

Hernias

Abdominal Wall Reconstruction and Hernias

An abdominal hernia is any full-thickness defect or weakness in the wall of the abdomen that may allow protrusion of abdominal contents.

Organ herniation through a ring of tissue confined within the abdominal cavity, such as a diaphragmatic hernia or organ displacement through a mesenteric rent, is considered an internal abdominal hernia.

A hernia is composed of a ring (the anatomic limits of the wall defect), sometimes a sac, and the protruding contents.

The ring may be confined within a normal aperture in the abdominal wall (**considered a true hernia**) or may occur in other areas (**false hernias**) as a result of trauma or through a disrupted surgical approach (an acquired hernia).

Very large hernial rings or small defects rarely cause clinical problems; however, hernias just large enough to entrap viscera and obstruct blood supply to the contents (strangulation) are most dangerous to the patient.

Contraction of scar tissue at the hernial ring during the healing process may cause a delay in onset of clinical signs as the organs become entrapped (incarcerated) or obstructed. Whereas in developmental (congenital) hernias, the hernial sac is a mesothelial membrane (peritoneum) covering the contents, in acute traumatic or incisional hernias, no sac is present.

Types of the Hernia

- 1, Paracostal hernia;
- 2, dorsal lateral hernia;
- 3, inguinal hernia;

- 4, cranial pubic ligament rupture;
- 5, femoral hernia;
- 6, umbilical hernia;
- 7, ventral hernia (subxiphoid);
- 8, scrotal hernia

PRINCIPLES OF ABDOMINAL HERNIA REPAIR

The main goals of hernia repair are to

- (1) ensure the viability of entrapped hernia contents;
- (2) release and return viable hernia contents into their normal location within abdominal cavity;
- (3) obliterate redundant hernia sac tissue
- (4) provide a tension-free and secure primary closure of the defect using strong, healthy surrounding tissue.

Umbilical Abdominal Hernias

The umbilical hernia found in the normal opening of the umbilical cord (umbilical blood vessels, small vitelline duct, and stalk of the allantois), which remains after normal migration and fusion in normal condition.

Clinical Signs.

Umbilical hernias usually appear as a soft, round mass or swelling at the umbilical scar. The swelling may feel firm if fat or another structure becomes entrapped and irreducible.

Animals with acute gastrointestinal signs (vomiting, anorexia) and a firm, irreducible, painful umbilical mass may have entrapped viscera causing obstruction.

Diagnosis.

Owners usually identify animals with obvious, large umbilical hernias soon after birth. A patient's history and location of the lesion usually leave little doubt about the diagnosis, although smaller hernias require careful inspection and palpation. Examination of the animal in dorsal recumbency facilitates reduction of the contents of the hernia and hernial ring palpation.

Treatment.

Most small, reducible umbilical hernias in dogs and cats contain only falciform fat and are of little clinical significance. Initially, healthy puppies with small (<2 to 3 mm) hernias are not treated because spontaneous closure has been reported as late as 6 months of age.

Inguinal Hernias

Inguinal hernias are less common than umbilical hernias. They result from a defect in the inguinal ring through which abdominal contents protrude.

Congenital inguinal hernias in dogs and cats are rare,

Anatomy and Pathogenesis.

The vaginal process, which contains the spermatic cord in males or the round ligament in females, passes through openings in the caudoventral abdominal wall known as inguinal rings.

In both sexes, the genital branch of the genitofemoral nerve, artery, and vein and the external pudendal vessels pass through the caudomedial aspect of the canal.

Clinical Signs.

Affected animals usually present with a painless, unilateral or bilateral mass with a soft, doughy consistency. In dogs, more unilateral inguinal hernias occur on the left side than on the right.

The external appearance may vary, depending on the amount of vascular occlusion and the nature of the contents. Inguinal hernias may be undetectably small. Large hernias may contain a gravid uterus (hysterocele),

Scrotal Hernia

Scrotal hernias are indirect hernias that result from a defect in the vaginal ring, allowing abdominal contents to protrude into the vaginal process alongside spermatic cord contents. Herniated organs within the vaginal process do not necessarily have to extend as far distally as the scrotum for the condition to be considered a scrotal hernia. Strangulation of contents occurs more frequently in male dogs with scrotal hernias than in females with indirect inguinal hernias.

Clinical Signs

Presenting signs of scrotal herniation result from protrusion of abdominal contents through the vaginal process, causing pain, swelling, and frequently organ dysfunction. Scrotal hernia is predominantly unilateral, with equal occurrence on both sides, although several bilateral cases have been reported.

Femoral Hernias

Femoral hernias are characterized by protrusion of fat or abdominal contents through a defect in the femoral canal. The femoral canal is frequently confused with the inguinal ring, presumably because of their close proximity. Because of differences in anatomy, however, repair of this hernia is different from repair of inguinal hernias. The femoral canal is in the caudal abdominal wall just lateral to the inguinal ligament.

Clinical Signs

Femoral hernias often have an appearance similar to inguinal hernias. Hernial swelling generally develops on the medial aspect of the thigh but may also extend into the inguinal area. As with other hernias, the size and consistency of the swelling depend on the herniated contents and the amount of vascular obstruction at the hernial ring.

Diagnosis

Femoral herniation may be diagnosed by careful palpation of the femoral ring after reduction of the herniated contents into the abdomen. If reduction is not possible, differentiation from other inguinal masses may be difficult. Standing the animal on its hindlimbs may facilitate palpation. Whereas inguinal hernias are palpated medially and cranially to the pelvic brim, femoral hernias are caudal to the inguinal ligament and ventrolateral to the pelvic brim. Diagnostic aids are similar to those for other abdominal hernias.

Treatment

Knowledge of the femoral canal and regional anatomy is essential for successful surgical repair. Vital regional structures must be protected and isolated during hernia repair. Because femoral hernias are frequently mistaken for inguinal

hernias, surgeons should be ready to repair either hernia when the definitive diagnosis is uncertain, particularly when there has been a recent history of trauma.

Traumatic Hernia

Sharp trauma (bite wounds, gunshots, knife stabs) may cause herniation anywhere in the abdominal wall. Animal fight wounds are more likely to cause multiple hernias in the dorsal or lateral abdominal wall. Sharp trauma is frequently associated with tears, perforation, and laceration of intraabdominal structures; therefore, patients with penetrating abdominal trauma should undergo emergency abdominal exploration after stabilization.

Repairing of the Hernia

Abdominal Wall suturing

Repairing the abdominal wall hernia by use the tension suture technique (horizontal, vertical, and over lapping).

Muscular Flaps

Skeletal muscle can be freed up and mobilized to repair defects beneath the skin of the abdomen resulting from trauma or surgical removal of damaged, diseased tissue. Chronic, large hernias are often difficult to close primarily without tension, and these flaps may also be useful in this situation.

Mesh Reconstruction Technique

Mesh can be implanted using onlay, inlay, or underlay techniques.