

# Investigation of Fascia Lata Ultrastructure in Patients With and Without Inguinal Hernias.

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**BACKGROUND:** Modern theories on the etiology and pathogenesis of hernias assume a disrupted balance between the synthesis and breakdown of the extracellular matrix fibers of the connective tissue forming the fasciae. Aside from acquired factors such as lifestyle (nutrition, alcohol, smoking), a pivotal role is played by congenital, genetically mediated factors associated with abnormal collagen type I to III ratio and metalloproteinase expression. These aberrations lead to tissue weakening, and if this process is generalized then the morphological changes observed in the tissue neighboring the hernial defect should also be apparent in distant locations.

**PURPOSE:** The goal of this study was to ascertain whether the morphology of the fascia lata differs between patients with and without inguinal hernia.

**METHODS:** The study group included 10 males undergoing surgery for lower extremity trauma. They were divided into two groups (each consisted 5 pts): those with a history or current diagnosis of inguinal hernia and those without mention of the disease. The age structure of both groups was comparable. Upon surgery, a 1x1 cm specimen was harvested. The harvested tissues, after fixation in 3.4% glutaraldehyde and dehydration, were subjected to critical-point drying (CDP 030, BALTEC), mounted, and coated with gold (Fine Coater, JCF-1200, JEOL). The samples were analyzed by scanning electron microscopy (JSM – 5310LV, JEOL) under 20 or 25 kV.

**RESULTS:** Even a macroscopic analysis of the photographs showed evident differences. The fibrous elements in the controls were wider and more densely “packed”. In order to confirm these findings, a computer analysis of the photographs was performed using the Image J software package. The width of fibrous elements was measured on subsequent photographs (50 x magnification) and the results were subject to statistical analysis. Significant differences were discovered in the width of the fibrous elements derived from the two groups. In spite of quite significant intra-group variability, the mean values for the two groups differed by a statistically significant amount.

**CONCLUSIONS:** Our research indicates the existence of differences in the morphology of fascia-forming connective tissue at locations distant from hernia site between patients with and without herniosis. Further research should be focused on other areas of connective tissue and different research methods.