**Overview & Aim**

Ninewells hospital, Dundee, has recently included Velocity Vector Imaging (VVI), Shear Wave Elastography (SWE) and Brachial Flow Mediated Dilation (FMD) as part of the Ultrasound (US) based pre-operative assessment for patients undergoing arteriovenous fistula surgery for haemodialysis. VVI, by analysing wall motion, and SWE which maps the elasticity of tissue (fig.1) can act as measures of arterial stiffness (AS) [1]. AS is an important measure of vascular health and has recently been linked to a negative AVF outcome after surgery [2,3], but data exists showing no link [4]. Few studies have been conducted using VVI or SWE in this patient group [5], but it is believed that measures could provide simple and non-invasive measures of AS which could be added to existing US protocols.

**Methods**

Patients who have been indicated for AVF creation and have undergone a pre-operative scan at Ninewells hospital & medical school will be identified through NHS databases. Ultrasound data of these patients will be accessed via Vascular Laboratory. We aim to determine if any link between the pre-operative ultrasound measurements of brachial artery SWE, brachial wall motion via VVI and brachial FMD and the outcome of the arterio-venous fistula exist. The results from SWE and VVI will be compared to an age-matched healthy comparator group, and a young group, due to a lack of baseline data in the literature.

**Discussion**

If a link between AS, as measured by SWE or VVI, and the outcome of the AVF were to be found, these methods could potentially be added to existing pre-surgical US protocols as a simple method of pre surgical assessment. This may help reduce failure to mature rates, which meta-analyses have suggested are as high as 40%. Comparison between two healthy groups of different ages (18-30 and 45-80) will allow us to determine if the tools can detect age related AS and are acceptable as a measures of AS in the general population.

**References**


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