

The Danish Hernia Database

Helping surgeons
make an informed
decision



Danish Hernia Database

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First choice recommendations for the elective treatment of ventral and incisional hernias anno 2026

Introduction

The Danish Hernia Database (DHD) provides national surveillance of current surgical practice and clinical postoperative outcomes.

The aim is to improve patient-reported outcomes, reduce postoperative facilitate nationwide implementation of evidence-based treatment strategies.





It is mandatory for all surgeons to register the hernia repairs (elective or emergency) in the DHD, regardless if operated in a public or private setting. By using patients unique civil number, a continuous follow-up is performed by a preprogrammed and automatic merge of data with data from the Danish National Patient Register (DNPR), which holds data from all patients' contacts with the Danish health care providers (private and public), including operations.

Results from DHD, along with current evidence from other studies, are presented to the Danish Surgical Society at annual meetings. At these meetings, guidelines and recommendations are discussed and continuously revised.

The guidelines are published on the website of the hernia database www.herniedatabasen.dk

Since most surgical departments are represented in the meetings, implementation of new guidelines and recommendations are adopted almost instantaneously.

The choice of treatment always depends on the individual patient. Therefore, the present guideline is meant as a tool to support the clinical decision-making.

To make an informed decision

Ventral hernia classification

Ventral hernias can be divided into primary hernias including umbilical, epigastric and Spigelian hernias and secondary hernias occurring in a former incision (incisional hernias). The European Hernia Society (EHS) classifies ventral hernias according to the location, defect width and whether they are primary or secondary.

In Denmark, we previously agreed on a treatment strategy based on the defect size. However, the defect size per se, is not the main driver in deciding the optimal treatment strategy. Therefore, this updated treatment algorithm includes patient- and hernia-related risk factors as well as surgeon's expertise. Hernias with a defect width >10 cm, loss of domain, flank, subcostal and parastomal hernias, are still considered complex hernias.

Preoperative optimisation

Patients who smoke, are obese or have poorly regulated diabetes, have an increased risk of getting postoperative complications such as surgical site infection and hernia recurrence. Therefore, smoking cessation is recommended 6 weeks prior to surgery. Weight loss to a body mass index of less than 35 kg/m² is encouraged. Diabetes treatment should be optimised to a glycated haemoglobin A1C (HbA1C) level of 60 mmol/mol or 7.5%. If the risk factors are not modifiable, a minimally invasive repair is suggested. For open repair of complex hernias pre-optimisation is considered mandatory, whereas for minimally invasive surgery wound complications are rare, and pre-optimisation may have less effect on the postoperative outcome.

Choice of surgery, minimally invasive or open approach

Choice of approach should depend on the surgeon's expertise. A minimally invasive approach (laparoscopic or robot-assisted) decreases the risk of wound complications and is preferred for patients with risk factors. A minimally invasive approach may also have advantage for repairing non-midline hernias.

An open approach is suitable for most small hernias (defect width < 2 cm). For patients with non-midline hernias and/or risk factors for wound morbidity, a minimally invasive approach may be advantageous.

For medium-sized hernias (defect width >2-6 cm), a minimally invasive approach is advantageous to decrease both early complications and recurrence rates.

The repair of large hernias (defect width > 6 cm) may require component separation to achieve defect closure. In Denmark, a posterior component separation with Transversus Abdominis Release (TAR) is most often used. This may be performed by a minimally invasive approach if the surgeon has the expertise. With a minimally invasive technique, the patient may experience less pain and be discharged more quickly. An open Rives-Stoppa repair is a good alternative, though there is an increased risk of wound morbidity and the patient often needs to stay in hospital for some days after surgery.

In Denmark, it is mandatory to refer patients with incisional hernias with defects wider than 10 cm and patients with parastomal hernias, to one of five expert centres in the country. Complex hernias are most often repaired by open approach, though a minimally invasive approach may be possible in some cases.

Sutured repair or mesh repair

There is no doubt that mesh repair reduces recurrence rate when compared to sutured repair for all types of ventral hernia repairs including small hernias. For small hernias, mesh repair leads to a slightly increased rate of readmissions, however, the rate of re-operation and chronic pain is not increased.

Thus, it is recommended to use mesh reinforcement regardless of hernia size. For women of child-bearing age, it is recommended that small umbilical and epigastric hernia repairs are postponed until after the last pregnancy. If surgery is required prior to that, sutured repair may be a good choice, since mesh repair before pregnancy does not decrease the risk of recurrence during pregnancy or after delivery.

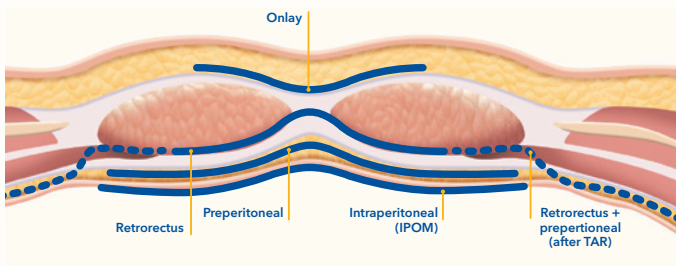
Closure of defect

Data from DHD shows that the rate of re-operation for recurrence and seroma formation is decreased when the defect is closed.

The defect may be closed with either slowly-absorbable or non-absorbable sutures for both open and minimally invasive repairs. Recent data from DHD suggests that the use of a slowly-absorbable suture is as good as a non-absorbable suture in reducing the risk of recurrence for open repair of primary

Mesh position

It is recommended to place the mesh in a retromuscular or preperitoneal position if possible. Intraperitoneal mesh placement may be associated with adhesion formation and fistulation. Onlay mesh placement increases the risk of surgical site occurrences in large hernias, but data from the smallest hernias DHD has shown that it is safe to use for hernias. There is no difference in rate of re-operation for recurrence between onlay, preperitoneal, retromuscular and intraperitoneal mesh placement.



ventral and incisional hernias, and why it is recommended to use slowly-absorbable sutures to minimise long-term risk of palpable knots and suture sinuses.

Mesh overlap

The evidence for optimal mesh overlap is limited. For a long time, a mesh overlap of at least 5 cm has been suggested irrespective of defect size, with later suggestions for even larger overlaps as defect size increases. However, most previous studies were based on laparoscopic repairs without defect closure. A recent study from DHD found that for midline incisional hernias repaired by an open approach, a mesh width of 10-15 cm decreased the recurrence rate irrespective of defect size. A mesh overlap of 3-5 cm is probably sufficient for most hernias when the defects are closed.

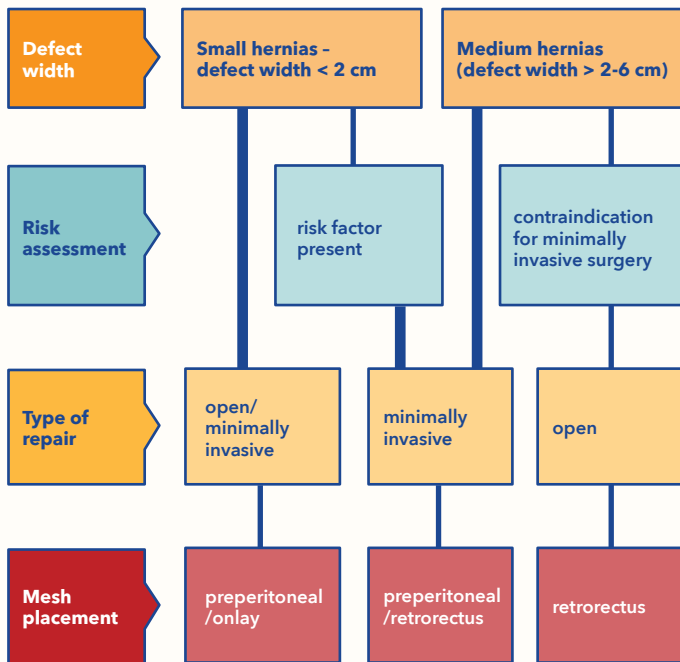
Postoperative considerations

There is limited evidence on the use of abdominal binders and return to strenuous activities after ventral and incisional hernia repairs.

However, it seems that the use of an abdominal binder decreases the risk of seroma, haematoma and may decrease postoperative pain. Therefore, it is suggested to give patients an abdominal binder postoperatively after repair of ventral and incisional hernias with defects > 2 cm. The optimal duration of binder wear is unknown; for pragmatic reasons, a period of 2-4 weeks is suggested.

When the patient can return to strenuous activities, is also unknown. - However, we suggest immediate resumption of daily activities, whereas sports and heavy lifting should wait until 2-4 weeks after the operation.

Recommendations based on defect width and complexity

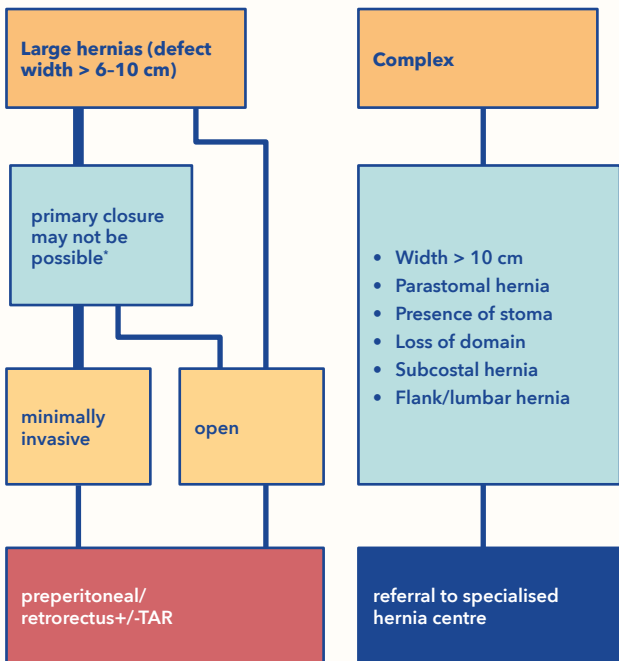


*Additional techniques may be required, such as use of preoperative botulinum toxin, Transversus Abdominis Release (TAR), flap technique, or fascial traction.

Ventral Hernia Algorithm

List of risk factors that advocates for minimally invasive repair

- Smoking
- BMI > 30 m²/kg
- Diabetes
- Rectus diastasis
- Non-midline defect
- Multiple defects





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