

ABSTRACT

THE ROLE OF COLLAGEN COMPOSITION IN THE AETIO-PATHOGENESIS OF INGUINAL HERNIA

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INTRODUCTION:

An abdominal wall hernia a localized weakness in the background of mechanical problems. It has to be repaired through technical means. Despite a legion of therapeutic modifications and refinements, recurrence of hernias still appears to be a challenge in 10–15% of cases. The aims of this study are to compare the composition of collagen in the tissues from the abdominal wall of patients with inguinal hernia and matched controls with no hernia. This led us to the second part of this study to compare the Collagen I/Collagen III ratio in transversalis fascia and skin of inguinal hernia patients with those of the controls

MATERIALS AND METHODS:

In this study we had a total of 60 patients, of which 30 patients underwent mesh repair for primary inguinal hernias and 30 patients who underwent laparotomies for various reasons were included as controls. Size of 0.5 × 0.5 cm transversalis fascia and skin were taken in both subjects and was sent for quantitative assessment using hematoxylin and eosin staining and Immunohistochemistry tests for Collagen I and III. The intensity of Collagen staining was graded and the ratio of Collagen I and III was calculated in both cases and controls

RESULTS:

Results were analyzed quantitatively and classified into following groups, Based on intensity of staining the slides were graded - Grade 0---NIL, Grade 1--1-25%, Grade 2-26-50%, Grade 3--51-75%, Grade 4--76-100% In this study, it was found that in skin samples the distribution of Collagen I in cases was the same as in controls. Collagen III distribution was higher in cases than controls. The picture in Transversalis fascia was reversed – Controls had significantly higher Collagen I. The cases had more Collagen III staining than controls but the difference was not statistically significant. In both cases the Collagen I/III ratio was very significantly reduced ($P < 0.001$) in cases than in controls. Further in cases the skin value was representative of transversalis fascia ratio making skin representative of transversalis fascia ratio in this group.

CONCLUSION:

This study proves the hypothesis that inguinal hernia is a local manifestation of a systemic disease rather than a mere local mechanical defect and also emphasizes on the role of Collagens in the pathophysiology of hernias. Further, the Ratio of Collagen I and III was comparable in skin and transversalis fascia. Since skin ratio is representative of transversalis fascia a larger population-based study is required to establish skin samples as a marker of hernia occurrence and recurrence

KEYWORDS:

Collagen I, Collagen III; Hernias, Skin, Transversalis fascia, Immunohistochemistry