

Medtronic

Robotic-assisted Hernia surgery explained



About the condition

How common is a hernia?

In Australia, around 45,000 hernia procedures are performed each year,¹ with inguinal and femoral repairs being the most commonly performed hernia surgeries.¹ Inguinal hernias account for 75% of all hernias and are most common in men due to the male anatomy of the spermatic cord (the opening that descends to the testes).¹⁻⁶ Femoral hernias are 10x more common in women² and they are always repaired because of a high risk of strangulation.²⁻⁴

Whether a hernia is congenital or acquired, surgery is the only way to repair a hernia.

What is a hernia?

An inguinal or femoral hernia is a weakness or defect in the abdominal wall in the groin area. Internal organs may push through the weakness or defect causing discomfort, pain and a noticeable bulge.

The anatomy of a hernia can be compared to a bulge in the inner tube of a tyre. When the tyre is damaged, the inner tube pushes and bulges through the opening of the tyre. **(Figure 1)** Similarly, when a hernia occurs, the inner layer of the abdominal wall may push against and through the abdominal wall defect. **(Figure 2)**

In some cases, a hernia may cause only slight discomfort. Whereas in other cases, a hernia may block digestion and may cause severe pain requiring immediate medical attention.

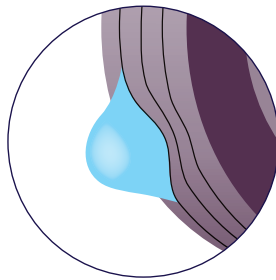


Figure 1

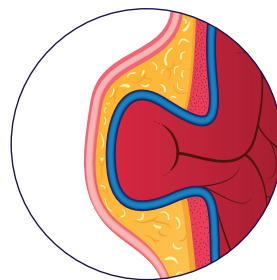
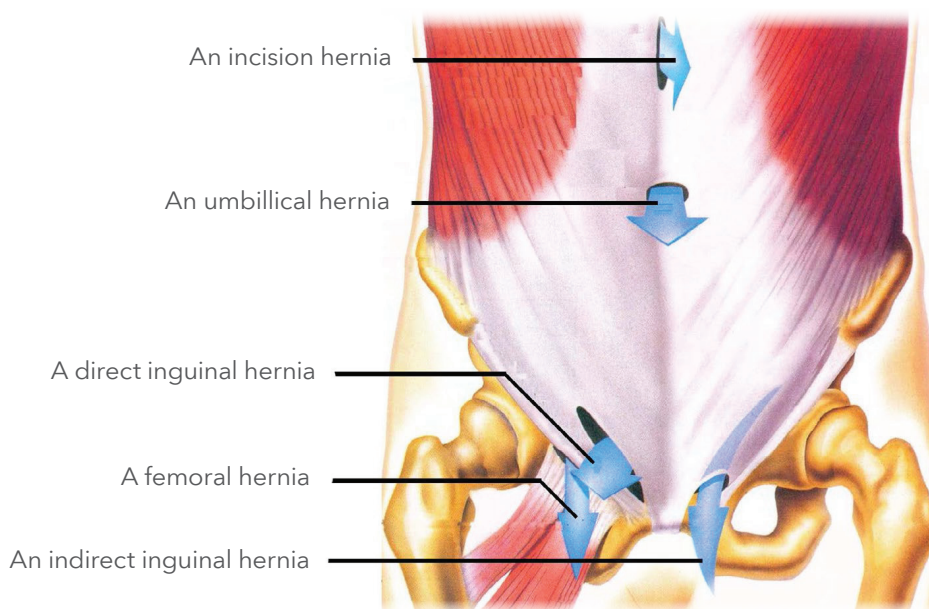


Figure 2

How does a hernia occur?

Some hernias may be acquired hernias, while others are caused by a congenital weakness, which means a weakness that one was born with. Acquired hernias may be caused by lifting heavy objects, pregnancy, extreme weight gain or persistent coughing.



Treatment options

Your doctor may initially want to simply monitor your hernia for possible complications. This approach is called ‘watchful waiting’.⁴ In many cases, patients will have to undergo surgical repair as the hernia will not heal itself. The need for surgery may depend on the size of your hernia and the severity of your symptoms.

Surgical treatment options

Traditional open hernia repair

An incision is made through the abdominal wall near the site of the hernia defect. The hernia is repaired with mesh or by suturing (sewing) the muscle closed. The incision can range from 5cm to 10cm in length depending on the size and location of the hernia. (Figure 3)

Laparoscopic hernia repair

This procedure is sometimes referred to as Minimally Invasive Surgery (MIS), or ‘keyhole surgery’. The hernia is repaired by mesh that is inserted through ports placed into small incisions in the abdomen, therefore eliminating the need for a large incision. (Figure 4)

Robotic-assisted hernia repair

Robotic-assisted surgery is a modern type of MIS where the surgeon uses a robotic system to help guide the surgical instruments with enhanced precision and control.¹⁵ During a robotic-assisted repair, small incisions are created to insert the instruments and hernia repair mesh into the abdomen, which the surgeon then controls from a robotic console. (Figure5)



Figure 3
Traditional
open repair
incisions



Figure 4
Laparoscopic
hernia repair
incisions



Figure 5
Robotic-assisted
hernia repair
incisions



Open, Laparoscopic and Robotic Hernia repair

	Open	Lap	Robotic-assisted
Return to normal activity ^{5-6,7-8,12}	► Longer	► Shorter	► Shorter
Complication rate ⁵	► Low	► Low	► Low
Post operative pain ⁵	► More	► Less	► Less
Surgical site infection ⁵	► Low	► Extremely low	► Extremely low
Recurrence of hernia ^{5, 7-12}	► Low	► Low	► Very Low ¹⁴

About the procedure

How the procedure is performed

In a traditional open hernia repair, the surgeon makes an incision near the hernia site and the hernia is reduced or pushed back into the abdomen. Most inguinal hernia repairs use mesh to close the muscle.¹³

In both laparoscopic and robotic-assisted hernia repair, an endoscope is inserted through a small incision in the naval to perform the procedure. The most common technique involves four small incisions that are made at the level of the navel. These incisions can range from 0.6cm to 1.3cm, reducing post-operative discomfort and scarring, promoting faster healing, and allowing for a much quicker return to normal activities.^{5-6,7-8,12}

What happens during surgery?

First the patient is given a general anaesthesia to ensure they will not feel pain during the surgery. During an open mesh repair, the hernia sac is removed. Mesh is positioned over the hernia site and attached using sutures sewn into the stronger tissue surrounding the hernia site.⁶

During robotic-assisted hernia repair, three or four small incisions are made so the endoscope and instruments can be inserted through these incisions into the abdomen.

The surgeon will then locate the hernia using the 3D vision of the robotic-assisted endoscope on the surgeon console. The hernia is 'reduced', or pulled back, and repaired by placing a piece of mesh directly over the hernia defect, like a patch covering a bulging tyre. Once the procedure is complete, the small incisions are closed with sutures or surgical tape.

For open, laparoscopic, and robotic-assisted mesh repair, the mesh is a permanently-implanted material placed over the defect to serve as a block intending to prevent the hernia bulge and pain from coming back.

What to expect after surgery?

Following hernia repair, the patient is taken to the recovery room and monitored by a nurse until they are awake and alert. A surgeon will evaluate progress and may prescribe medication to relieve discomfort from the surgery. A nurse will go over any discharge instructions with patients before they leave the hospital. These instructions will include what to expect the first few days, how to care for the incision(s), and a list of symptoms and warning signs. They will also provide a number to call if the patient has any concerns or questions.

In a robotic-assisted procedure, patients may experience:

- Less pain⁵
- Lower recurrence rate^{5,7-12}
- Fewer complications and a faster return to normal activity compared with traditional open repair surgery²⁻³

Questions to ask your doctor

1. What technique will be used to repair the hernia?
2. How frequently does the surgeon perform this procedure in their practice?
3. What risks are associated with this type of surgery?
4. What are the risks and side effects of anaesthesia?
5. What is the recurrence rate with the recommended procedure?
6. What products or medical devices will likely be used in the procedure?
7. What level of pain is expected and how will it be managed?
8. Do I need to stay in hospital? If so, for how long?
9. Will there be any costs associated with the surgery?
10. Approximately how long will it be before I can return to my normal activities?
11. When, and how often, will I need to see a doctor for follow-up visits?



This material is intended to be educational and is not a diagnostic tool. It is not intended to replace the information provided to you by your healthcare provider and does not constitute medical advice. The information may not be directly applicable for your individual clinical circumstance.

Ask your doctor for information and/or instructions for use for the indications, contraindications, warnings, and precautions associated with the medications and devices referenced in these materials.



References

1. Australian Institute of Health and Welfare. Admitted Patient Care 2017-2018. 2019. [Cited 9 Aug 2020.], www.aihw.gov.au/getmedia/df0abd15-5dd8-4a56-94fa-c9ab68690e18/aihw-hse-225.pdf.aspx?inline=true
2. Fitzgibbons RJ, Giobbie-Hurder A, Gibbs JO, et al. Watchful Waiting vs Repair of Inguinal Hernia in Minimally Symptomatic Men: A Randomized Clinical Trial. JAMA. 2006;295(3):285-292. doi:10.1001/jama.295.3.285
3. Malangoni MA, Rosen MJ. Hernias. In:CM Townsend, RD Beauchamp, et al. Sabiston Textbook of Surgery, Philadelphia, PA: Elsevier, 2012:Chap 46.
4. Sarosi GA, Wei Y, Gibbs JO, Reda DJ, McCarthy M, Fitzgibbons RJ, Barkun JS. A clinician's guide to patient selection for watchful waiting management of inguinal hernia. Ann Surg. 2011 Mar;253(3):605-10. doi: 10.1097/SLA.0b013e31820b04e9. PMID: 21239979.
5. Abbas AE, Noaman N, Amin M, Patient-perspective quality of life after laparoscopic and open hernia repair: A controlled randomized trial. Surgical Endoscopy. 2012;26:2465-2470
6. American College of Surgeons. Surgical Patient Education: Groin Hernia Repair Inguinal and Femoral, 2019 Groin Hernia Brochure Version 1, https://www.facs.org/media/0aihsqg0/groin_hernia.pdf
7. Königer J, Redecke J, Butters M. Chronic pain after hernia repair: a randomized trial comparing Shouldice, Lichtenstein and TAPP. Langenbecks Arch Surg. 2004 Oct;389(5):361-5. doi: 10.1007/s00423-004-0496-5. Epub 2004 Jul 9. PMID: 15243743.
8. Grant AM; EU Hernia Trialists Collaboration. Laparoscopic versus open groin hernia repair: meta-analysis of randomised trials based on individual patient data. Hernia. 2002 Mar;6(1):2-10. doi: 10.1007/s10029-002-0050-8. PMID: 12090575.
9. Butters M, Redecke J, Königer J. Long-term results of a randomized clinical trial of Shouldice, Lichtenstein and transabdominal preperitoneal hernia repairs. Br J Surg. 2007;94(5):562-565.
10. Eklund AS, Montgomery AK, Rasmussen IC, Sandbue RP, Bergkvist LA, Rudberg CR (2009) Low recurrence rate after laparoscopic (TEP) and open (Lichtenstein) inguinal hernia repair: a randomized, multicentre trial with 5 year follow up. Ann Surg 2491:33-38
11. Pokorny H, Klingler A, Schmid T, Fortelny R, Hollinsky C, Kawji R, Steiner E, Pernthaler H, Fußger R, Scheyer M (2008) Recurrence and complications after laparoscopic versus open inguinal hernia repair: results of a prospective randomized multicenter trial. Hernia 12:385-389
12. McCormack K, et al. Laparoscopic techniques versus open techniques for inguinal hernia repair. Cochrane Database Syst Rev 2003;1:CD001785.
13. Gould J. Laparoscopic versus open inguinal hernia repair. Surg Clin North Am. 2008 Oct;88(5):1073-81, vii-viii. doi: 10.1016/j.suc.2008.05.008. PMID: 18790155.
14. De'Angellis et al_Robotic Surgery for inguinal and ventral hernia repair - A systematic review and meta-analysis_Surgical Endoscopy_2023
15. Prata et al_State of the Art in Robotic Surgery with Hugo RAS System_Journal of Personalised Medicine_2023

For more information relating to Hernia Repair and the treatment options available, please visit the Medtronic Hernia Website using the QR code below.

Medtronic

Medtronic Australasia Pty Ltd
Level 8, 11 Khartoum Road
Macquarie Park, NSW 2113, Australia
Tel: +61 2 9857 9000
Fax: +61 2 9889 5167
Toll Free: 1800 668 670

Medtronic New Zealand Ltd
Level 3 - Building 5, Central Park Corporate Centre
666 Great South Road
Penrose, Auckland 1051
New Zealand
Fax: +64 9 918 3742
Toll Free: 0800 377 807

© Medtronic 2025 All Rights Reserved
16627825 | AU-RP-2500020

medtronic.com.au

