# Abdominal wall hernia/

## where do we stand now ?

Aleksandar Mitevski MD
Associated professor in Digestive surgery

ReMedika Skopje
University "Goce Delchev" Shtip

**Arregui** ME, Davis CJ, Yucel O, Nagan RF. Laparoscopic mesh repair of inguinal hernia using a preperitoneal approach: a preliminary report. *SurgLaparoscEndosc*. Mar 1992;2(1):53-8
Dion YM, Morin J. Laparoscopic inguinal herniorrhaphy. *Can J Surg*. Apr 1992;35(2):209-12.

- HerniaSurge Group. International guidelines for groin hernia management.Hernia. 2018 Feb;22(1):1-165. doi: 10.1007/s10029-017-1668-x. Epub 2018 Jan 12.

JOURNAL ARTICLE

## Update of the international HerniaSurge guidelines for groin hernia management

Cesare Stabilini , Nadine van Veenendaal , Eske Aasvang , Ferdinando Agresta , Theo Aufenacker , Frederik Berrevoet , Ine Burgmans , David Chen , Andrew de Beaux , Barbora East ... Show more

*BJS Open*, Volume 7, Issue 5, October 2023, zrad080, https://doi.org/10.1093/bjsopen/zrad080
**Published:** 20 October 2023 **Article history**

A correction has been published: *BJS Open*, Volume 8, Issue 2, April 2024, zrae034, https://doi.org/10.1093/bjsopen/zrae034

PDF Views Cite Permissions Share

**Abstract**

**Background**

Groin hernia repair is one of the most common operations performed globally, with more than 20 million procedures per year. The last guidelines on groin hernia management were published in 2018 by the HerniaSurge Group. The aim of this project was to assess new evidence and update the guidelines. The guideline is intended for general and abdominal wall surgeons treating adult patients with groin hernias.

**Method**

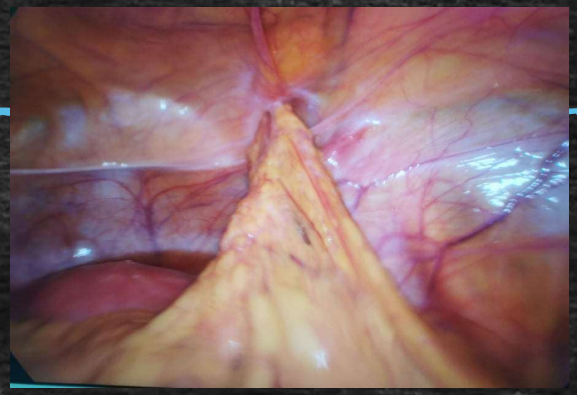
A working group of 30 international groin hernia experts and all involved stakeholders was formed and examined all new literature on groin hernia management, available until April 2022. Articles were screened for eligibility and assessed according to GRADE methodologies. New evidence was

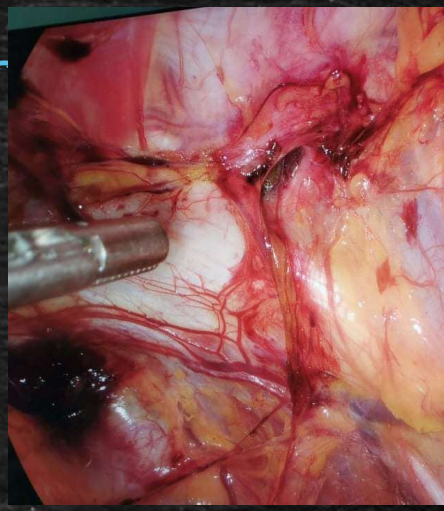
**Table 1** Team composition of the updated guideline on groin hernia management

| Chapter | Team |
|---|---|
| 6a. Tissue repair | Lorenz (DE), Wiessner (DE), Chen (USA), Miserez (BE) |
| 6d. Open preperitoneal repair | Berrevoet (BE), Lopez-Cano (ES), Garcia-Alamino (ES), Lorenz (DE) |
| 6f. Laparo-endoscopic repair | Simons (NL), Köckerling (DE), Lopez-Cano (ES), Tran (AUS), Verdauguer (ES) |
| 8. Occult | DeBeaux (UK), Burgmans (NL), Reinpold (DE), East (CZE), Stabilini (IT) |
| 10. Mesh | Burgmans (NL), Köckerling (DE), Montgomery (SE), Kukleta (CH) |
| 12. Antibiotic prophylaxis | Kockerling (DE), Montgomery (SE), Henriksen (SE), Aufenacker (NL) |
| 13. Anaesthesia | Agresta (IT), van Veenendaal (NL), Sartori (IT), Simons (NL) |
| 19. Chronic pain treatment | Miserez (BE), Zwaans (NL), Loos (NL), Pawlak (UK), Aasvang (DK), van Veener Chen (USA) |
| 21. Emergency | Pawlak (UK), de Beaux (UK), Agresta (IT), Podda (IT), East (CZE), Morales-Cor |
| 28. Non-commercial mesh | Sanders (UK), Berrevoet (BE), Oppong (UK), Yeboah (GH), Simons (NL) |

AUS = Australia; BE = Belgium; CZE = Czech Republic; DE = Germany; DK = Denmark; ESP = Spain; IT = Italy; N Netherlands; SE = Sweden; UK = United Kingdom; USA = United States of America; GH = Ghana; CH = Switzer

| | | | |
|---|---|---|---|
| Statement | When the surgeon has sufficient experience in the technique, laparo-endoscopic techniques do not take longer than Lichtenstein operations | ⊠⊠⊠□ | |
| Statement | When the surgeon has sufficient experience, no significant differences are observed in the perioperative complications needing reoperation between the laparo-endoscopic and Lichtenstein techniques. | ⊠⊠⊠□ | |
| Statement | Laparo-endoscopic techniques have less chronic pain and faster recovery than the Lichtenstein repair. | ⊠⊠⊠□ | |
| Statement | The direct operative costs for laparo-endoscopic inguinal hernia repair are higher. The difference decreases when the total community costs are considered and the surgeon has sufficient experience. | ⊠⊠⊠□ | |
| Statement | The learning curve for laparo-endoscopic techniques (especially TEP) is longer than for Lichtenstein. There are rare but severe complications mainly described early in the learning curve. It is imperative that laparo-endoscopic techniques be learned in a properly supervised manner in order to minimize complications. | ⊠⊠⊠□ | |
| Recommendation | For patients (all sexes) with primary unilateral inguinal hernia, a laparo-endoscopic technique is recommended because of a lower postoperative pain incidence and a reduction in chronic pain incidence, provided that a surgeon with specific expertise and sufficient resources is available. However, there are patient and hernia characteristics that warrant Lichtenstein as first choice (chapter 7 on individualization). | ⊠⊠⊠□ | Strong (upgraded) |





and unhealthy alcohol use, were associated with adverse outcomes after VIHR. These factors were significantly associated with increased health care spending; therefore, preoperative optimization may improve outcomes and decrease episode-of-care costs.

## Introduction

Go to:



More than 350 000 ventral and incisional hernia repairs (VIHRs) are performed each year in the United States.[1] The annual health care spending associated with these operations exceeds $3 billion. Unfortunately, a significant proportion of VIHR are associated with complications, with 30-day readmission rates of 5%, surgical site infection rates of 13%, and recurrence rates as high as 63%.[2,3] Although variation in operative approach and technique has been shown to affect outcomes, it is also well known that a number of patient comorbidities can significantly affect postoperative mortality and morbidity.[4] Diabetes, obesity, and low functional status have been shown to increase short-term wound infection and readmission rate, as well as long-term hernia recurrence and need for reoperation.[5,6,7] The increased costs associated with these modifiable patient risk factors have been reported to exceed $80 000 per patient.[8]

Forgoing operative VIHR in high-risk patients avoids postoperative complications, but it is associated with decreased functional status and poor quality of life and exposes patients to the risk of emergency VIHR.[9,10] Consequently, there is increasing interest in preoperatively addressing modifiable patient comorbidity as a strategy to improve postoperative outcomes and reduce cost. Preoperative optimization can result in a quicker return to baseline functional capacity and has the potential to reduce postoperative complications.[11] Although these effects are well-established in

Journal Article

J.W. Burger, J.F. Lange, J.A. Halm, G.J. Kleinrensink, H. Jeekel**Incisional hernia: early complication of abdominal surgery.**World J Surg, 29 (2005), pp. 1608-1613

Le Huu Nho R, Mege D, Ouaïssi M, Sielezneff I, Sastre B. Incidence and prevention of ventral incisional hernia. J Visc Surg. 2012 Oct;149(5 Suppl):e3-14. doi: 10.1016/j.jviscsurg.2012.05.004. Epub 2012 Nov 9. PMID: 23142402.

Pierce RA, Spitler JA, Frisella MM, et al. Pooled data analysis of laparoscopic vs. open ventral hernia repair:14 years of patient data accrual. SurgEndosc. 2007;21(3):378–86

- 15% of all abdominal hernias are ventral and 10% incisional
- 10-20% burden in laparotomy
- ideal technique for ventral and incisional hernia,
  - low recurrence rate
  - least complications
  - it is minimal invasive,
  - reduces postoperative recovery period,
  - reduces and prevents a expenses and
  - reduces the hospital stay.

History of the MIS ventral hernia repair

IPOM

IPOM plus

1992

Laparoscopic repair of incisional abdominal hernias using expanded polytetrafluoroethylene: preliminary findings
Surg Laparosc Endosc. 1993;3:39-41.

2011

Guidlines in LIHR IEHS
Surg Endosc (2014) 28:2–29
DOI 10.1007/s00464-013-3170-6

# IPOM and IPOM Plus: A Step-by-Step Guide

July 2018

DOI:10.1007/978-3-319-72626-7_58

In book: The Art of Hernia Surgery (pp.571-581)

**Authors:**

**Jan F Kukleta**
Klinik Im Park Hirslanden

urg Laparosc Endosc. 1993 Feb;3(1):39-41.

## aparoscopic repair of incisional abdominal hernias ing expanded polytetrafluoroethylene: preliminary ndings

LeBlanc [1], W V Booth

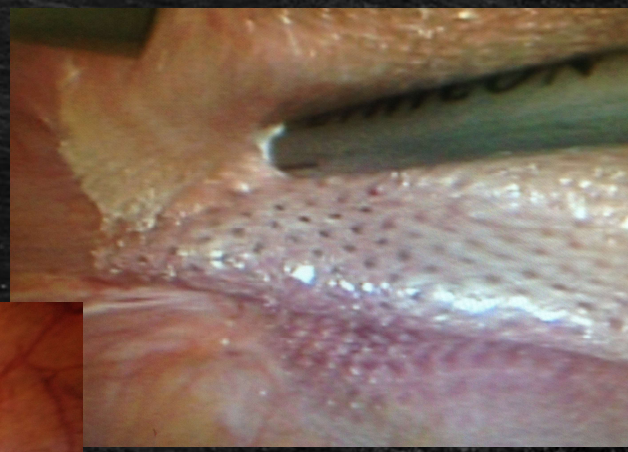
iations + expand

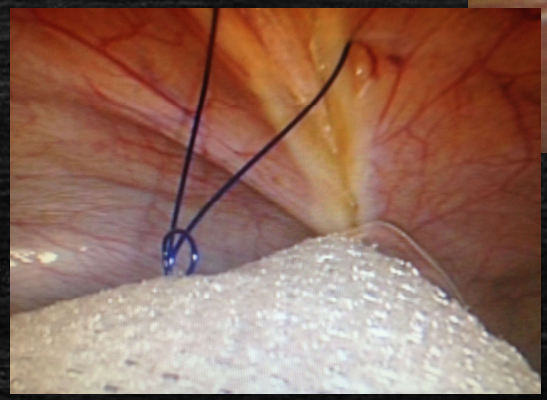
D: 8258069

Cite

### stract

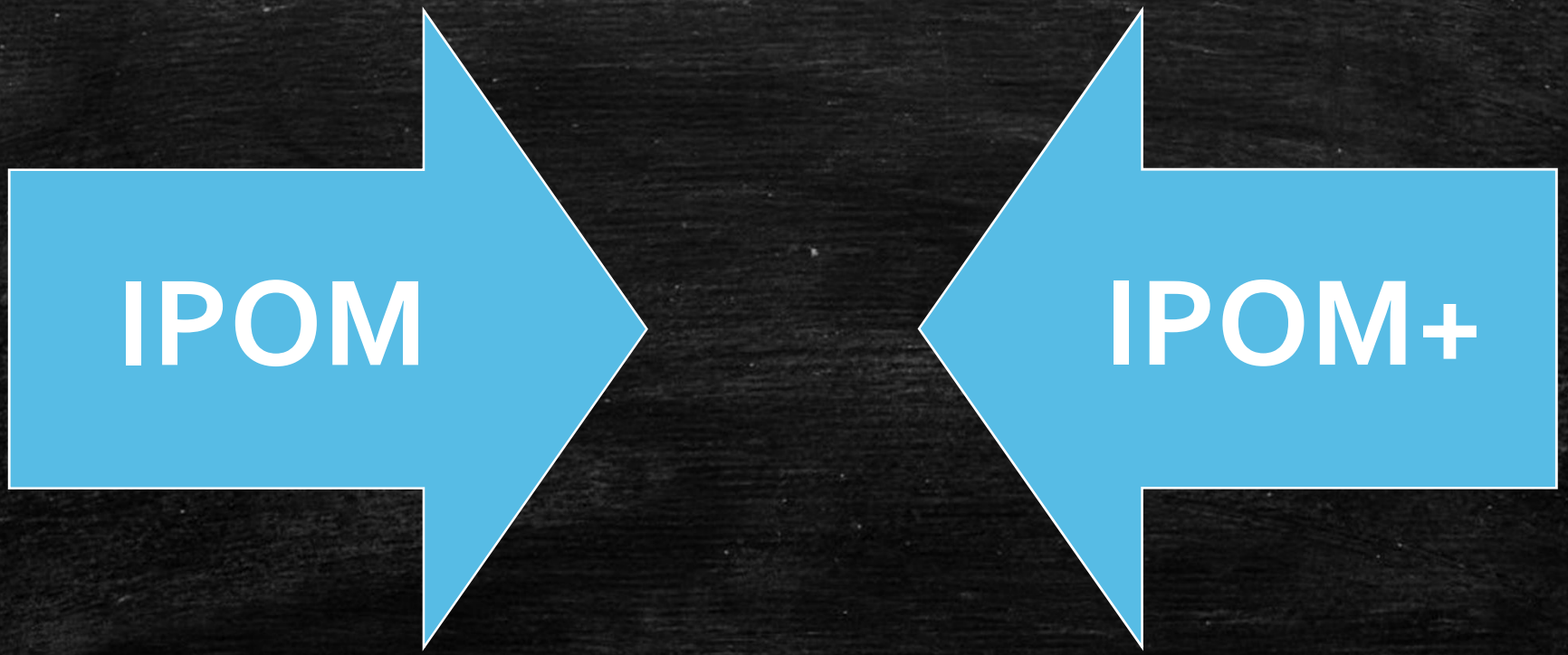
aroscopic techniques were used in five cases to repair incisional abdominal hernias ranging in from 1.5 to 6 cm2. Four to five trocars were used in each case, one in the upper midline and e or four placed laterally. All repairs were made using 1-mm-thick expanded ytetrafluoroethylene patches inserted intraperitoneally and stapled to the anterior abdominal



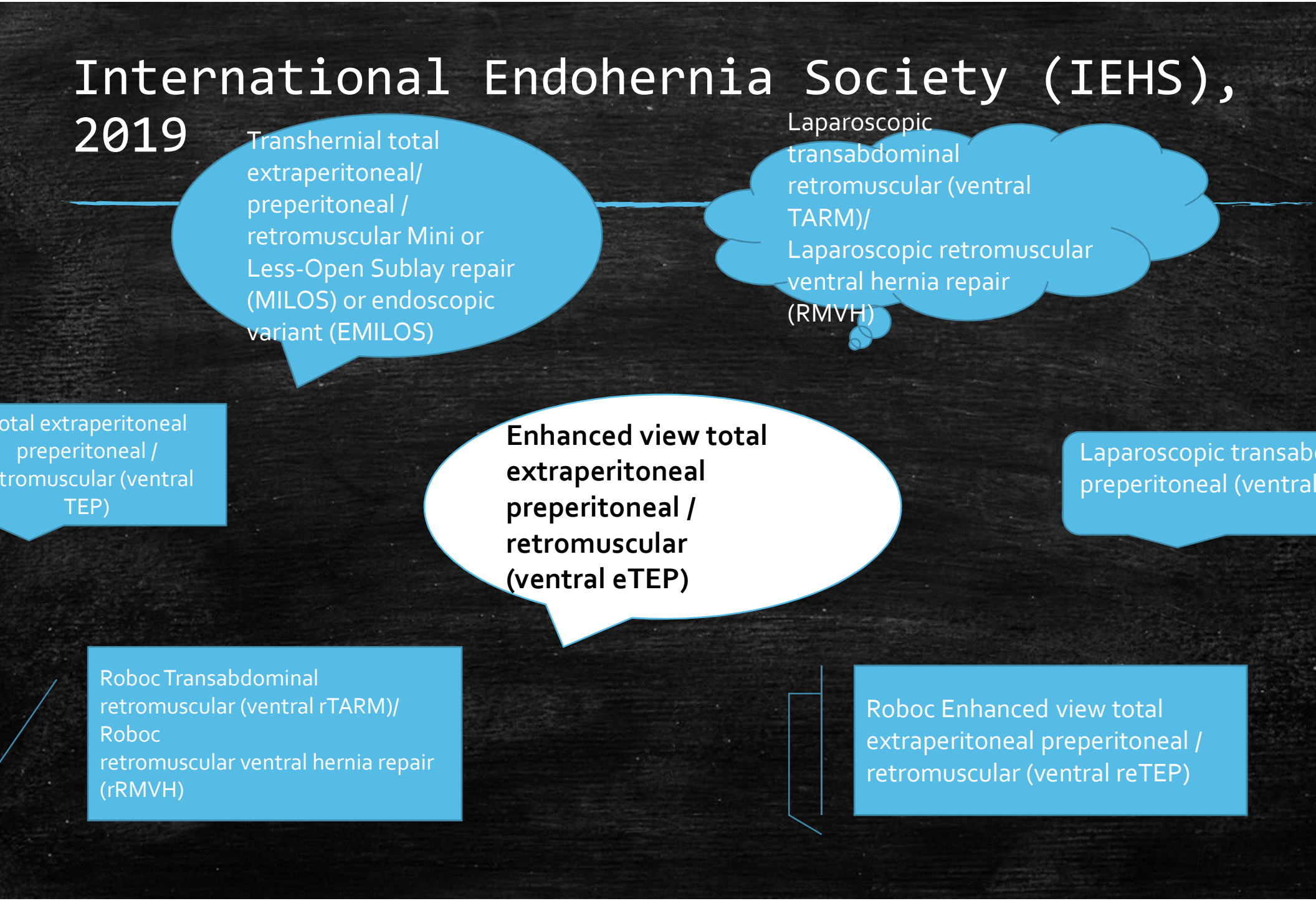


# International Endohernia Society (IEHS), 2014

**Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias**



# International Endohernia Society (IEHS), 2019



Access:

- Laparoscopic transabdominal preperitoneal (ventral TAPP)
- Laparoscopic transabdominal retromuscular (ventral TARM)/ Laparoscopic retromuscular ventral hernia repair (RMVH)
- Total extraperitoneal preperitoneal / retromuscular (ventral TEP)
- Enhanced view total extraperitoneal preperitoneal / retromuscular (ventral eTEP)
- Robotic Enhanced view total extraperitoneal preperitoneal / retromuscular (ventral reTEP)
- Robotic Transabdominal preperitoneal (ventral rTAPP)
- Robotic Transabdominal retromuscular (ventral rTARM)/ Robotic retromuscular ventral hernia repair (rRMVH)
- Transhernial total extraperitoneal/ preperitoneal / retromuscular Mini or Less-Open Sublay repair (MILOS) or endoscopic variant (EMILOS)

Location of mesh:

- preperitoneal
- retrorectus (between rectus abdominis muscle and posterior rectus sheath)
- retromuscular (posterior to rectus abdominis or oblique muscles and peritoneum
- onlay

Modality of defect closure:

- Suture
- Tack
- Linear stapler
- None

Reconstruction of the abdominal wall: closure of hernia defect, posterior rectus sheath, and rectus diastasis

- No closure
- Only closure of hernia defect
- Only closure of posterior rectus sheath
- Closure of hernia defect and posterior rectus sheath
- Closure of hernia defect and rectus diastasis
- Closure of hernia defect, posterior rectus sheath and rectus diastasis

Al Chalabi H, Larkin J, Mehigan B, McCormick P (2015) A systematic review of laparoscopic versus open abdominal incisional hernia repair, with meta analysis of randomized controlled trials. Int J Surg 20:65–74 (**2**)

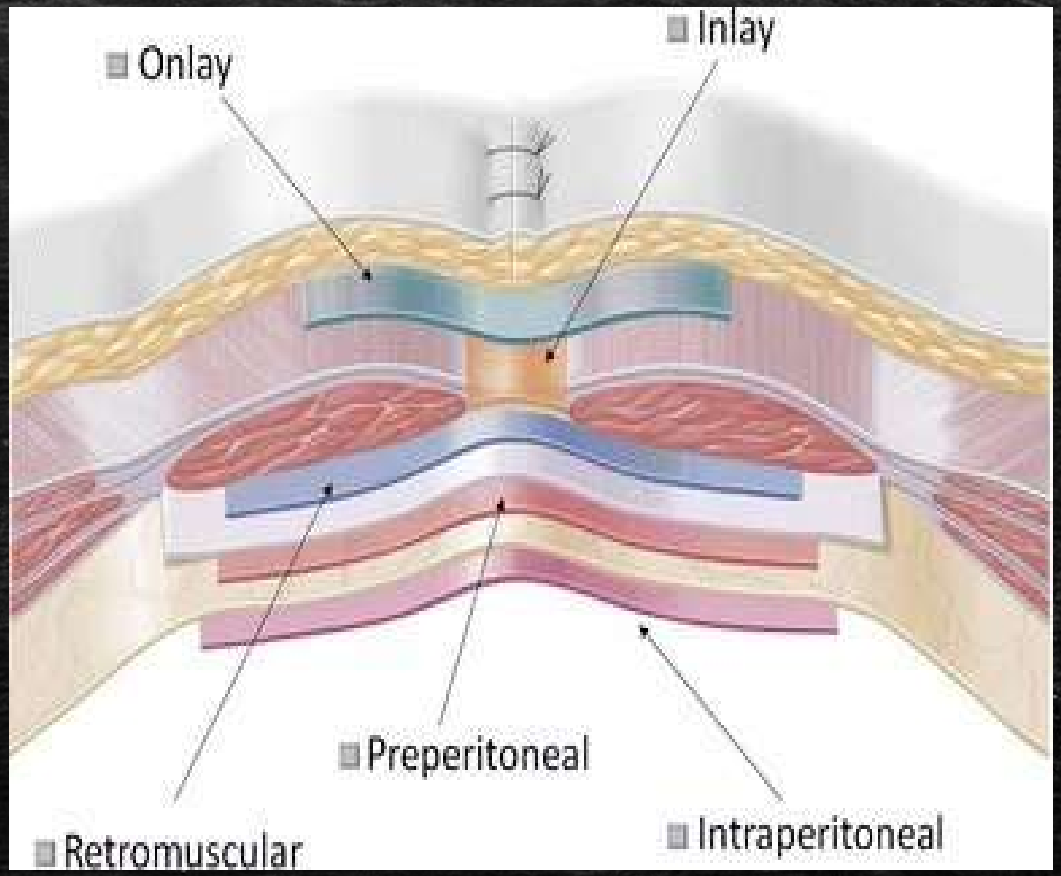
Awaiz A, Rahman F, Hossain MB, Yunus RM, Khan S, Memon B, Memon MA (2015) Meta-analysis and systematic review of laparoscopic versus open mesh repair for elective incisional hernia. Hernia 19(3):449–463

Mitura K, Skolimowska-Rzewuska M, Garnysz K (2017) Outcomes of bridging versus mesh augmentation in laparoscopic repair of small and medium midline ventral hernias. Surg Endosc 31(1):382–388. Epub 2016 Jun 10. (**2B)**

Tandon A, Pathak S, Lyons NJ, Nunes QM, Daniels IR, Smart NJ (2016) Meta-analysis of closure of the fascial defect during laparoscopic incisional and ventral hernia repair. Br J Surg 103(12):1598–1607. Epub 2016 Aug 22.

traperitoneal

xtraperitoneal



Join

pers only

## uidelines

09, EHS has published guidelines on the prevention and/or management of different types of
s well as important methods in hernia surgery. The aim of these guidelines is to support the use of
e-based approaches to hernia management. In cases where evidence is lacking, the guidelines are
n expert consensus. The guidelines are regularly updated.

also developed guidelines in collaboration with international partner societies and endorsed
es which have been developed by other groups of experts.

uidelines developed or endorsed by EHS are listed here, and work is ongoing to cover more topics.

BJS Foundation

ation

TICLE

## e incisional hernia guidelines: the European Hernia

lers , Maciej M Pawlak , Maarten P Simons , Theo Aufenacker , Andrea Balla , Cigdem Berger ,
revoet , Andrew C de Beaux , Barbora East , Nadia A Henriksen ... Show more

*al of Surgery*, Volume 110, Issue 12, December 2023, Pages 1732–1768,
rg/10.1093/bjs/znad284
19 September 2023 **Article history**

on has been published: *British Journal of Surgery*, Volume 111, Issue 1, January 2024,
https://doi.org/10.1093/bjs/znad349

(British Journal of Surgery) / Volume 107, Issue 3 / p. 171-190

view | Free Access

## uidelines for treatment of umbilical and epigastric hernias from the European
ernia Society and Americas Hernia Society

A. Henriksen, A. Montgomery, R. Kaufmann, F. Berrevoet, B. East, J. Fischer, W. Hope, D. Klassen,
Lorenz, Y. Renard, M. A. Garcia Urena, M. P. Simons ... See all authors

st published: 09 January 2020
ps://doi.org/10.1002/bjs.11489
ations: 226

**Fig. 20** Forest plot: mesh *versus* suture risk of seroma

Open in new tab | Download slide

There was no difference in length of stay using suture or mesh repair.

### Key Question 7: What is the difference in outcome considering different posi of mesh in incisional hernia repair?

**Recommendation A:** For patients with a midline incisional hernia, the guidelines panel recommends that mesh should be placed in the retromuscular plane (strong recommendatio low certainty evidence).

**Good Practice Statement A**: Surgeons performing incisional hernia repair should be familia the technique for positioning the mesh in different planes (including onlay, retromuscular, a intraperitoneal).

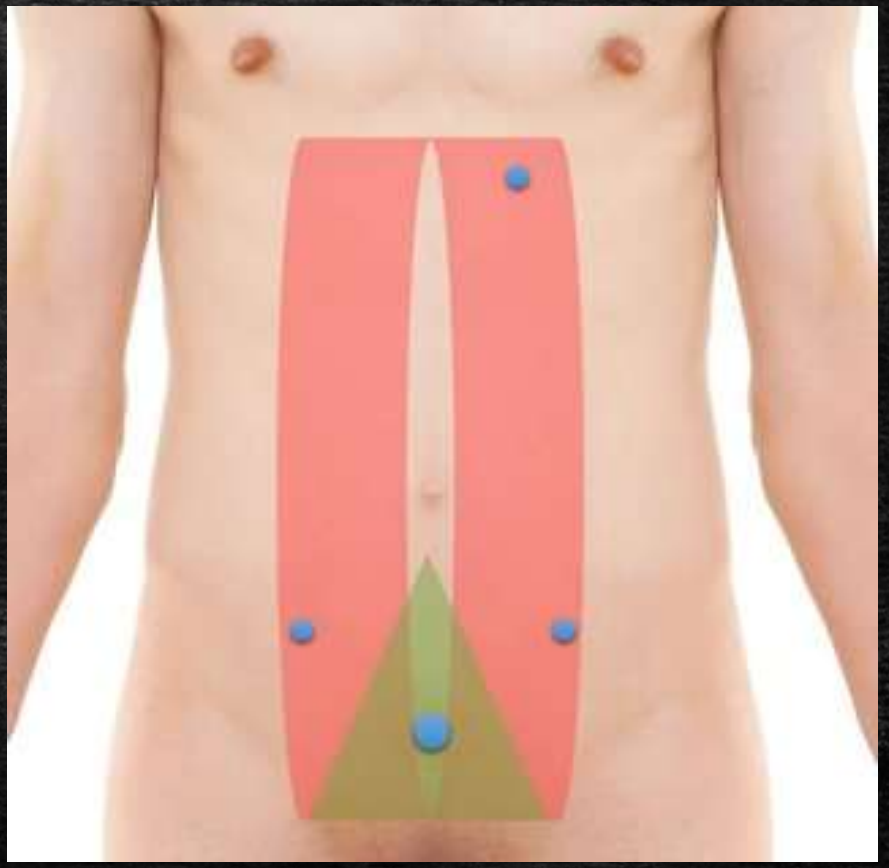
**Good Practice Statement B**: For patients with a midline incisional hernia, the guidelines pan suggests that any mesh in the abdominal cavity exposed to the abdominal viscera should be with caution due to the risk of long-term complications at any subsequent abdominal surge

Terminology and nomenclature to describe mesh position within the abdominal wall is often inconsistent and varies with surgeon/institutional interpretation. It is important that uniform terminology is used for consistency of clinical management and to allow for an evidence-based comparison of different techniques. In an effort to establish this, Parker *et al.*[137] have provided a international classification produced by Delphi methods on the different mesh placement plan most commonly used of these are onlay (on the fascia below the subcutaneous fat), retrorectus the rectus muscle and the posterior rectus sheath), preperitoneal (between the posterior rectus and the peritoneum), and intraperitoneal (inside the peritoneal cavity against the peritoneum)[1] term retromuscular encompasses both the retrorectus and preperitoneal planes. The optimal m should be associated with a low recurrence rate, a low risk of complications such as seroma, hae SSI, and adhesions, and, finally, a low risk of mesh sensation, acute pain, and chronic pain.

## Search results

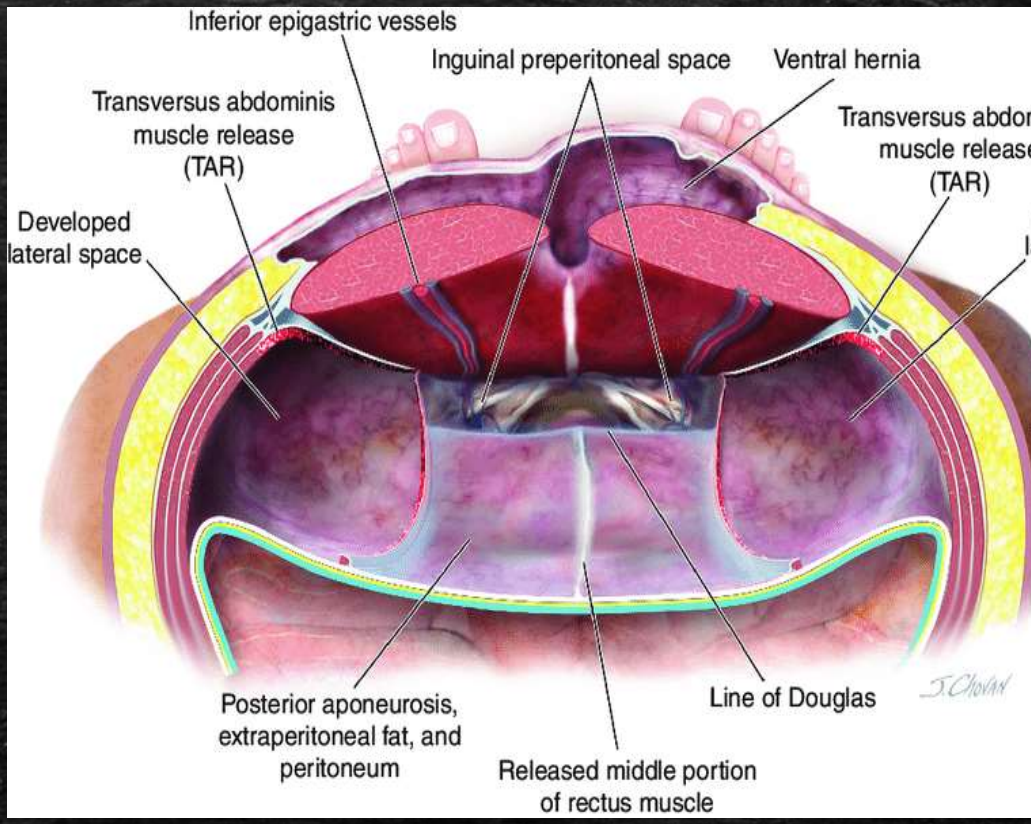
The search retrieved 756 records. After the duplicates were removed, the titles and abstracts of were screened. A total of 42 reports were selected for full-text retrieval and were assessed for el total of 31 reports were excluded. A total of four studies and seven reviews met the inclusion cri Handsearching and checking references identified another 40 reports whose full texts were eva

Daes J. The enhanced view – totallyextraperitoneal technique for repair of inguinal hernia. SurgEndosc 2012; 26:1187-118

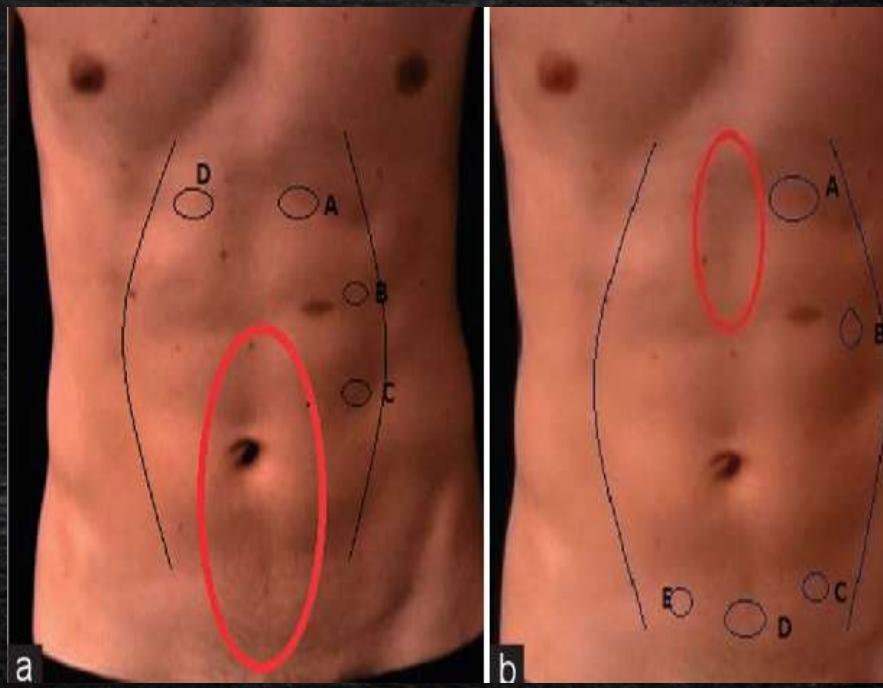
Daes J. The extended-view totallyextraperitoneal (eTEP) technique for inguinal hernia repair. In: Novitsky Y. W., editor. Hernia Surgery. Cham: Springer; 2016. pp. 467–472.
Belyansky I, Daes J,3, Radu VG, Balasubramanian R, Reza Zahiri H, Weltz AS, Sibia US, Park A6, Novitsky Y.SurgEndosc. 2018 Mar;32(3):1525-1532. doi: 10.1007/s00464-017-5840-2. Epub 2017 Sep 15.A novel approach using the enhanced-view totallyextraperitoneal (eTEP) technique for laparoscopic retromuscular hernia repair.

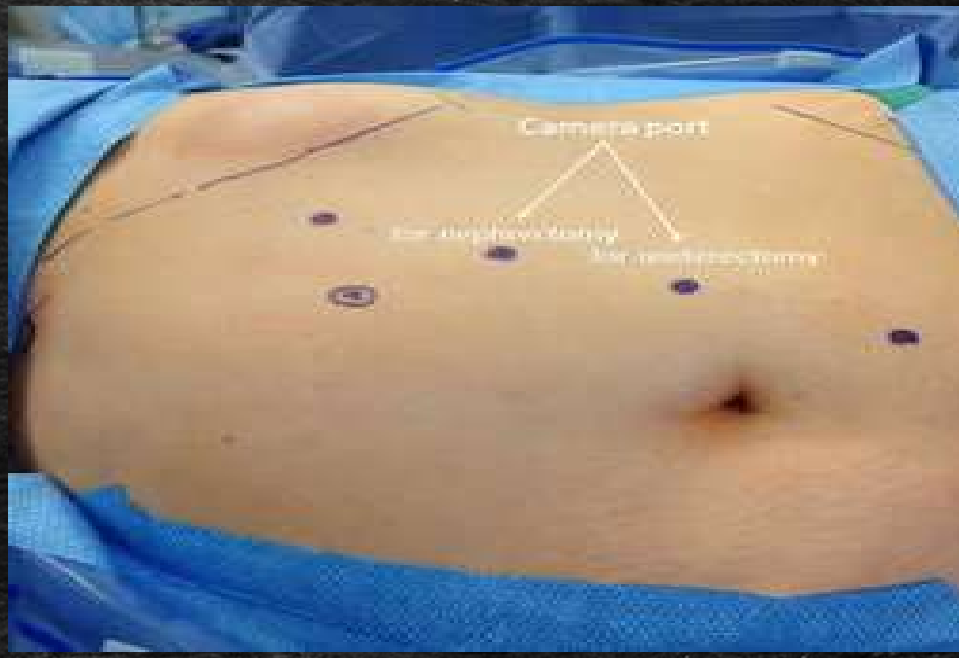
- peritoneal cavity is not entered which is lessening the risk of visceral lesions and troacar site hernias
- the preperitoneal-retromuscular space can be entered and created from any position
- knowledge of anatomy is crucial

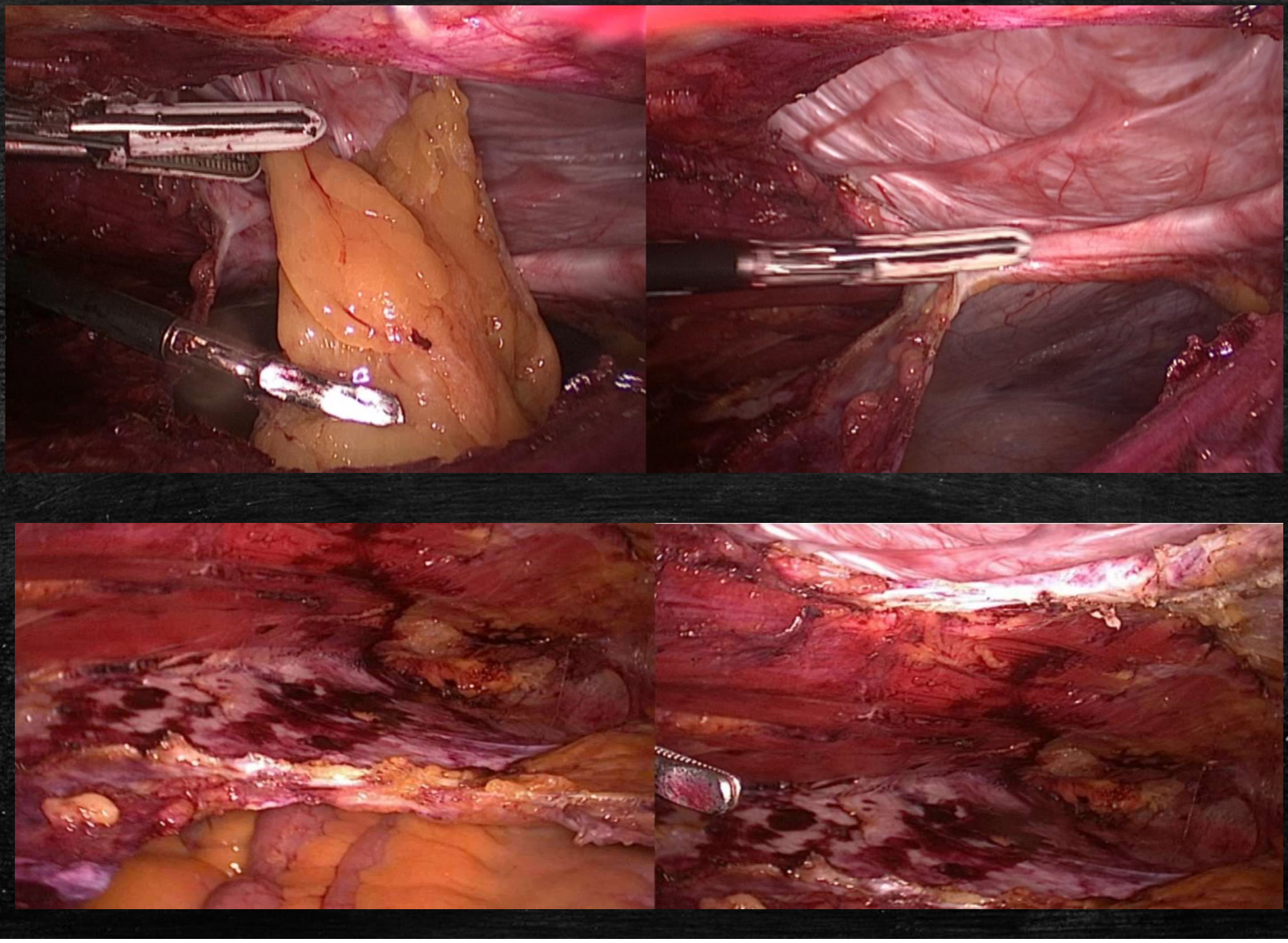


Stoppa RE. The treatment of complicated groin and incisional hernias. World J Surg. 1989;13(5):545-54.
Iqbal CW, Pham TH, Joseph A, Mai J, Thompson GB,Sarr MG. Long-term outcome of 254 complex incisional hernia repairs using the modified Rives- Stoppa technique. World J Surg. 2007;31(12):2398-404.

- Flexible and ergonomic port setup
- Large surgical field
- Tolerance of pneumoperitoneum
- eTEP Stoppa –Rives
- eTEP TAR
- eTEP Lumbar




Camera port

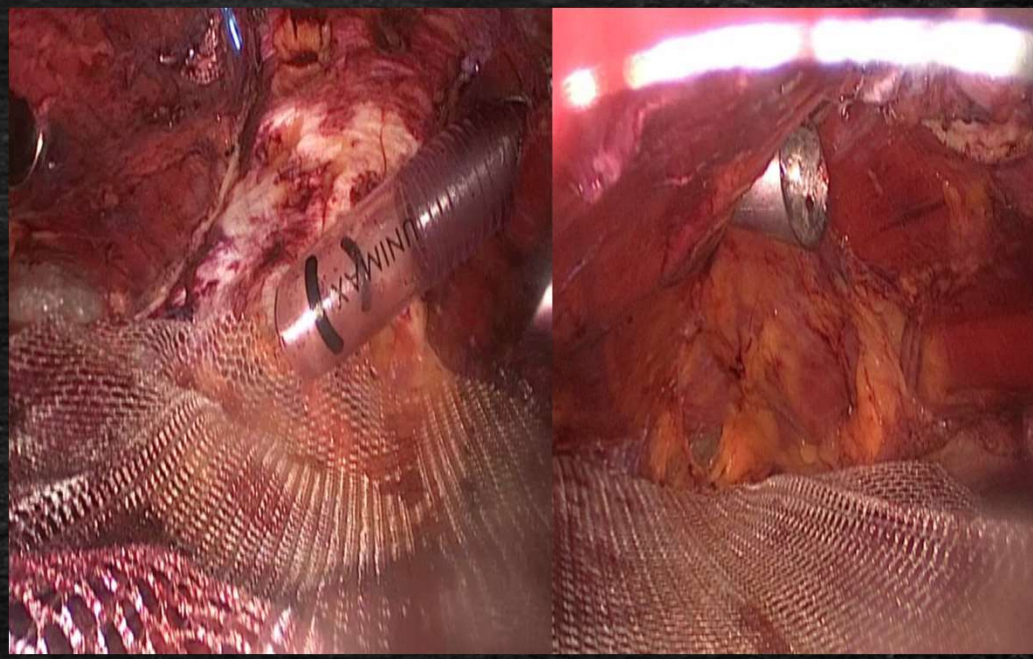


Novitsky Y. W., Porter J. R., Rucho Z. C., et al. Open preperitonealretrofascial mesh repair for multiply recurrent ventral incisional hernias. Journal of American College of Surgeons. 2003;203(3):283–289. doi: 10.1016/j.jamcollsurg.2006.05.297.

Belyansky I, Daes J,3, Radu VG, Balasubramanian R, Reza Zahiri H, Weltz AS, Sibia US, Park A6, Novitsky Y.SurgEndosc. 2018 Mar;32(3):1525-1532. doi: 10.1007/s00464-017-5840-2. Epub 2017 Sep 15.A novel approach using the enhanced-view totallyextraperitoneal (eTEP) technique for laparoscopic retromuscular hernia repair.

# Principles

- minimal invasive
- closure of the defect
- restoration of the linea alba on the midline
- uncoated mesh placed outside the peritoneal cavity
- minimal or none fixation



# CONCLUSION

There are many available minimally invasive techniques for repair of ventral hernia. Surgeons should be proficient in most if not in all of them in order to accommodate to patient's needs and to be able to convert from one to another when necessary.