Laparoscopic Hernia Repair

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Advantages of Laparoscopic Ventral vs. Open Hernia Repair

- Lower wound infection rate: 2.6% vs. 5.8%
- Lower Mesh infection rates: 2% vs. 3.5%
- Recurrence rates: 4% vs. 16%
- Overall Complications: 23.2 vs. 30.2%.
- Drains not needed.

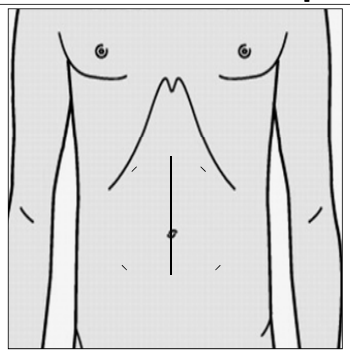
Several Different Types of Hernia

- Ventral Hernia
  - ✓ Umbilical
  - ✓ Epigastric
  - ✓ Spigellian
  - ✓ Incisional
- Inguinal Hernia
  - ✓ Direct
  - ✓ Indirect
- Paraesophageal Hernia
  - ✓ Four different types

Laparoscopic Ventral Hernia Repair

- Patient selection is very important
- If incisional hernia repair is needed, need full history of surgical procedures
- No ongoing infections, fistula, or open wounds can be present
- If loss of domain is present, laparoscopic approach may not be able to bridge the gap

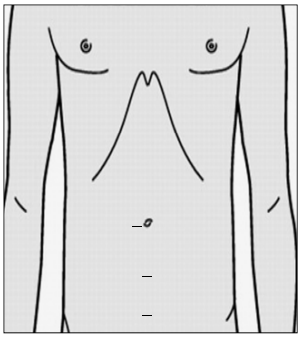
Trocar Placement for Laparoscopic Incisional Hernia Repair



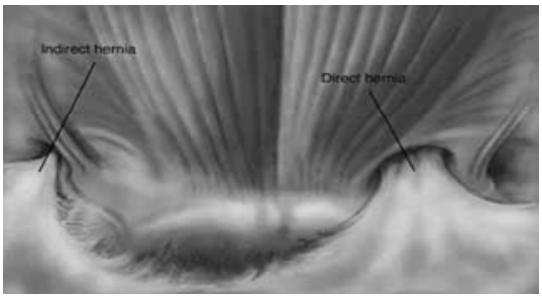
Laparoscopic Inguinal Hernia Repair

Author	Type of repair	Number of patients	Follow-up period	Complication rate (%)	Hernia recurrence rate (%)
Rutledge	McVay	906	9 years	NR	2.0
Amid	Lichtenstein	3,250	Average of 4 years (range: 1 to 8 years	NR	1.5
Rutkow and Robbins	Rutkow	2060	NR	0.3	0.1
Nyhus	Posterior Iliopubic tract repair	1200	37 years	NR	1-6
Felix	Transabdominal preperitoneal laparoscopic repair TAPP	733	24 months	13	0.3
Felix	Total extraperitoneal laparoscopic repair TEP	382	Average of 9 months	11	0.3

Trocar Placement

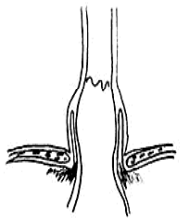


Inguinal Hernias

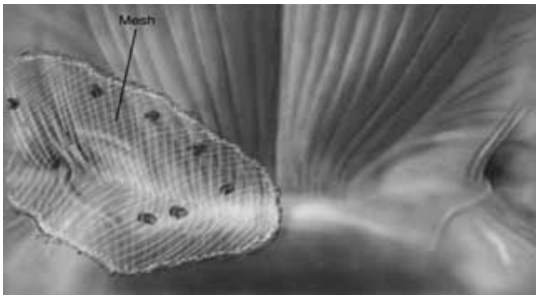


Paraesophageal Hernia

- Type I (sliding hernia)
- Upward migration of GE junction into posterior mediastinum
- Represent 90% of PEHs
  - Found in greater than 10% patients on routine GI studies
- Prevalent during third to fifth decades
- Often associated with symptoms of GERD

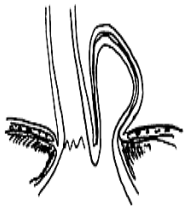


Inguinal Hernias



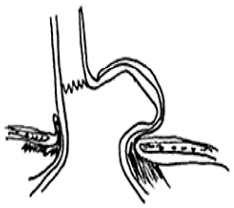
Paraesophageal Hernia

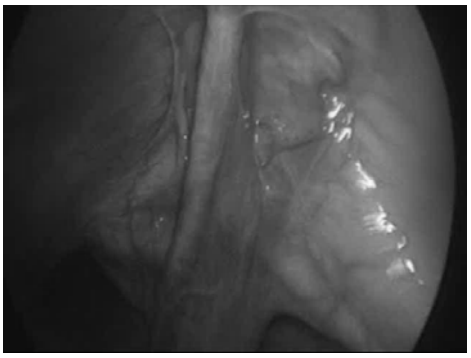
- Type II (rolling)
- Upward displacement of gastric fundus with *normal* positioned GE junction
- Less than 2% of all HHs
- Common symptoms include postprandial fullness/pain, nausea, dysphagia and heartburn
- Can present with anemia and pulmonary dysfunction less commonly



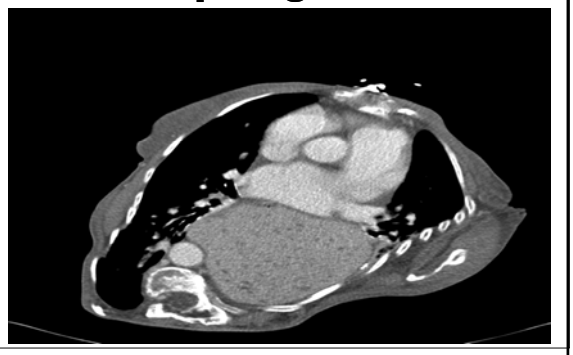
Paraesophageal Hernia

- Type III (mixed)
- About 5% of all HHs
- Combines type I and type II
- Symptoms similar to type II
- Most prevalent in fifth to sixth decade
- Most commonly on left side of diaphragm
- Divided into Type 3A (natural) and Type 3B (postoperative/iatrogenic)
- Type IV contains omentum/colon





Paraesophageal Hernia



Laparoscopic Hernia Repair

- Lots of different types of hernias
- Many can be fixed using laparoscopic techniques
- Patient selection is important
- Surgical wisdom comes in knowing when not to operate

Abdominal Wall Reconstruction

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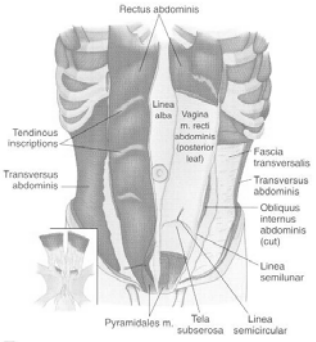
Ventral Hernia Repair Principles

- **Incorporation of the remaining abdominal wall in the repair**
- **Tension-free**
- **Dynamic muscular support**

Muscle and Investing Fascia



Abdominal Wall Reconstruction

- **Autologous tissue rearrangement**
- **Prosthetic or bioprosthetic materials**
- **Structural anatomy should be integrated with understanding the dynamic function of the abdominal wall.**

Treatment Options

- Primary Repair
- Mesh
- "Components Separation" with and without mesh
- Local flaps and Free tissue transfer
- Staged repair

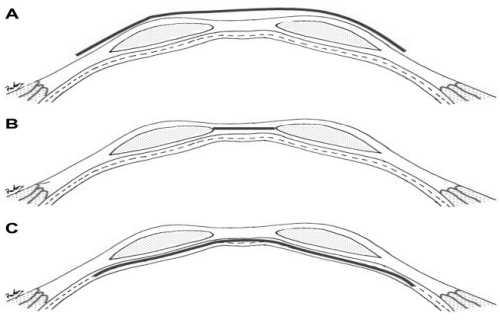
Mesh

- Nonabsorbable: Polypropylene / Polyester / PTFE
- Bioprosthetic
- Anchor mesh to well vascularized tissue
- Complications:
  - ✓ Seroma, Infection, fistula formation, erosion, & continued drainage

Primary Repair

- Patient selection
- Limited to small defect
- Highest recurrence rate
- Tension leads to ischemia and failure

Mesh Placement



Onlay Technique

- Still most popular
- Milliken survey : 1/2 of surgeons use this repair without closing the fascial defect.
- The disadvantages:
  - ✓ Wide tissue undermining predisposes to wound complications
  - ✓ The pressure required to disrupt the mesh from the anterior abdominal wall is less than other repairs

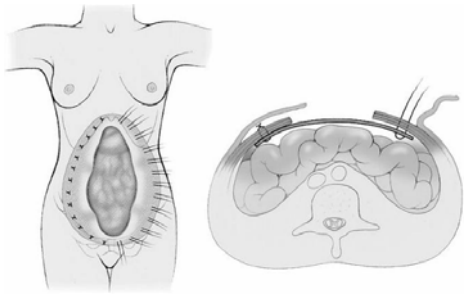
Intraperitoneal Underlay Placement

- Open and laparoscopic.
- Large overlap allows for better tissue ingrowth
- Different Fixation techniques
- Recurrence 5%

Inlay Technique

- Provides for a tension-free repair at the time of surgery
- No undermining of the onlay repair
- Intra-abdominal pressure - tension to the mesh-fascial interface, which is the weakest point of the repair

Open Intraperitoneal Underlay



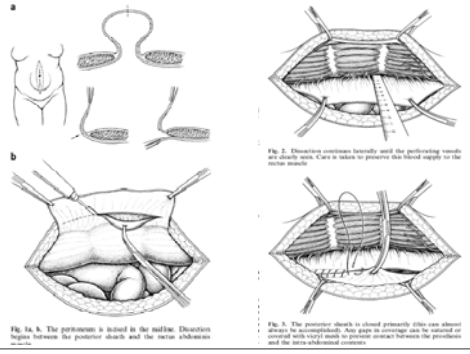
Retrorectus, Retroperitoneal Underlay

- Rives and Stoppa
- Mesh - above the posterior rectus sheath and beneath the rectus muscle
- Overlap between the mesh and fascia
- Distribution of pressure over a wider area (Pascal's principle),
- Pressure-induced apposition promotes ingrowth
- Physiologic repair

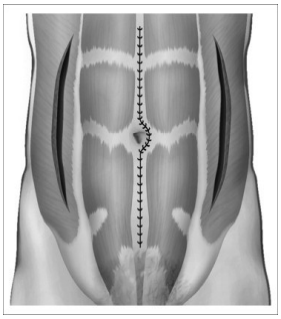
Components Separation

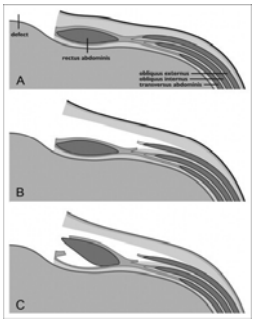
- Oscar Ramirez (1990) :
  - ✓ Cadaveric dissection
  - ✓ Incision 1cm lateral to linea semilunaris
  - ✓ Ext oblique (easily separated from internal oblique in avascular plane
  - ✓ Rectus flap can be advanced
    - 5cm epigastrium
    - 8-10cm middle
    - 3cm suprapubic

Rives-Stoppa Repair



Open Components Separation



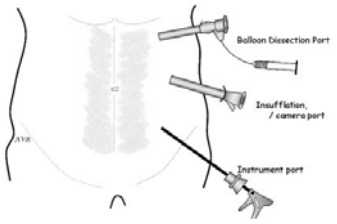


Open Component Separation

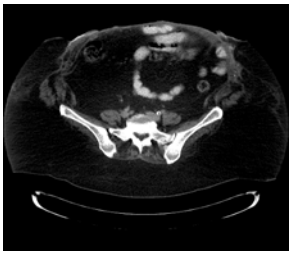
- **Rectus muscle medialization - restores dynamic abdominal wall function**
- **Cosmetic improvement -excision of excess tissue**
- **Drawback – large flap dissection with devascularization**

Minimally Invasive Component Separation

- **Rectus Abdominis Perforators Preservation Significantly Reduces Wound Complications**



When laparoscopic approach is not an option



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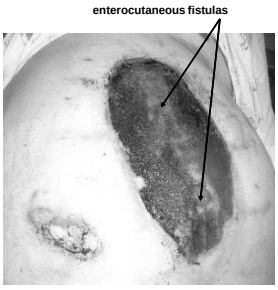

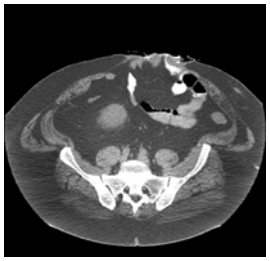

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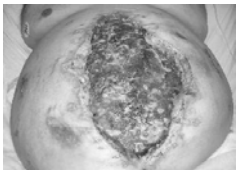

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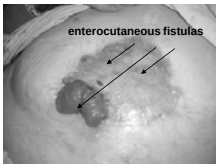

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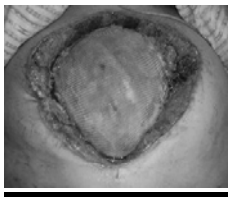
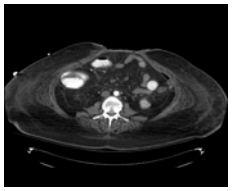
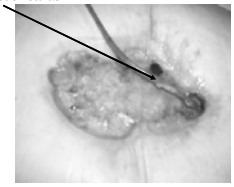
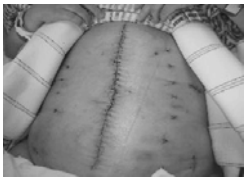




enterocutaneous fistulas





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