

Incisional hernias are one of the most frequent complications in patients undergoing abdominal surgeries. They develop as a result of a defect of the postoperative scar within the deep layers of the abdominal wall. Consequently, abdominal organs or their fragments normally situated in the abdominal cavity translocate into the subcutaneous tissue. The risk of developing incisional hernias is particularly high in surgical oncology. It is estimated that even one out of two patients undergoing abdominal surgery due to malignant tumors develop this complication. Incisional hernias are an extremely important clinical problem, as they may lead to life-threatening complications, yield negative effects on the quality of life, and the costs of treatment remain a major economic burden to public systems of healthcare. Despite the magnitude of the problem, factors that lead to the development of incisional hernias remain not completely elucidated. Particular lack of data exist for the relevance of surgical technique of abdominal closure following transverse incisions. Data available in the literature on the role of collagen content, a protein responsible for mechanical resistance of tissues, in fascias of abdominal muscles are inconsistent. Accumulation of advanced glycation end products is a factor, which role in the pathogenesis of incisional hernias remains practically unknown. The products are formed by addition of glucose to several types of particles present in human body, which alters their function. The aim of this research project is to evaluate if and in what extent does the type of surgical technique of abdominal closure after transverse incisions in the epigastric region is associated with the development of incisional hernias and to assess the relevance of other factors, with special reference to collagen content in transversalis fascia and accumulation of advanced glycation end products. The study is planned to include 392 patients with malignant tumors undergoing abdominal operations through transverse incisions in the epigastric region. Before operation, detailed medical data will be collected and basic anthropometric measurements will be performed, including patient weight, height, and waist circumference. Evaluation of the accumulation of advanced glycation end products will be performed with non-invasive measurement of skin autofluorescence. Subsequently, patients will be randomly assigned to 2 groups, in which two different surgical techniques of abdominal closure will be applied. Small part of the transversalis fascia, which is one of the structures within the deep layer of the abdominal wall, will be procured during surgical procedure. This part will be subject to histopathological assessment of collagen content. Moreover, the operating surgeon will subjectively evaluate the quality of the abdominal wall. Over the postoperative hospitalization, patients will be observed for the development of early postoperative complications. Moreover, each patient will be invited to attend control visits at 1 and 2 years after the operation. During these visits, patients will undergo clinical examination and ultrasonographic assessment of postoperative scar in order to determine the presence of potential hernia. Patients' quality of life will be evaluated before operation, in the immediate postoperative period and at each of the control visits. In the last step, an analysis will be performed that should reveal which of the studied factors (and in what extent) influence the development of incisional hernias after abdominal operations through transverse incisions. Moreover, a detailed analyses of the impact of the occurrence of incisional hernias on patient quality of life will be done.