expected inputs

The blood and AAA exterior surface:
..\Geometry\blood.vtp and ..\Geometry\Exterior.vtp

Thickness measurements:
..\Thickness

Running the software

Go to folder Meshing_var_thickness and run AAA_CreateWall.bat.

Go to folder Meshing_var_thickness\Meshing and run AAA_mesh.bat.

Do the above in the folder Meshing_const_thickness.

Expected outputs

In Meshing_var_thickness (and Meshing_const_thickness):
- .vtp surfaces for the AAA and ILT volumes (and the 2 merged together)
- .stl surfaces for all the walls
- .msh file defining all walls and volumes
- A size.bin file used for sizing elements during meshing.

Because vtk does not guarantee that the generated surfaces are free from non-manifold edges, only the .stl files defining the ILT interior surface and the AAA external and internal surfaces are used for meshing.

The constant AAA wall thickness is by default 1.5 mm and can be changed by editing the file Meshing_const_thickness\Thickness\M.acsv.

Expected outputs

In Meshing_var_thickness\Meshing (and Meshing_const_thickness\Meshing):
- .stl files with the re-meshed ILT interior surface and the AAA external and internal surfaces
- ILT.vtk and Wall.vtk with the volumetric meshes
- Any errors occurring during meshing are written to error.txt
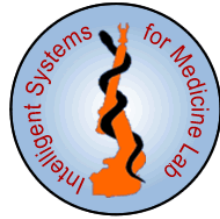
Expected results

Meshes of the AAA wall and ILT with configured number of layers of tetrahedral elements along the thickness (default configuration is 2 layers).
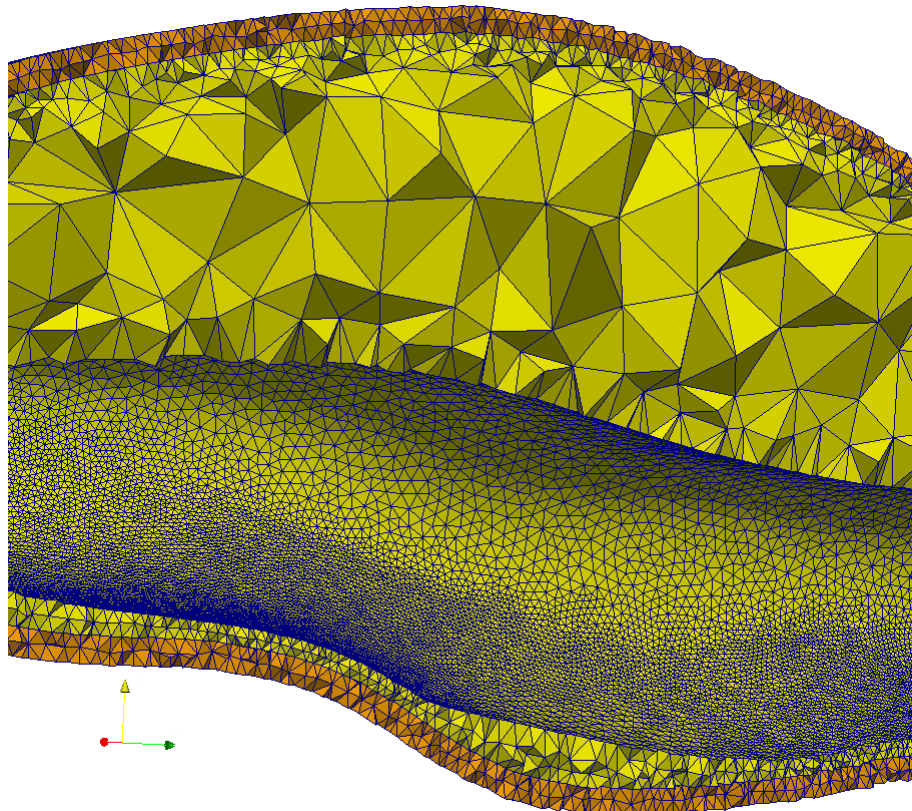
Constant AAA wall thickness
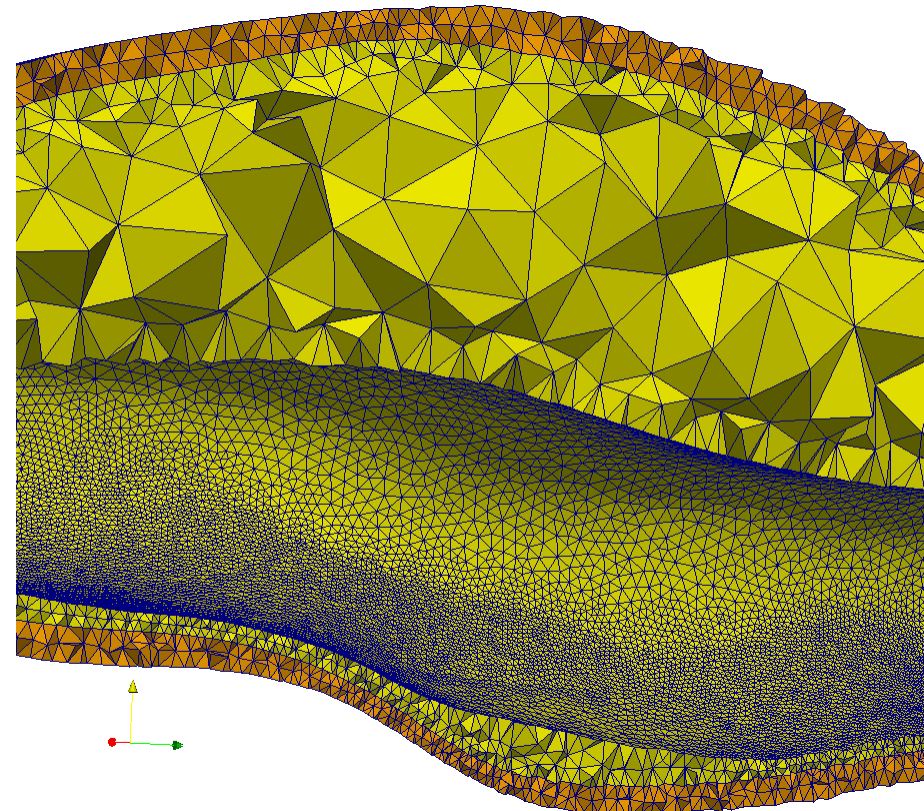
Variable AAA wall thickness **G.R. Joldes**

Thank You !

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