Ventral Abdominal Wall Hernias: What the Surgeon Wants to Know

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Target Audience:

Any radiologist or radiology trainee interpreting abdominal CTs

Goals:

• Anatomy of anterior abdominal wall including potential sites for defects that give rise to hernias
• Types of ventral abdominal wall hernias
• Complications of ventral abdominal wall hernias
• Types of surgeries
• Post surgical complications
Anatomy of Ventral Abdominal Wall with Potential Sites Of Herniation

- Herniation of abdominal contents from defect or a point of weakness in the abdominal wall is a ventral abdominal wall hernia.
- Potential sites of herniation include the umbilicus, weakness/defect in linea alba which is formed from the fusion of external and internal oblique aponeurosis and at the semilunar line which is the line of separation of rectus abdominis from the oblique muscles.

Axial CT of abdominal wall above the arcuate line of Douglas

Axial CT of abdominal wall at the level of umbilicus

Axial CT of abdominal wall below arcuate line of Douglas

- External Oblique Muscle
- Internal Oblique Muscle
- Transversus abdominus
- Rectus muscle
- Linea alba
- Semilunar line
- Umbilical Hernia
- Epigastric Hernia
- Infra-umbilical Hernia
- Spigelian Hernia
Types of Ventral Abdominal Wall Hernias

- Epigastric Hernia
- Right Spigelian hernia
- Umbilical Hernia
- Left Para-umbilical hernia
- Incisional Hernia from Ileostomy reversal
- Left parastomal hernia
**Types of Mesh Repair**

**On-lay Technique**
- Mesh is placed anterior to the fascia.

**Sub-lay Technique**
- Mesh is placed posterior to the fascia.

**Retro-rectus Repair**
- Mesh is posterior to rectus muscle and anterior to posterior rectus sheath.

**Pre-peritoneal Technique**
- Mesh is placed posterior to posterior rectus sheath.

Mesh images courtesy - https://en.dyna-mesh.com/
Complications of Hernia Repair

**Site Infection**
Extensive stranding in the skin and subcutaneous tissues of anterior abdominal wall following on-lay technique of repair

**Enterocutaneous fistula**

**Postoperative seroma**
Low-density collection after 3 weeks of sublay approach of hernia repair consistent with seroma

**Hematoma**

**Abscess**
Retro-rectus repair complicated by abscess in right lower quadrant (orange arrow) anterior to the mesh

**Mesh folding**
Sublay technique complicated by folding of mesh and recurrent hernia

**On-lay repair** complicated by abscess (orange arrow) posterior to the mesh and enterocutaneous fistula (green arrow)

**Sublay approach** complicated by hematoma with intraperitoneal extension
Complications of Hernia Repair

**Intra-peritoneal abscess**

Ventral wall hernia in a 56-year-old woman containing incarcerated bowel loops which was repaired with sublay approach of mesh placement. Post surgical images show large intra-peritoneal abscess (yellow arrows) that developed under the mesh within a week of surgery.

**Postoperative hematoma with intra-peritoneal extension**

Ventral wall hernia in a 73-year-old woman repaired by sublay approach was subsequently complicated by post-operative hematoma (yellow arrows). There was no active bleeding on CT angiogram. IR guided drain was placed to drain the hematoma. Follow up imaging 2 months after drain placement shows mild decrease in the size of collection which is still persistent.

**Conclusion**

There are different approaches of hernia repair associated with specific complications that radiologists need to know.

**References**