

# Laparoscopic Hernia Repair, Indications, Superiority and Outcome



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 **Nuffield Health**

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- Hernia Types & Epidemiology
- Mesh Evolution
- Techniques of Hernia Repair
- Superiority of Laparoscopic Repair
- Special Types of Hernia
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  - Parastomal Hernia Repair
  - Perineal hernia Repair

# Background

- **Astley Cooper ; 1804** has defined hernia as “a protrusion of a tissue, viscus or part of a viscus outside the cavity which normally contains it . Also known as rupture ! The protruded parts are generally contained in a sac-like structure, formed by the membrane with which the cavity is naturally lined”

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- Eubanks S. Hernias. In: Sabiston DC Jr, ed. *Textbook of Surgery: The Biological Basis of Modern Surgical Practice*. 1997.

## Epidemiology:

- 25% of males  
2% of females

Will have inguinal (Groin) hernias in their lifetimes representing the **most common hernia in males** and females

- 
- Rutkow IM, Robbins AW. Demographic, classificatory, and socioeconomic aspects of hernia repair in the United States. *Surg Clin North Am.* Jun 1993;73(3):413-26. [\[Medline\]](#).
  - Rutkow IM. Epidemiologic, economic, and sociologic aspects of hernia surgery in the United States in the 1990s. *Surg Clin North Am.* Dec 1998;78(6):941-51, v-vi. [\[Medline\]](#).

- **75%** of all hernias occur in the **groin**; two thirds of these hernias are indirect and one third direct
- **Incisional and ventral hernias** account for **10%** of all hernias

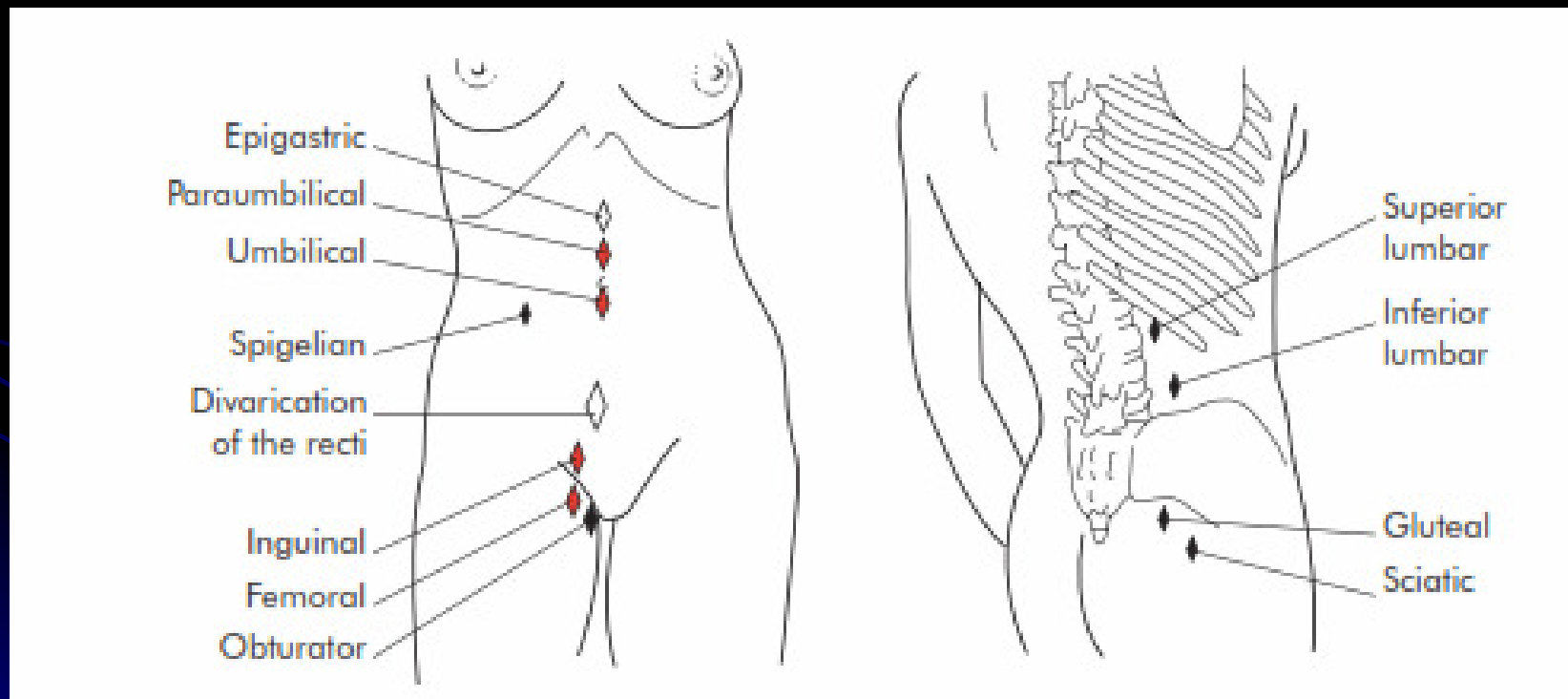
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Katz DA. Evaluation and management of inguinal and umbilical hernias. *Pediatr Ann.* Dec 2001;30(12):729-35. [\[Medline\]](#).

Matthews RD, Neumayer L. Inguinal hernia in the 21st century: an evidence-based review. *Curr Probl Surg.* Apr 2008;45(4):261-312. [\[Medline\]](#).

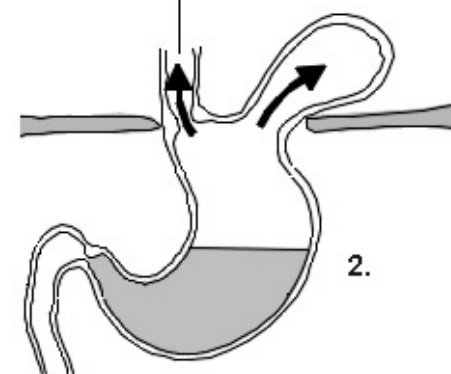
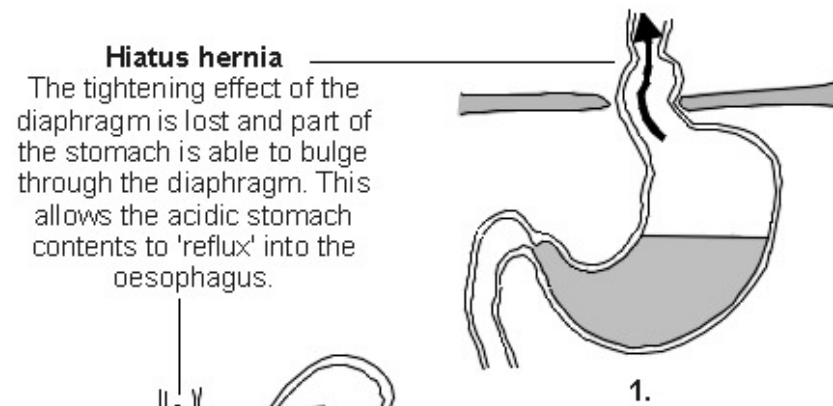
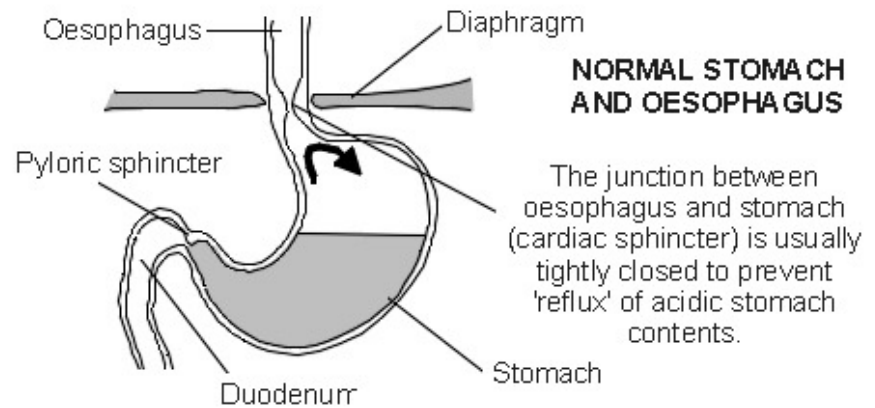
## Types & Names of Hernias:

- Spontaneous Hernias:



# Special Types & Names of Hernias

## “Hiatus Hernia”

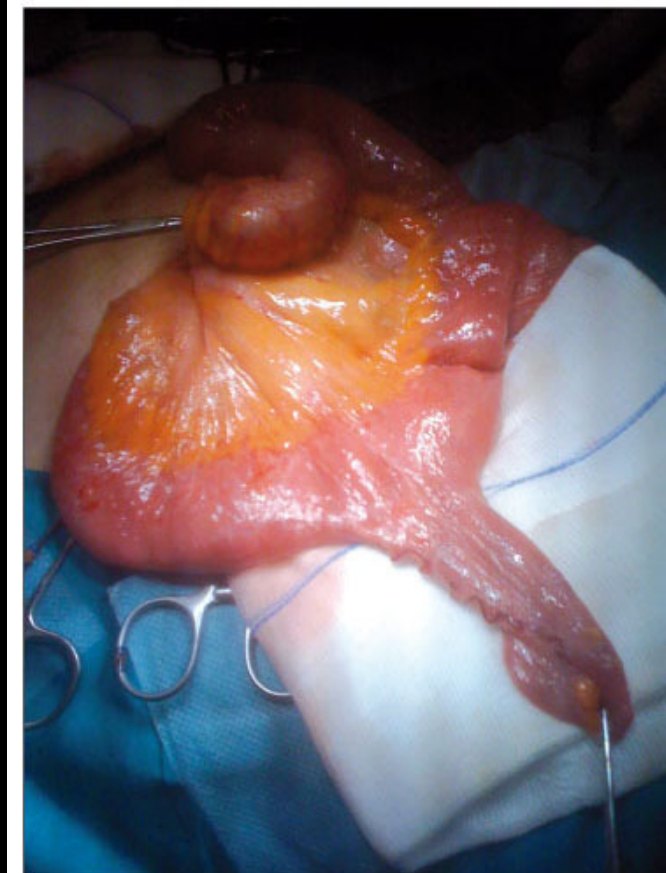
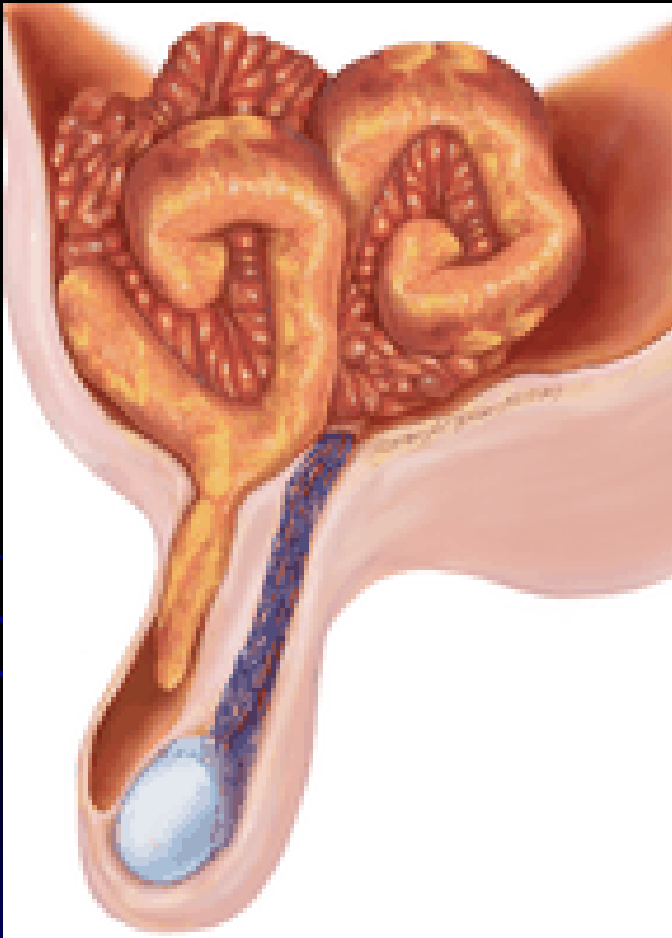


**HIATUS HERNIA**

**Types of hiatus hernia**

1. Sliding hiatus hernia
2. Rolling hiatus hernia

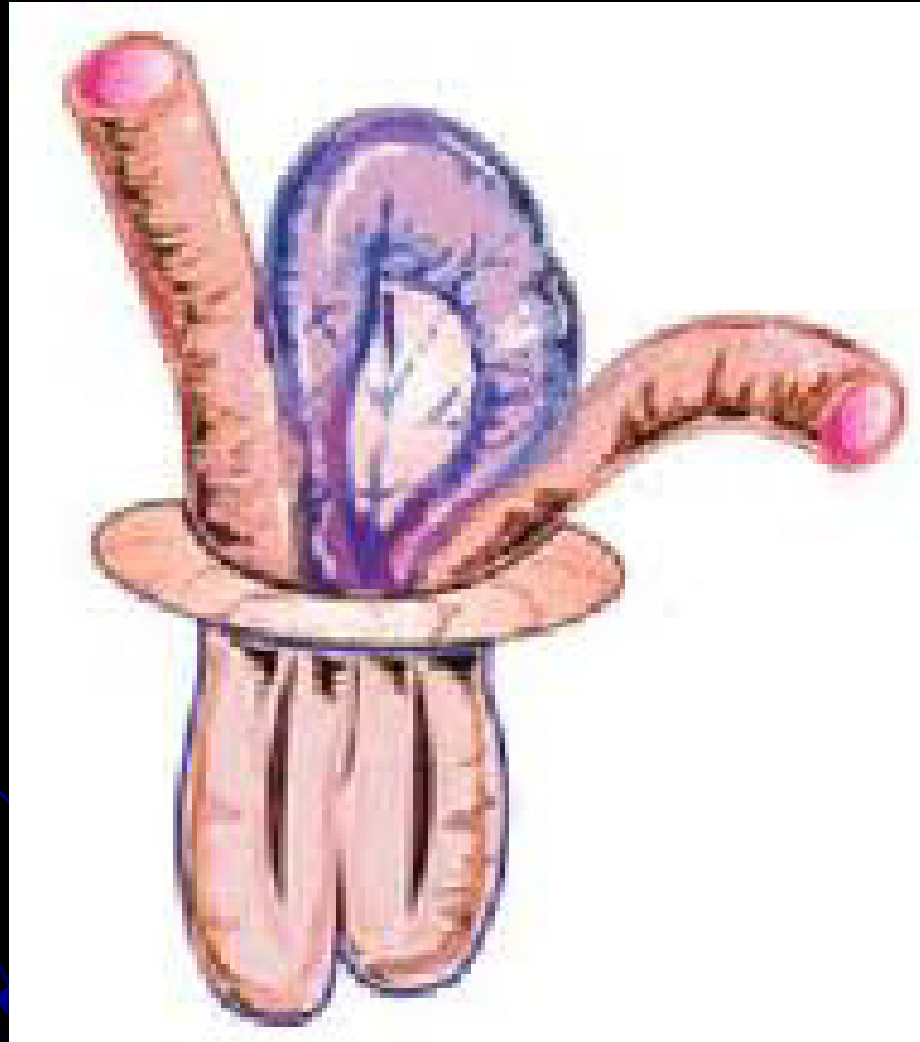
# Meckel's Diverticulum "Littre's Hernia"



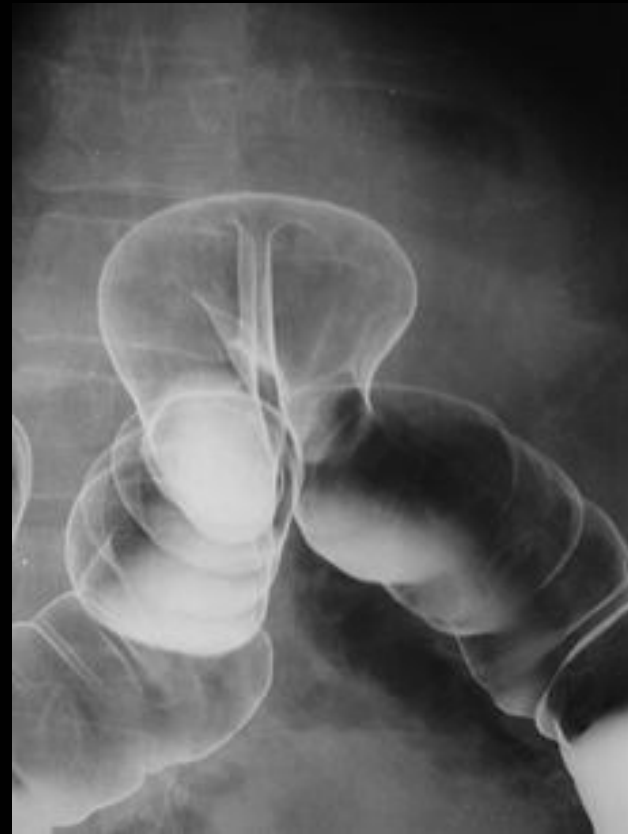
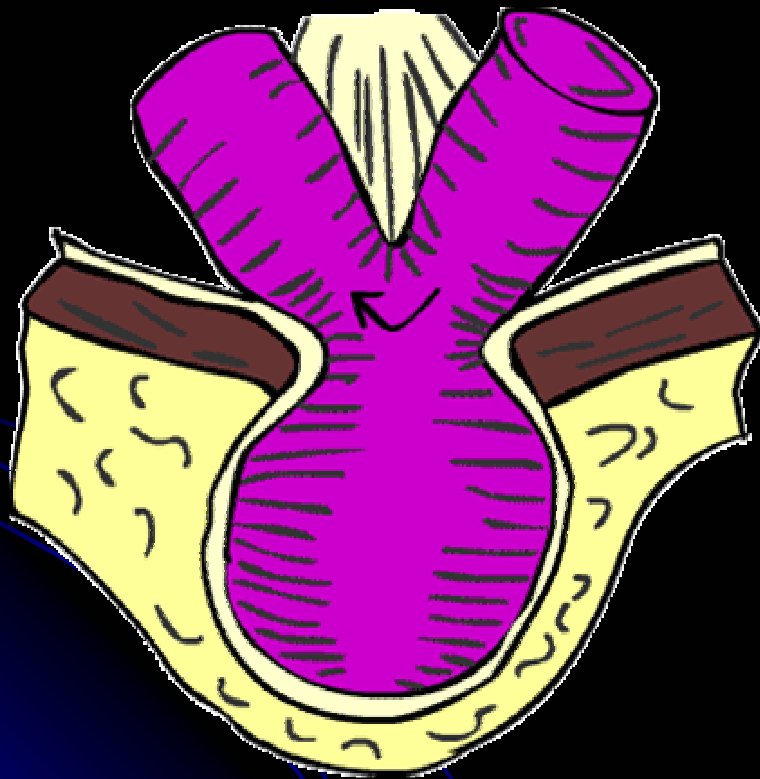
*Fig. 1. Hernia sac content: a large amount of small bowel with Meckel's diverticulum.*



## W-Shaped loop of small bowel: Maydl's Hernia



# Strangulated anti-mesenteric border of hernia “ Rickter's Hernia



## Greater Sciatic Notch “Gluteal Hernia”



Figure 1 - An enlarging herniation in the right buttock area, partially reducible.

# Superior Lumbar Triangle “Grynfelt's Hernia”



# Inferior Lumbar Triangle: Petite Hernia



Figura 1: Hérnia de Petit: tumor localizado na região lombar inferior direita.

Figure 1: Petit's hernia: tumor located in the right inferior lumbar triangle.







# Not only in Human but....



"No vet will operate on your dog," the couple's long-time vet procrastinated as the dog's backside swelled more. The dog is old and may die on the operating table. The surgery is risky too

The couple surfed the net and consulted me

"There will be a vet who will operate," I said. "The issue is whether you and your family will accept the high risk of anaesthetic death on the operating table."

"Is it 45% for one swelling?" the man asked me. "90% for two?"

"The risk of dying is above 60%" I said. "It depends on his health from the blood tests and examination."

Silkie Terrier, Male, Not Neutered, 10 years  
Difficulty in lying down and urinating and has loose stools.

**Perineal Hernias**  
toapayohvets.com  
July 13, 2011



# Prolapse [Rectal] :



Inflammation and tissue damage causes painful straining to pass stools, which can lead to rectal prolapse.



# Prolapse is also common in animals

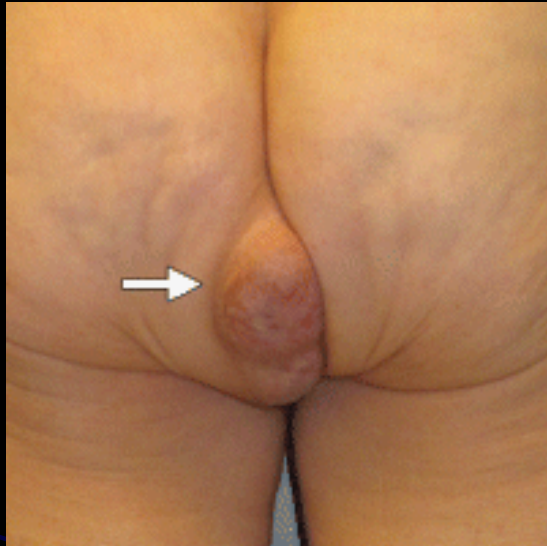


## B] Iatrogenic Hernia:

- Parastomal Hernia:



- Perineal Hernia:



# Hernia Repair:

- **Until 1958**, abdominal wall hernias were closed with primary suture repair
- In 1958, Usher published his technique using a polypropylene mesh
- This led to the Lichtenstein repair some 30 years later which popularised mesh for hernia repair
- Currently, about one **million** meshes are used per year world-wide.

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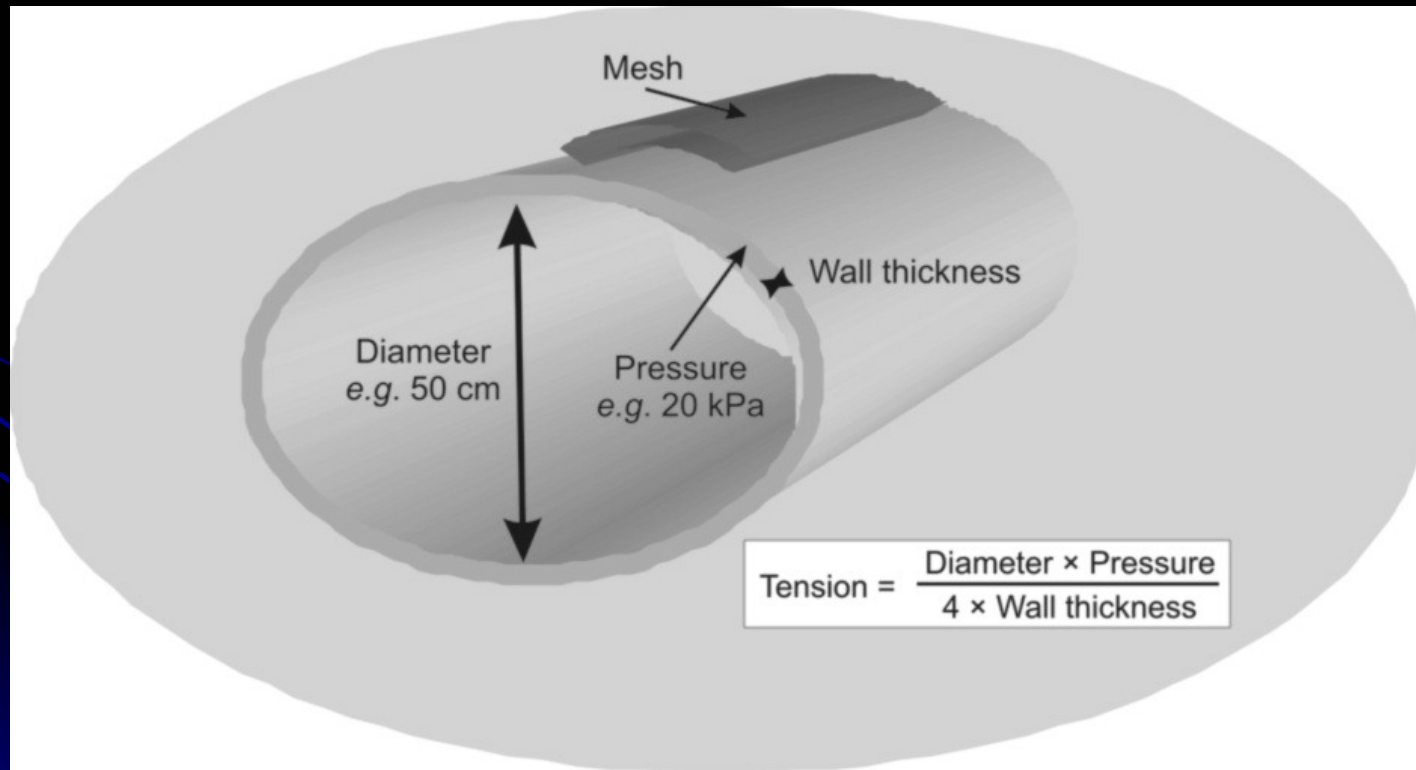
Klinge U, Klosterhalfen B, Birkenhauer V, Junge K, Conze J, Schumpelick V. Impact of polymer pore size on the interface scar formation in a rat model. *J Surg Res* 2002; **103**: 208–14.

- meshes have now virtually replaced suture repair in the developed world with few exceptions.
- The original logic behind using a mesh was very simple: the mesh was a material which could be used to **reinforce – Tension Free** - the abdominal wall with the formation of scar tissue. It was expected that the best meshes would be those made of very strong material and able to induce the most fibrosis.

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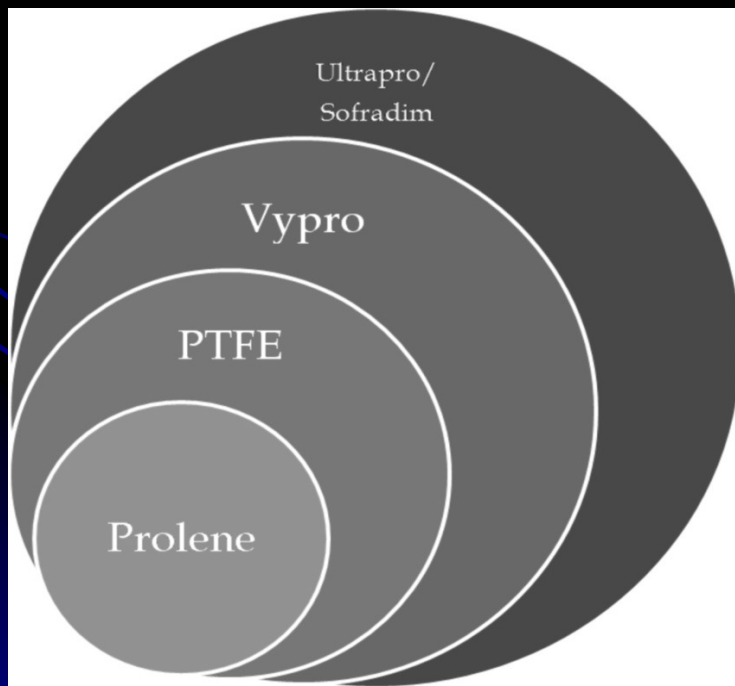
Nixon SJ, Jawaaid H. Recurrence after inguinal hernia repair at ten years by open darn, open mesh and TEP – no advantage with mesh. *Surgeon* 2009; 7: 71–4.

- Calculations of intra-abdominal pressures by the **law of Laplace**. proved that this would be possible without compromising mesh function.



- **SHRINKAGE**

- Shrinkage occurs due to **contraction of the scar tissue** formed around the mesh.
- Scar tissue shrinks to **about 60%** of the former surface area of the wound.
- The smaller pores of **heavy weight meshes lead to more shrinkage** due to the formation of a scar plate



Ultrapro < 5%,  
Sofradim < 5%.  
Vypro II 29%,  
PTFE 40–50%,  
Prolene 75–94%,



- There is **little** evidence that recurrence is related to the **type of mesh** used
    - Although it has been proposed that light-weight meshes have a higher risk due to their increased flexibility and movement
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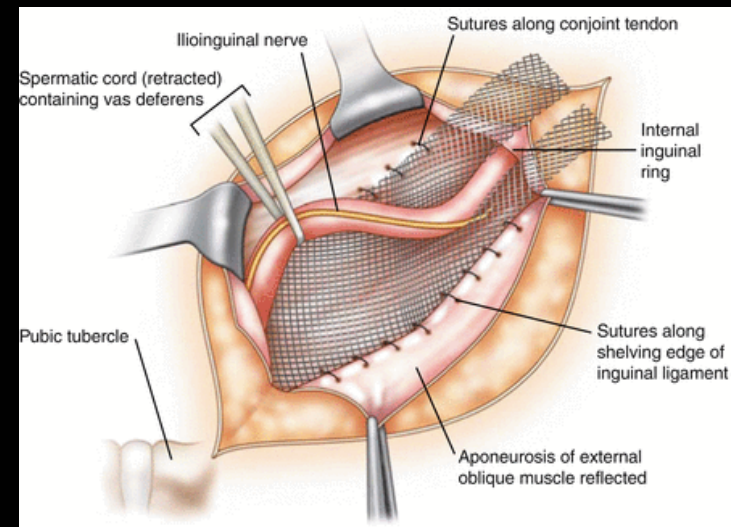
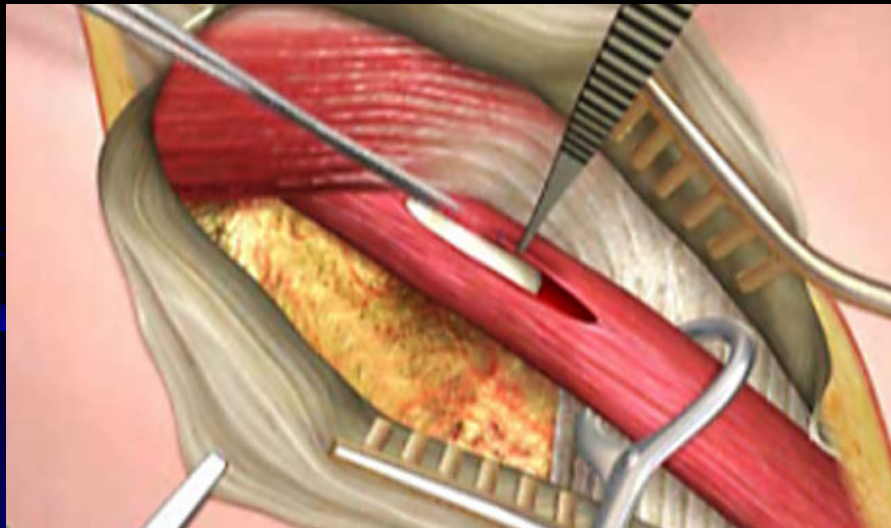
O'Dwyer, Kingsworth AN, Molloy RG, Small PK, Lammers B, Horeysek G. Randomized clinical trial assessing impact of a lightweight or heavyweight mesh on chronic pain after inguinal hernia repair. *Br J Surg* 2005; **92**: 166–70.

Klosterhalfen B, Junge K, Klinge U. The lightweight and large porous mesh concept for hernia repair. *Expert Rev Med Devices* 2005; **2**: 103–17.



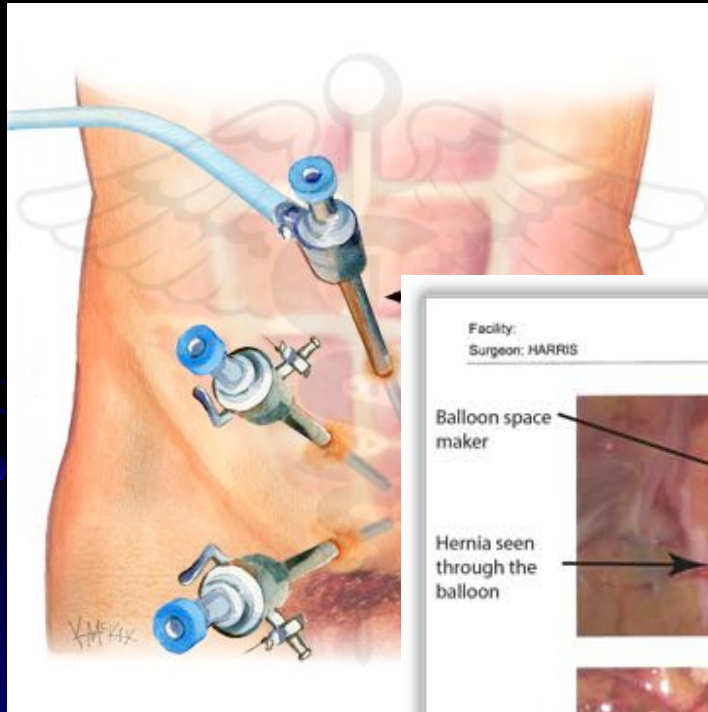
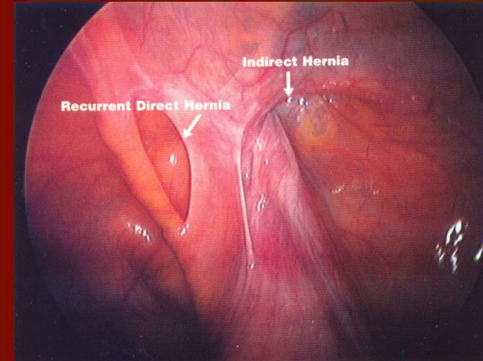
# Technique of Repair

- Open Hernia Repair:



- Laparoscopic (Keyhole) Hernia Repair:**

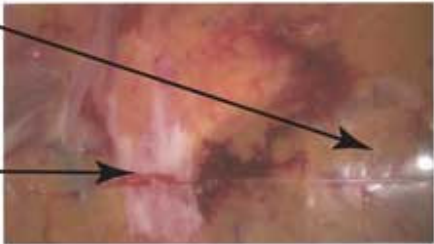

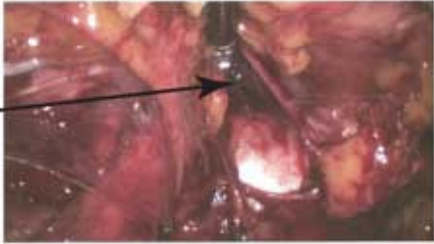

Trans-peritoneal Laparoscopic View



Facility: \_\_\_\_\_  
Surgeon: HARRIS

Laparoscopic inguinal hernia repair

stryker®

Balloon space maker		Balloon space maker	
Hernia seen through the balloon		Hernia seen through the balloon	
Hernia defect or hole in the muscle.		Lightweight mesh placed to cover the hernia	
Instrument in the defect			

CALIFORNIA  
HERNIA  
SPECIALISTS  
TODD S. HARRIS, MD

Nice, National Institute for Health and Care Excellence recommendation:  
<https://www.nice.org.uk/guidance/ta83/chapter/4-Evidence-and-interpretation>

## ● Laparoscopic Repair of Hernia:

A systematic review of the literature identified 37 randomised controlled trials (RCTs) that compared laparoscopic with open mesh repair of inguinal hernias in a total of 5560 participants.

### Outcome: Laparoscopic surgery was associated with

- Significantly **shorter time to return to usual activities** in all of the studies that measured this outcome.
- Statistically significant **reduction in persistent numbness** compared with open repair
- **Fewer cases of persistent pain** at 1 year post-operation after laparoscopic repair, compared with open repair
- Laparoscopic repair was associated with **fewer cases of wound-related infection and haematoma**.
- The rates of **recurrence were similar** for laparoscopic and open repair
- Laparoscopic surgery was associated with a statistically significant **increase in operation time** compared with open methods of hernia repair
- **Laparoscopic Hernia surgery was not cost effective for the NHS System**

## Recommendation of NICE:

<https://www.nice.org.uk/guidance/ta83/chapter/7-Implementation-and-audit>

1. If laparoscopic surgery is the right treatment for the repair of inguinal hernia, **it should be offered to** patients, in line with NICE's recommendations.
2. The individual undergoing repair of inguinal hernia is fully informed of all the **risks and benefits associated with open surgery and laparoscopic surgery** by both the TEP and TAPP procedures as part of the informed consent process
3. Laparoscopic Hernia Repair **should only be performed** by a surgeon who has **received appropriate training and regularly carries out the procedure.**
4. Laparoscopic Repair is recommended & Superior in **Bilateral Hernia**
5. Laparoscopic Repair is recommended & Superior in **Recurrent Hernia**

## Suitability for Laparoscopic Hernia Repair:

- **Fit for General Anaesthesia**
  - If **not fit**, **Local anaesthesia** can be recruited for open technique
- **Moderate to Large Size hernia**
  - **Large Inguino-Scrotal Hernias** should not be done Laparoscopic
- **Bilateral Hernia**
  - Very small incision to repair both sides with quicker recovery and better cosmetic and functional outcome
- **Groin Pain when diagnosis is not confirmed:**
  - Groin Exploration is better done Laparoscopic
- **Recurrent Hernia:**
  - Evidence that Laparoscopic Repair provide a better outcome.

- **Complications are much less :**

- Scar
- Bleeding
- Infection
- Seroma / Haematoma
- Recurrence
- Chronic Groin Pain

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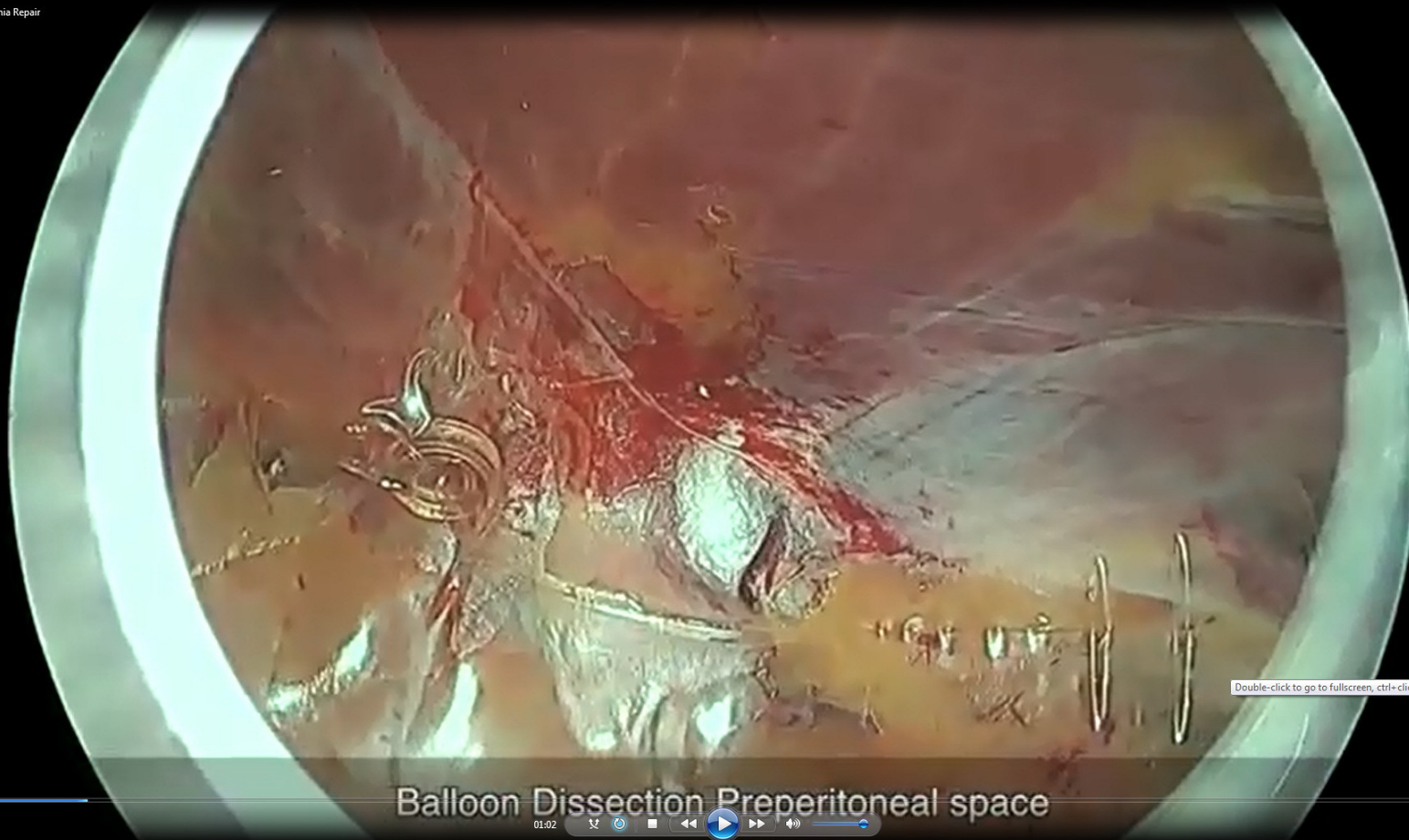
Poobalan AS, Bruce J, Smith WC, King PM, Krukowski ZH, Chambers WA. A review of chronic pain after inguinal herniorrhaphy. *Clin J Pain* 2003; **19**: 48–54.

Courtney CA, Duffy K, Serpell MG, O'Dwyer PJ. Outcome of patients with severe chronic pain following repair of groin hernia. *Br J Surg* 2002; **89**: 1310–4.



# Theatre Intervention

MP3 Lap Hernia Repair

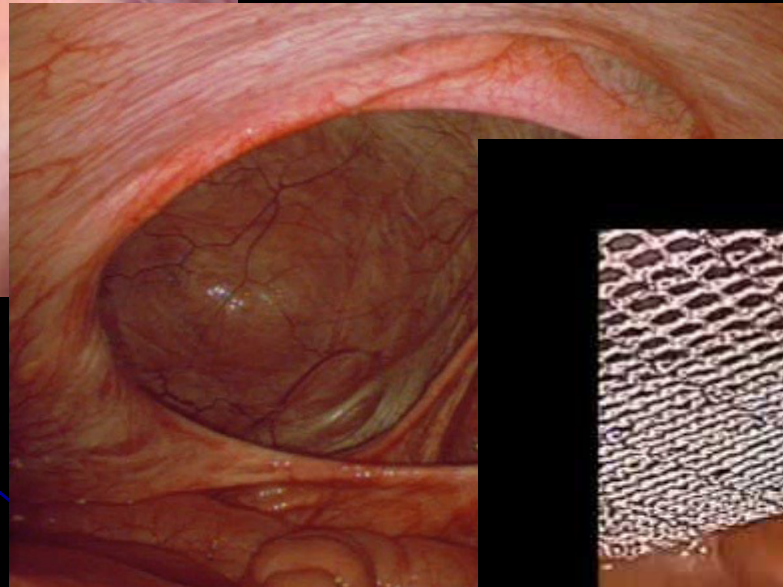
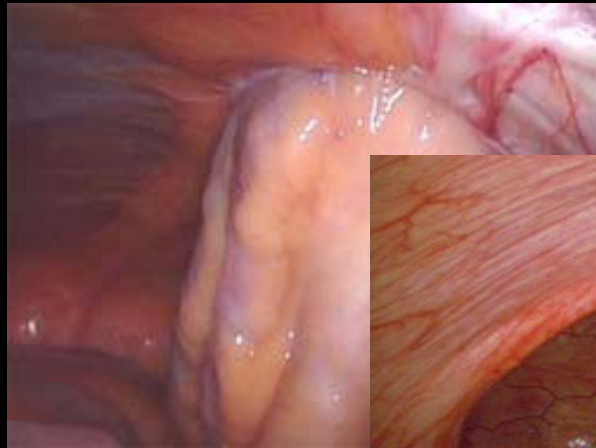


Double-click to go to fullscreen, ctrl+click to snap to video size

Balloon Dissection Preperitoneal space

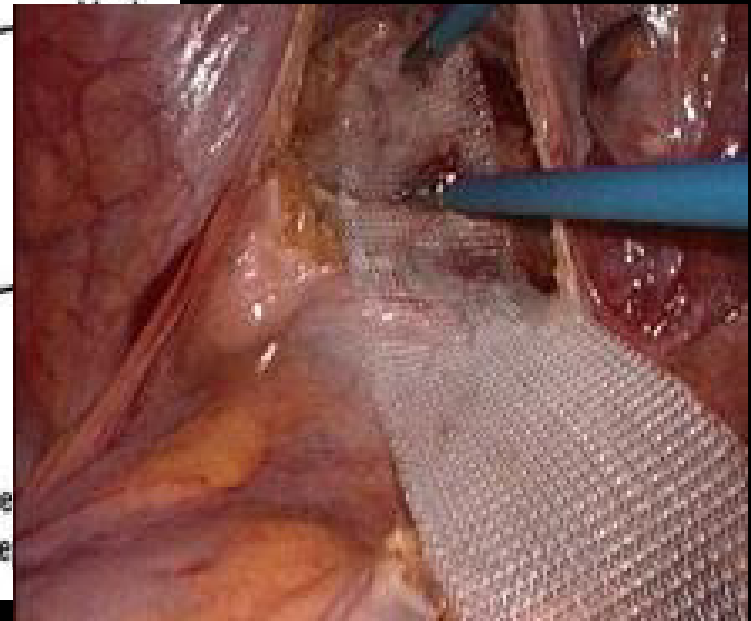
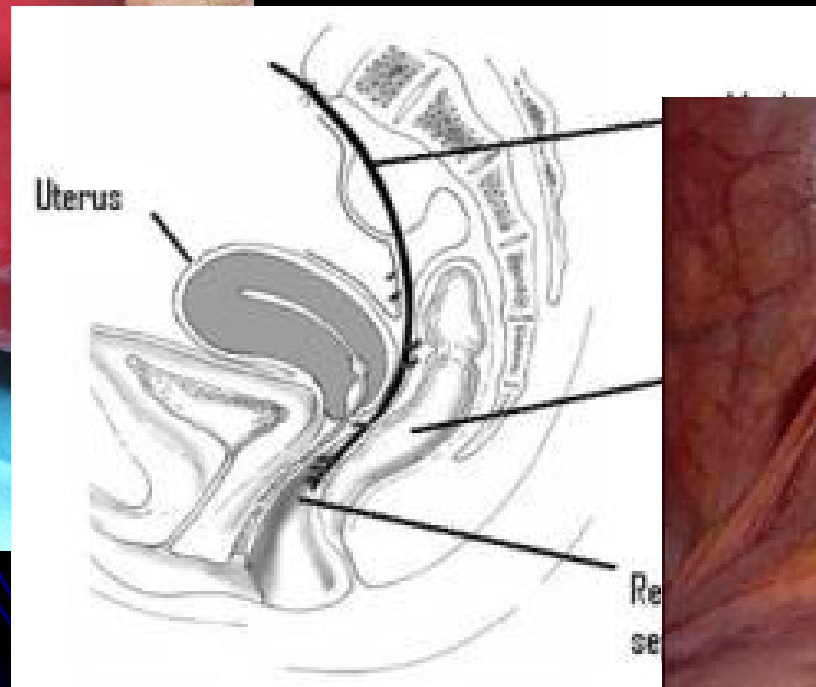
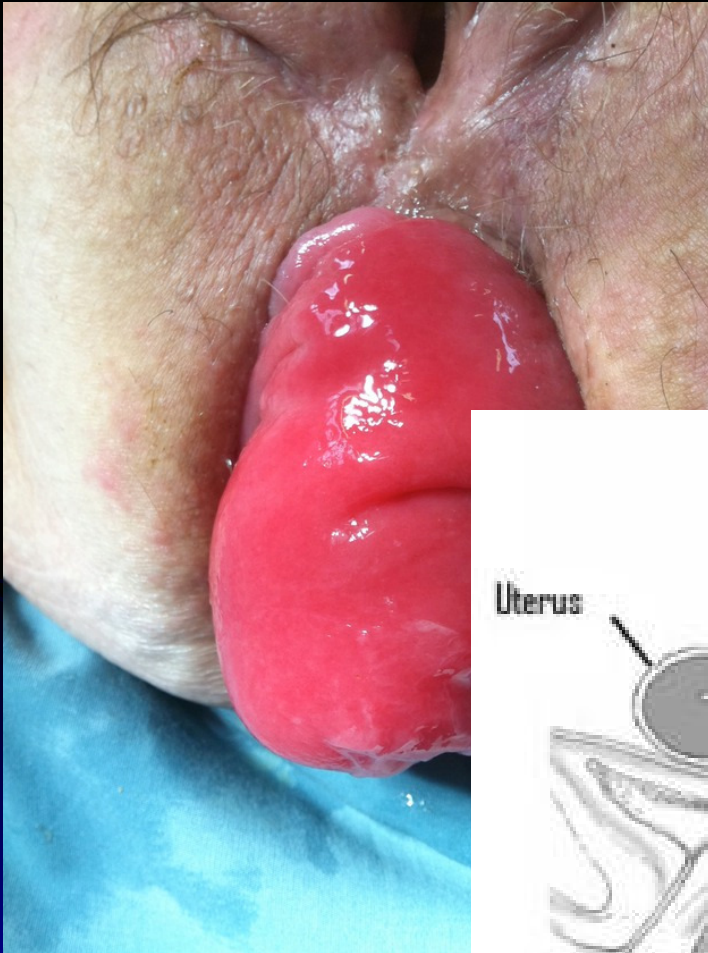
# Other Hernias

- Ventral Hernia / Umbilical Hernia :

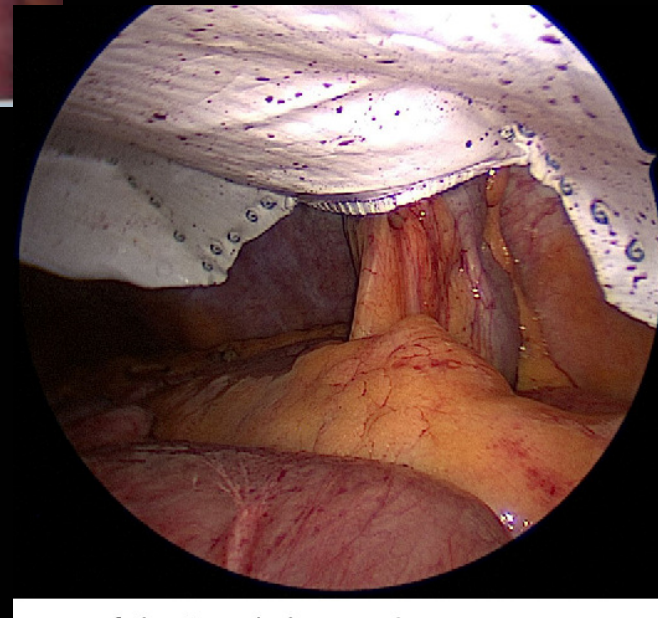
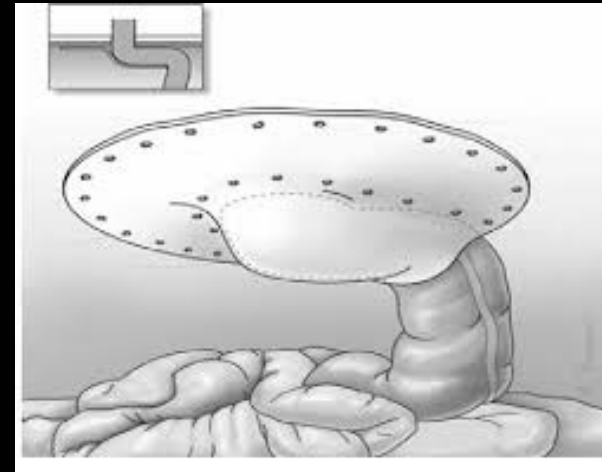




# Rectal Prolapse:



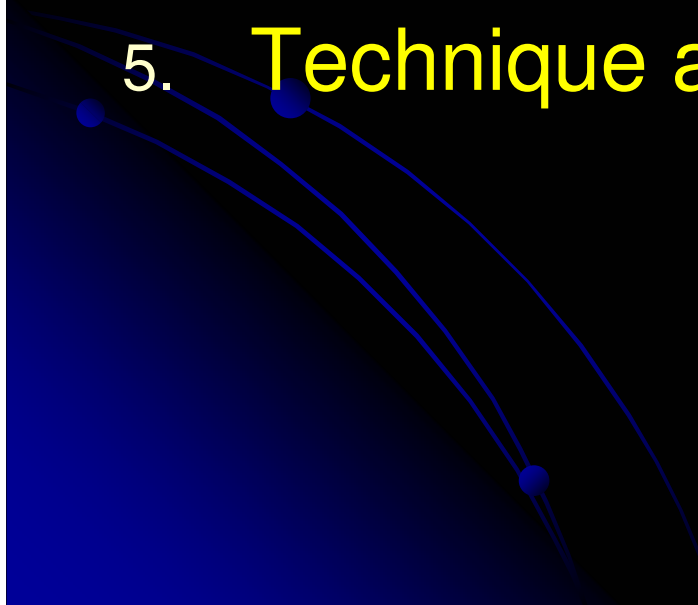
# Para-Stomal Hernia



# Which mesh should surgeons use?

- **light-weight mesh, with large pores and minimal surface area.** Ideally, it should consist of a monofilament , A polypropylene or polyester mesh is, therefore, usually suitable
- If the mesh is to be placed **inside the peritoneal** cavity, an attempt should be made to minimise adhesions by choosing a hybrid mesh with an absorbable surface
- In **infected wounds**, an absorbable / Biological mesh is preferred

# Do I need my Hernia Repaired ?

1. Symptoms
  2. Life Style & Work
  3. Complications: “Bowel Resection Risk”
  4. Size
  5. Technique and outcome
- 

# The Day of Surgery

## 10 Steps to a free life!

1. All are “Day case” procedure
2. Come to hospital, get admitted
3. Reviewed by Surgeon & Anaesthetist
4. Clerk / Mark / Consent
5. Operation 1-2 hours (Single/Bilateral)
6. Pressure Dressing / Scrotal Support
7. Home when pass Urine
8. Clinic Review in 4-6 Weeks
9. Discharge
10. Hassle Free Life

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January 30, 2017

Accuracy of magnetic resonance enterography in the preoperative assessment of patients with small bowel Crohn's disease  
January 24, 2017


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### Qualifications

- MBBCh. Cairo University 1995
- MSc. National Cancer Institute, International Directory of Cancer Institutes & Organizations 1999
- Ph.D. National Cancer Institute, International Directory of Cancer

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**Any Questions !!!**



**Thank You ...**