

The Fascia Lata of the Thigh – More Than a “Stocking”: A Magnetic Resonance Imaging, Ultrasonography and Dissection Study.

Willem Fourie.

School of Anatomical Sciences, University of the Witwatersrand, 7 York Road, Parktown
2193, Johannesburg, South Africa.

Phone: +27 (0)11 763 6990. Fax: +27 (0)866 180 179. E-mail: willief@medi.co.za

BACKGROUND: Regional descriptions of the thigh mostly exclude detailed descriptions of the fascia lata and its relationships to underlying muscles. It is cursorily described as “a strong, dense, broad single layer of deep fascia investing the thigh muscles like a stocking”. This “stocking” contributes to increased compartment pressure when the muscles contract, aiding venous return. With recent growing understanding of the role of deep fascia, it seems like the fascia lata may not solely be for compartmentalisation, containment and aiding venous return.

OBSERVATIONS: During dissections of cadaver thighs, we observed that the fascial relations to underlying muscles differ from textbook descriptions, forming a separate fascia covering some muscles, while acting as an epimysial cover to others in the same region. Furthermore, in an ultrasonography (US) pilot study, some regions of the upper thigh appeared as a triple layer of fascia covering muscles. Both these observations contradicted the general descriptions in literature.

AIMS:

1. To investigate the above observations further.
2. Comparing dissection observations and living subjects using magnetic resonance imaging (MRI) and ultrasonography (US).

METHODS: Detailed dissection of eight cadaver thighs compared to observations from MRI and US of four living subjects’ thighs. Observations were done at the same four levels on all the thighs.

RESULTS: While vastus lateralis observations corresponded to textbook descriptions, US showed the fascia lata as a triple layer in places. Over vastus medialis, areas of a very close relationship (epimysial) were observed. Sartorius showed a mixed relationship. In places over the upper third of the thigh, the fascia lata doubled on itself forming a protecting cover for peripheral cutaneous nerves. US came closest to visually reproducing what was observed during dissections.

DISCUSSION: Detailed study and description of the fascia lata, as well as its topographic relationships between the fascia and the underlying musculature is lacking. Our observations indicate: 1. That the interaction of the fascia lata and different parts of the quadriceps femoris constitute more than just a “stocking around the muscles.” 2. There are areas of double fascial relations for protection of peripheral structures outside the sleeve of deep fascia. The intact fascia lata appears to be a vital component of the normal function of the knee and thigh muscles in the production of force for bipedal locomotion, while simultaneously acting as a protector of peripheral structures.