

Umbilical Hernias: Causes, Symptoms, Diagnosis, and Treatment

Introduction

Umbilical hernias, also known as periumbilical hernias, are common primary ventral hernias at the umbilical ring, the natural opening in the abdominal wall through which the umbilical cord passes. In adults, umbilical hernias are typically acquired and result from increased intra-abdominal pressure. While they are often small and asymptomatic, if untreated, umbilical hernias can progress to cause pain, discomfort, and complications such as bowel obstruction or ischemia.

What is an Umbilical Hernia?

An umbilical hernia occurs when abdominal contents, such as omentum or bowel, protrude through a weakened area in the umbilical ring. Increased pressure within the abdomen due to obesity, pregnancy, abdominal distension, or ascites can cause or exacerbate these hernias. Anatomical variations in the structure of the umbilical ring may also predispose certain individuals to hernia formation.

- **Prevalence:** Umbilical hernias are common, with studies indicating a prevalence of 23-50% in screened individuals.
- **Demographics:** These hernias are more prevalent in females than males, with a 3:1 ratio. Men, however, are more likely to experience incarcerated hernias, while women with normal or low body weight often have reducible (non-incarcerated) hernias.

Risk Factors and Causes

Umbilical hernias in adults are most commonly acquired, with risk factors including:

- **Obesity:** Increased weight places added pressure on the abdominal wall.
- **Pregnancy:** Expanding abdominal size and pressure increase the likelihood of hernia formation.
- **Ascites:** Accumulation of fluid in the abdomen raises intra-abdominal pressure.
- **Abdominal Distension:** Chronic bloating or distension adds strain to the abdominal muscles.
- **Cirrhosis:** Patients with liver disease and ascites are at higher risk due to the combination of increased abdominal pressure and poor tissue healing.

Symptoms and Clinical Presentation

Umbilical hernias may present with a variety of symptoms depending on size and content:

- **Soft Mass Around the Umbilicus:** A palpable mass may be present at, above, below, or to one side of the umbilicus. This bulge can often be reduced (pushed back) unless the hernia is incarcerated.
- **Pain or Discomfort:** Tenderness is common, especially when pressure is applied, though some hernias are asymptomatic without provocation.
- **Complications:**
 - **Omental Strangulation:** Trapped omentum can cause chronic pain.
 - **Bowel Incarceration:** If a segment of the intestine is trapped, symptoms may include nausea, vomiting, and signs of bowel obstruction or ischemia.

Umbilical hernias are classified by size as:

- **Small:** Less than 1 cm
- **Medium:** Between 1 and 4 cm
- **Large:** Greater than 4 cm

Diagnostic Evaluation

Diagnosis of an umbilical hernia is typically based on physical examination. A soft mass that protrudes during straining or coughing and may be tender to touch is often palpable around the umbilicus. Larger hernias may present with skin changes like erythema, ulceration, or even ischemia if strangulation occurs. Imaging, such as ultrasound or CT scan, may be used to evaluate the hernia's size and contents, particularly if complications are suspected.

Treatment Options

Management of umbilical hernias depends on the hernia's size, symptoms, and risk of complications.

1. **Conservative Management:**
 - **Watchful Waiting:** Small, asymptomatic hernias can be observed, especially in pregnant or asymptomatic patients.
 - **Special Populations:**
 - **Pregnancy:** Asymptomatic umbilical hernias in pregnant women are generally managed with watchful waiting until after delivery.
 - **Cirrhotic Patients:** The repair of umbilical hernias in patients with cirrhosis and ascites is challenging, requiring careful consideration of timing and technique.
2. **Surgical Repair:** Surgery is the primary treatment for symptomatic or complicated hernias, and it can be performed using open or laparoscopic techniques.
 - **Open Repair:**
 - **Incision and Dissection:** A vertical or curvilinear incision is made over or next to the hernia sac, and the sac is carefully dissected to its fascial attachments.

- **Hernia Sac Management:** The hernia sac can be inverted or excised, and the fascia is closed with nonabsorbable sutures.
 - **Mesh Reinforcement:** If the hernia is larger than 1 cm or under high tension, mesh reinforcement is recommended to reduce the risk of recurrence. The mesh can be placed beneath the fascia (sublay) or over the fascia (onlay) and is secured with sutures to prevent migration.
 - **Aesthetic Considerations:** Surgeons often take care to tack the skin of the umbilicus to the fascia, recreating a cosmetically appealing umbilicus.
 - **Laparoscopic Repair:**
 - **Indications:** Laparoscopic repair is generally reserved for larger hernias, patients with obesity, or when multiple defects are suspected.
 - **Technique:** The procedure is similar to other ventral hernia repairs, using mesh to reinforce the defect, and allows for a minimally invasive assessment of bowel viability if incarceration is suspected.
- 3. **Surgical Approach Based on Hernia Size:**
 - **Small Hernias (<1 cm):** Can often be closed with sutures alone.
 - **Larger Hernias (>1 cm):** Require mesh reinforcement to prevent recurrence, particularly in patients with coexisting rectus abdominis diastasis (RAD).
- 4. **Recurrence Rates:** Umbilical hernia repair with mesh has a low recurrence rate (0-3%), whereas sutured repairs may see recurrence rates as high as 14%. For patients with Rectus abdominis diastasis, mesh repair is recommended as suturing the linea alba alone may increase recurrence rates.

Complications and Special Considerations

Umbilical hernias can cause significant complications if untreated:

- **Bowel Obstruction and Ischemia:** Incarcerated hernias containing bowel can obstruct and lose blood supply, leading to ischemia.
- **Rectus Abdominis Diastasis (RAD):** RAD, a separation of the rectus muscles, is often present in obese patients or those with weakened abdominal muscles. To reduce recurrence, surgeons should assess for RAD and consider mesh repair if the umbilical hernia coexists with RAD.

Conclusion

Umbilical hernias are a common type of ventral hernia that affect adults, especially women, and often arise from increased intra-abdominal pressure. While small, asymptomatic hernias may be managed conservatively, symptomatic or larger hernias typically require surgical intervention. Open and laparoscopic repair techniques offer effective solutions, with mesh reinforcement recommended to prevent recurrence. Understanding the risk factors, symptoms, and treatment options for umbilical hernias helps guide individualized care, ensuring optimal outcomes and minimizing complications for affected patients.