

Complex abdominal wall hernias

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Valorisation addendum

This paragraph consists of a reflection, for a broad audience, on the scientific and social impact of the results of the research described in the thesis.

Scope

Inguinal, umbilical or epigastric hernias are commonly present and often visible as a hump on the belly (abdominal wall). This hump contains a sac with fat and intestines, that bulges through a hole in the abdominal wall. To prevent a potentially dangerous incarceration of the content in the sac, an operation may be required. The sac is then pushed back through the hole and the hole is surgically narrowed or closed with stitches and reinforced with a mesh.

Besides a hole through a natural weak spot in the abdominal wall, these humps may also be due to a previous surgical cut (incision) in the abdominal wall. Incisions that heal inadequately may lead to an incisional hernia. This occurs at least in one of every eight patients (13%) that underwent any type of an abdominal operation. Especially older patients with other diseases (comorbidities) are prone to develop incisional hernias. If such an incisional hernia remains small and patients have no complaints, surgical repair may not be needed. In other cases, surgery of small incisional hernias may be of help to reduce complaints and decrease the risk of strangulation.

But if the hernia develops into a very large hump over time, with a hole larger than 10 cm, repair becomes complex. International studies demonstrated that at least one of seven (15%) incisional hernia repairs were performed for complex hernias.

The presence of a complex hernia may reduce quality of life, due to shame, inability to perform daily activities, pain or other complications. Pushing a large hump into the belly and then surgically closing the hole over a mesh, leads to a



very tight abdominal wall. This again may cause pain or complications like infection, problems with breathing, or even worse. These complications occur in more than one-third of the patients, especially if they suffer from overweight, diabetes, smoking, immobility or if the patients are of advanced age. That is why surgeons are reluctant to operate on these patients, because the remedy (a complex hernia operation) can be worse than the disease (diminished quality of life due to a complex hernia).

Annually, some 100.000 abdominal operations are performed in The Netherlands, of whom an estimated 13.000 (13%) may develop an incisional hernia in the following years. From 4.200 incisional hernias that are operated annually in the Netherlands, 630 (15%) may be assigned as a complex hernia, but the actual incidence of complex abdominal wall hernias will be higher. Despite one third of all abdominal operations are performed nowadays laparoscopically, with less risk for develop a large incisional



hernia, the incidence of incisional hernias in the USA is still rising. This has been described as having 'epidemic' proportions. Failure of primary hernia repairs and performing increasingly complex abdominal operations in an ageing population with many comorbidities, will maintain this epidemic.

Incisional hernias are a chronic and cyclical disease. With each failed repair, costs exponentially increase due to morbidity, readmissions and reoperations. In an USA cohort of 500.000 patients that underwent any form of abdominal surgery, subsequent treatment of incisional hernias costed at least 250 million dollar per year. If preventative risk-reductive interventions can be implemented, millions can and will be saved.

Main aim, results and conclusions of the thesis

This thesis aimed to improve the quality of care for patients with a complex abdominal wall hernia and demonstrated that the quality of care for these patients can be improved, if every complex hernia patient is approached integrally by an established multidisciplinary team, that knows how to stratify risks, apply prehabilitation, tailor surgery, and repeatedly evaluate the delivered quality of care.

Relevance

Although complex abdominal wall hernia comprises only a small portion of all hernia presentations, it accounts for more than half of total hernia repair expenses. The application of multidisciplinary care principles to the management of patients with complex abdominal wall hernias is a relatively novel concept.

The long-term impact of this thesis is providing complementary scientific evidence for: (a) the consensus, recently made by 32 international hernia experts, that centers offering complex abdominal wall repair can only deliver good and sustainable outcomes, if a multidisciplinary pathway framework is used, instead of single-handed care; (b) the conclusion of a recent systematic review on multidisciplinary complex hernia care, that a multidisciplinary care pathway has potential to facilitate pre-optimization with prehabilitation and improve postoperative outcomes, by providing a tailored approach to the complex medical, surgical and psychosocial requirements of this patient cohort.

International variation in classifications to stage patients, hernias or outcome measures makes result interpretation and comparison challenging and weakens meaningful scientific discussions about treatment effects. This research used the so-called Hernia-Patient-Wound (HPW) classification. Endorsement of this classification by our team had national impact, while this classification was formally acknowledged by the Dutch Association of Surgeons in their first guideline on incisional hernias (2019). After publication of this guideline, the Dutch Health Authority formalized complex incisional hernias as a unique hernia repair registration code with a different reimbursement.

Introduction of the multidisciplinary complex hernia care pathway also had impact on referral patterns. More than 70% of our patients originate from outside the region of adherence. Similar Dutch hospitals aiming at complex hernia centralization also used our pathway to create a regional hernia network.

The complex hernia care pathway had much local impact. The number of complex hernia operations increased from 20 to 100 per year. A higher case volume increased experience for the multidisciplinary team and individual surgeons. Postoperative complications subsequently decreased which led to shorter hospital stay. Insurance company endorsed referral of complex patients to the hospital which fueled the cycle of improvement. Interest in complex hernia patients by adjacent specialists grew, which converged pathways and aligned treatment protocols. Finally, the research had an enormous patient impact: quality of life and value of care was increased for most of our patients.

Suggestions to further improve outcome for these patients within this multidisciplinary framework is to explore patient psychological wellbeing (quality of life, patient-reported experience/outcome measures (PREMS/PROMS)) and analyze the results of prehabilitation. To optimize allocated resources and multidisciplinary care benefits, clear referral criteria should be defined to ensure appropriate patient selection (HPW classification validation). Postoperative care pathways should be researched deeper and described in detail. Decreasing the mesh-footprint by developing soluble (liquid?) meshes or, even better, discovering components that prevent hernia formation, will ultimately be the 'holy grail'.

Target audience

The research presented in this thesis is relevant for all health care professionals who want to focus on the treatment of complex hernia patients. It provides insight for medical specialists, health care policy makers, partners in industry and individual patients, to understand the 'complexity' of complex hernia care. The target audience was informed by publishing and presenting the results of this thesis in international medical journals, at (inter)national congresses, educational sessions, webinars, and during mirror meetings with patients.

Conclusion

The burden of a complex hernia can be immense for patients, for society, but also for surgeons and hospitals considering treating these patients. Although surgical techniques, instruments and meshes have advanced greatly recent decades, surgical repair is only an option, when quality of life of the patient can be improved safely. This thesis is a call to treat these patients in a multidisciplinary care pathway, a guide to implement such a pathway, and a plea for centralization and registration of outcomes. First treat the patient, then the hernia.