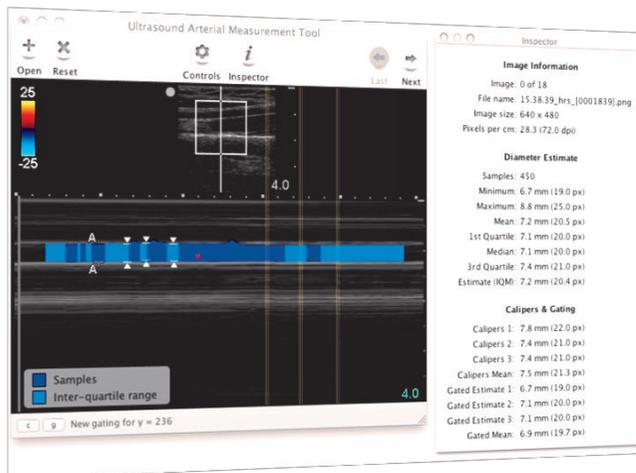


Arterial Diameter and Wall Thickness Estimation Tool



The arterial diameter measurement tool is designed to allow medical practitioners to quickly and robustly estimate the diameter of large arteries and the wall thickness of the carotid arteries from ultrasound images.

How much the brachial artery dilates after being blocked for a short period of time

and the thickness of the walls of the carotid arteries are indicators of cardiovascular disease.

To use the tool, a practitioner first selects one or more ultrasound images to analyse. For each image, the practitioner locates the artery in the image, and clicks inside it with the mouse. The system uses the point provided by the practitioner to segment the arterial boundary and the result is displayed on the sonogram.

Various statistics on the arterial diameter are also computed and displayed.

The thickness of the carotid arterial wall is assessed by selecting the innermost line of the wall and its outermost line. An estimate of the arterial wall thickness is computed and displayed.

Benefits

- ◆ Blood vessel diameter measurement
- ◆ Wall thickness measurement
- ◆ Fast, with real-time feedback
- ◆ Easy-to-use
- ◆ Robust to seed placement
- ◆ Robust to noise
- ◆ Robust to variation on arterial boundary
- ◆ Integrated calipers for manual measurements
- ◆ Diameter estimates at selected cross-sections

Applications

- ◆ Diameter assessment of large blood vessels
- ◆ Carotid arterial wall thickness measurement

<http://www.clarity-centre.org>

Application

The technology has been designed to measure the diameter of the brachial artery and the wall thickness of the carotid artery.

Endothelium dysfunction is one of the earliest events in the development of atherosclerosis. Brachial artery reactivity (BAR) assessment using ultrasonography is an indicator of endothelium vasodilator function. BAR is diminished in individuals with atherosclerosis and cardiovascular risk factors. This novel technology allows for the post-analysis of arterial dilation during BAR assessment using the semi-automated diameter assessment tool or the manual calipers.

Benefits

With current technology, the requirement to assess arterial diameter and wall assessment in real time can be problematic and time consuming. As a result the number of measurements that can be taken over a period of time is limited.

This software enables the imaging and recording of brachial and carotid artery images and allows for post-analysis at an increased number of time-points using the minimum amount of practitioner interaction.

Technology status

- ◆ Fully functional beta version available
- ◆ Outputs Excel-compatible CSV files or XML
- ◆ Supports standard image formats: JPG, PNG, BMP, GIF, TIFF, etc.
- ◆ Multi-platform (Windows, Linux, Mac OS X)

The research group is keen to engage with companies interested in further developing this technology

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