

Advances in minimally invasive abdominal wall surgery

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Chapter 13

Summary

Abdominal wall surgery accounts for a large proportion of surgical procedures worldwide. Nowadays, these surgeries are increasingly being performed by dedicated abdominal wall surgeons that more and more use extraperitoneal mesh and minimally invasive techniques. Since the introduction of robotic-assisted surgery, a major shift in current practice has been observed (**Chapter 1**). This thesis reports on several recent developments in the field of hernia surgery. With an emphasis on both technical aspects and outcomes, interventions in the prevention and treatment of inguinal, parastomal and ventral hernias are discussed.

In **Part I**, outcomes of two minimally invasive techniques in inguinal hernia repair are reported. In a prospective cohort study in 100 male patients that were treated for a bilateral inguinal hernia, a standardized laparoscopic technique using one large self-gripping mesh was validated (**Chapter 2**). By reporting on patient-related outcome measures on quality of life and lower urinary tract symptoms during a 1-year follow-up, favorable results were seen. The use of a large self-gripping mesh covering both groins did not induce urological complaints or significant chronic pain. In **Chapter 3**, a single center experience of robotic-assisted inguinal hernia repair after previous transabdominal prostatectomy was described. In a group of 45 patients, this minimally invasive approach has proven to be safe and feasible, and has shown similar short-term outcomes when compared to open surgery. In case of bilateral disease and in the diagnosis of an occult contralateral inguinal hernia this approach might offer specific advantages.

In **Part II** of this thesis, we elaborate on the treatment of ileal conduit parastomal hernias. A systematic review has identified a major lack of evidence, and fails to identify the optimal treatment of this specific problem (**Chapter 4**). Difficulties to overcome during minimally invasive surgery for this complex hernia, and the need for a tailored approach are described in **Chapter 5**. In our patient cohort, a significant amount of complications were reported during a median follow-up of 366 days. The overall complication rate of 46.7%, and 3 out of 15 patients presenting with a severe complication illustrate the challenges in treating this condition. Depending on the presence of a concomitant midline incisional hernia (IH) and intraoperative findings, we present a flowchart to standardize the choice of surgical technique.

The stepwise introduction of robotic-assisted techniques in the treatment of inguinal and ventral hernias in Maria Middelaers hospital (Gent, Belgium) is presented in **Chapter 6**. Regarding ventral hernia repair, this has led to a major shift in mesh position. Robotic

surgery allows techniques that use extraperitoneal mesh, and intraperitoneal meshes were largely abandoned.

Furthermore, two topics regarding midline IHs are discussed in **Part III**. First, current practice and long-term outcomes regarding prophylactic mesh after open abdominal aortic aneurysm (AAA) treatment were investigated. Second, outcomes, shortcomings in current literature and future perspectives in robotic-assisted transversus abdominis release (rTAR) are reported.

In a survey among vascular surgeons in Belgium and The Netherlands, current practice in the use of a prophylactic mesh after open AAA repair was monitored (**Chapter 7**). Of the 101 respondents, only 6.9% systematically use a prophylactic mesh, and 18.8% use it in selected cases. Furthermore, only 44.6% of vascular surgeons report using the recommended 4 to 1 suture to wound length ratio in the primary closure of the abdominal wall. Increased operative times and concerns on mesh-related complications were identified as the main reasons not to use mesh. In **Chapter 8**, we report on the 5-year follow-up of a randomized controlled trial (RCT) comparing the use of a prophylactic retrorectus mesh and primary closure of midline laparotomies after open AAA repair. The cumulative incidence of IHs after open AAA repair when no mesh is used continues to increase during the first 5 years after surgery (up to 49.2%), which leads to a substantial rate of hernia repairs (21.7%). On the contrary, when a mesh was used, no IHs were observed during follow-up.

Results of a retrospective multicenter study, including 90 patients that underwent rTAR and 79 patients that were treated by open transversus abdominis release (oTAR) are presented in **Chapter 9**. The length of postoperative hospital stay was significantly shorter in the rTAR group (3.4 days vs 6.9 days; $p < 0.001$) and during the first 30 days after surgery, there were significantly more overall and serious complications in the oTAR group (7.8% vs 20.3%; $p = 0.018$). On the longer term, reoperation and recurrence rates were similar. These findings are in concordance with available observational data in literature. In a comment to a recently published pooled analysis of these data (**Chapter 10**), some shortcomings in the methodology of this meta-analysis were highlighted. To conclude, in **Chapter 11**, we present a study protocol for a multicenter RCT to undeniably illustrate the possible advantages of rTAR over rTAR in the treatment of complex ventral IHs.