

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

Akademisk avhandling

Som för avläggande av medicine doktorexamen vid Sahlgrenska akademien, 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 delarbeten

- I. Falk P, **Ruiz-Jasbon F**, Strigård K, Gunnarsson U, Ivarsson M-L.
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
Hernia. 2014 Oct; 18(5):723–730
- 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).
- IV. **Ruiz-Jasbon F**, Ticehurst K, Ahonen J, Norrby J, Falk P, Ivarsson M-L.
Results at 3-year follow-up of totally extraperitoneal (TEP) hernia surgery with long-term resorbable mesh
Hernia. 2020 Jun; 24(3):669-67.

SAHLGRENKA AKADEMIN
INSTITUTIONEN FÖR KLINISKA VETENSKAPER



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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.