Aspects on the use of slowly degradable mesh in inguinal hernia surgery

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademin, Göteborgs universitet kommer att offentligen försvaras i hörsalen Arvid Carlsson (Academicum), Medicinaregatan 3, den 4:e september 2020, klockan 13.00

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Avhandlingen baseras på följande delarbete

An ex vivo model using human peritoneum to explore mesh-tissue integration
Biology Open. 2017 Sep; 15; 6(9):1391-1395.

II. Ruiz-Jasbon F, Norrby J, Ivarsson M-L, Björck S.
Inguinal hernia repair using a synthetic long-term resorbable mesh: results from a 3-year prospective safety and performance study

III. Ruiz-Jasbon F, Ticehurst K, Ahonen J, Norrby J, Ivarsson M-L.
TEP with long-term resorbable mesh in patients with indirect inguinal hernia
JSLS. 2018 Jan-Mar; 22(1).

Results at 3-year follow-up of totally extraperitoneal (TEP) hernia surgery with long-term resorbable mesh
Aspects on the use of slowly degradable mesh in inguinal hernia surgery

Fernando Ruiz Jasbon

Abstract

**Background:** Synthetic non-degradable mesh used in inguinal hernia surgery can cause chronic inflammation, which in turn can lead to chronic post-operative pain (CPP). Theoretically, a degradable mesh could reduce the risk of chronic pain.

**Aims:** Explore the possibility of keeping viable human peritoneum in contact with hernia meshes in an *ex vivo* model for several weeks. Evaluate the feasibility and the safety of a slowly degradable mesh in open and endoscopy inguinal hernia repair.

**Methods:** Four publications are included in the doctoral thesis: an experimental method study with peritoneal tissue and three prospective clinical safety studies using a slowly degradable mesh in the repair of patients with inguinal hernias.

**Results:** Ex-vivo model: Peritoneal tissue in contact with a mesh could be kept viable between 26 and 56 days.

Safety Studies: At 3-year control, no patient experienced CPP. The recurrence rates in patients operated with the open technique were 44% for medial inguinal hernias and 0% for lateral inguinal hernias. In patients operated with the endoscopy technique, the recurrence rate for lateral inguinal hernias was 8.8%.

**Conclusions:** Peritoneal tissue can be kept viable in contact with mesh during weeks in a human ex vivo model. Using slowly degradable mesh in the repair of medial inguinal hernia is not safe due to an increased recurrence risk. This mesh seems safe regarding the risk of chronic post-operative pain in patients with lateral inguinal hernias, but the risk of hernia recurrence should be further studied.

**Keywords:** Slowly degradable mesh, inguinal hernia, chronic post-operative pain, hernia recurrence, ex-vivo model.