Advances in minimally invasive abdominal wall surgery

Impact

In this paragraph, we aim to delineate the impact on daily practice of the recent advances in abdominal wall surgery that were discussed in this thesis. The economic burden that these techniques pose on healthcare systems necessitate an identification of the true clinical benefit of novelties, and a careful selection of patients that benefit the most from these developments. In general, two relatively new evolutions in hernia surgery were evaluated throughout the chapters, that warrant an evaluation of the true added value in daily practice:

1. Robotic-assisted techniques in inguinal, parastomal and ventral hernias
2. The use of a prophylactic mesh after open abdominal aortic aneurysm (AAA) surgery

Robotic-assisted techniques in hernia surgery: where is the true benefit?

For the treatment of uncomplicated inguinal hernias, the robot probably does not add sufficient value to justify its routine use. Economic analyses have shown that the costs for robotic-assisted inguinal hernia repair were significantly higher compared to conventional laparoscopy, and probably the potential benefits do not outweigh this. In case of complex inguinal hernias (e.g. after transabdominal prostatectomy, large inguinoscrotal hernias, after previous preperitoneal repairs), these robotic techniques could be superior to conventional laparoscopy. However, there is currently insufficient evidence to support this opinion.

In the treatment of ventral hernias, the introduction of the robot has led to a shift in mesh position. Using conventional laparoscopic techniques mostly intraperitoneal repairs with penetrating fixations are performed. The robotic platform facilitates extraperitoneal mesh placement, in both preperitoneal and retromuscular planes. The wristed instruments facilitate suturing the abdominal wall, which is highly beneficial in closing hernia defects and fixating mesh. On the short term, this implies a reduction in postoperative pain, use of pain medication and length of hospital stay. Thereby, this allows the use of a less expensive (uncoated) mesh. On the long term, avoiding intraperitoneal mesh placement decreases the risk of adhesions and/or mesh erosions. These advantages could compensate for the increased cost of robotic-assisted surgery, and undeniably influence quality of life of patients.

Probably the biggest potential of robotic-assisted surgery lies within a patient group that needs component separation techniques to treat an incisional hernia. Our data suggest a highly significant reduction in length of postoperative hospital stay, due to a substantial decrease in postoperative pain and complications. Besides improving quality of life, this big reduction in length of hospital stay could (at least partially) compensate for higher procedure-related costs. It should be mentioned that these techniques are still in an early adoption phase, and do not represent common practice in Europe.

Prophylactic mesh after open AAA repair: should routine use be recommended?

By reporting on the long-term results of the PRIMAAT-trial (**Chapter 8**), we illustrated a high cumulative incidence of incisional hernias when no prophylactic mesh was used after open AAA repair. This number continues to increase during the first 5 years after surgery, and leads to a substantial number of incisional hernia repairs. The use of a prophylactic mesh did not lead to an increase in mesh-related complications. Despite these observations, surgeons remain reluctant to use it, and guidelines only cautiously state that its use may be considered after open AAA repair. The most recent guidelines for vascular surgeons on the topic explicitly state that long-term results are awaited to recommend a change in practice. By reporting on the 60-month follow-up of the PRIMAAT-trial, we believe that this evidence has now been provided, supported by similar results (although with shorter follow-up) from other randomized controlled trials. The latest guidelines of the European Hernia Society on abdominal wall closure, published in 2015, require an update. Since then, evidence has piled up. This offers an opportunity to include a stronger recommendation on the use of a prophylactic mesh in patients at high risk for the development of an incisional hernia, like patients with an AAA.