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Popular Article

Hernia and its management in small animals

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Abstract

The hernia in small animals is congenital or acquired in nature due to trauma and suture dehiscence. Which can be either at a normal anatomical opening or abnormal in nature. The true hernia contains the hernia ring, hernia sac, and herniated contents. Depending on the nature of the reduction in size, it can be reducible or non-reducible. Hernia can be diagnosed with the help of palpation, radiography, contrast radiography, and ultrasonography. Surgery is considered the best method of treatment for hernias, which is done by using mesh or sutures.

Introduction:

Hernia is a protrusion of an organ or portion of an organ through a gap in the wall of the anatomical cavity in which it is normally located. The most of hernias in small animals involve defects in the abdominal wall, perineum or diaphragm. These might be congenital or acquired. Hernia can be arise at normal 'openings', such as the inguinal herrnia, they may be iatrogenic, or abnormal in nature (eg, following trauma).

Classification of Hernias:

There are many ways to classify and name hernias. Hernias are termed as true hernia if the herniated contents are protruding out through an unnatural opening. If the herniated contents are protruding through a natural opening, then hernia termed as false hernia. The components of a true hernia include hernial ring, and a hernial sac containing the hernial contents. Hernias can either be congenital or acquired. They can also be classified by the nature of the hernial contents. They can be reducible when hernial contents are freely moveable and can be readily repositioned into the

anatomical cavity from which they have protruded; or non-reducible, if, herniated contents cannot be replaced. Hernias can also be named by their anatomical location (eg. umbilical, incisional, inguinal, ventral abdominal, diaphragmatic, perineal etc.).

Principles of Hernia Repair

Reduce the Hernia

Reduction of the hernia refers to the repositioning of the herniated contents to their normal location in their normal anatomical cavity. Most hernias are best treated with a direct incision over the site sometine extensive intervention may require Adequate surgical exposure is required, sometimes the hernial ring may occasionally be enlarged. Adhesions should be cautiously dissected using a combination of blunt and sharp dissection. Organs that are filled with fluid and/or air may require aspiration to allow for repositioning (Pratschke, 2002).

Check the Viability of the Hernial Contents:

Discoloration of the herniated tissue indicates ensuing devitalization, and might happen due to strangulation produced by the hernial ring. Such cases are considered as surgical emergencies (Pratschke, 2002). Blood flow to the herniated contents can also be assessed by ultrasonography. Such cases require resection of the hernia contents. Non-viable tissue, such as necrotic loops of bowel, should not be de-rotated before resection.

Closure of the Defect or Hernial Ring / Herniorrhaphy: The closure is done by applying direct suture apposition of the local tissues. The suture material should be sufficient strength, and maintains its tensile strength for a long duration (eg. Polydioxanone, Polyglactin 910). The hernia defect can be closed by using Vest-over-Pant suture technique or any other interrupted pattern like simple interrupted or mattress. Sutures are generally preplaced on the hernial ring without tying the knots. One of the assistant then pulls the edges together in the apposition, and the surgeon ties the knots sequentially (Brown and Finch, 2010).

Overcome Tension: Sometimes, the hernial ring is too large and the edges cannot be apposed without causing severe tension at the suture line. In such cases, natural or synthetic grafts can be used in an inlay fashion, to close the hernia ring. Polypropylene mesh is a common, commercially available synthetic graft that can be used for hernioplasty (Brown and Finch, 2010). This can also be achieved by the use of omental pedicles and collagen implants, local muscle or fascial flaps (Bringman *et al.*, 2010).

Obliterate Dead Space:

The dead space during suturing should be obliterated. If not possible use of drains should be

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considered.

Specific Hernias

Perineal Hernias Perineal hernia refers to the failure of the muscular pelvic diaphragm to support the rectal wall, resulting in herniation of pelvic and, occasionally, abdominal viscera into the subcutaneous perineal region. Perineal hernia typically occurs in uncastrated middle-aged to older male dogs. The most common presentation of perineal hernia in dogs is a unilateral or bilateral swelling of the perineum (Bray, 2001). Clinical signs include constipation, obstipation, dyschezia, tenesmus, stranguria, or anuria. Hernial contents can be evaluated with the help of perineal ultrasonography. In dogs, perineal hernias are mostly treated by surgical intervention. Appositional herniorrhaphy is sometimes difficult to perform as the levator ani and coccygeus muscles are atrophied and unsuitable for use. Internal obturator muscle transposition is the most commonly used technique. Additional techniques include superficial gluteal and semitendinosus muscle transposition, in addition to the use of synthetic implants and biomaterials. Postoperative care involves analgesics, antibiotics, a low-residue diet, and stool softeners.

Diaphragmatic hernias/ Ruptures

Diaphragmatic hernias are mostly associated with accident or trauma that leads to tear in the diaphragm and herniantion of abdominal contents into the thoracic cavity. Liver is the most commonly observed herniated organ, followed by intestine, omentum, stomach and spleen. Typical clinical findings are respiratory distress, exercise intolerance and depression. Diaphragmatic hernias can be evaluated/ diagnosed with the help of plain and contrast radiography, and ultrasonography. Surgical intervention is the only option for treatment. Surgery is performed under general anaesthesia and assisted ventilation, with animal in dorsal or lateral recumbency. The post xiphoid midline coeliotomy or sternotomy are the most common surgical approaches for diaphragmatic hernia. Continuous running or lock-stitch suture is performed, by using non-absorbable suture materials, polydioxanone, glycomer 631 or polypropylene. Air must be removed from the thorax prior to abdominal closure to maintain negative pressure in thoracic cavity.

Hiatal Hernias: A hiatal hernia may be defined as a protrusion or transposition of any abdominal structure through the oesophageal hiatus of the diaphragm into the thoracic cavity it may be congenital and acquired. Hiatal hernias can be observed in many forms including sliding/ axial, paraesophageal, a combination of both sliding and paraesophageal, and gastroesophageal intussusceptions. The most common hiatal hernia in dog and cats is the axial hiatal hernia. Clinical signs associated with hiatal herniation range in severity. The most commonly associated clinical signs include hypersalivation,

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regurgitation, vomiting, chronic weight loss and dyspnoea and concurrent development of gastro-oesophageal reflux. Megaoesophagus is commonly seen with hiatal hernias in dogs, and resolves spontaneously with treatment of the hiatal hernia. Confirmatory diagnosis can be made by contrast radiography and endoscopy. Medical treatment is often beneficial for the managing of oesophagitis and gastro-oesophageal reflux but definitive management is surgical intervention. Better results have been obtained using a combination of diaphragmatic hiatal reduction and plication, 360° oesophagopexy and left fundic gastropexy.

Caudal Abdominal Hernias An abdominal hernia may involve any defect in the external abdominal wall. They can be congenital (umbilical) or may be induced by a blunt trauma (ventral abdominal). Generally, they can be easily reduced and the hernia ring can be easily palpated, with the animal in dorsal recumbency. Ultrasonographic examination and/or radiography can be used to evaluate hernia contents. In cases of strangulated hernia due to small hernial ring, surgery should be planned as early as possible. Animals suffering with strangulative hernias display pain, vomition, constipation, pyrexia etc. Generally, hernial rings are not very large and are amenable to herniorraphy. However, if the ring is large, producing tension at the edges when brought in apposition, hernioplasty should be planned (Shaw *et al.*, 2003).

Inguinal Hernia

Inguinal hernia is formed when an organ protrudes through the inguinal canal. They are often presented as a soft doughy swelling in inguinal region that can be reduced with digital manipulation. Surgical repair is usually undertaken using either a direct approach over the inguinal ring itself for uncomplicated unilateral hernias, or midline celiotomy plus inguinal exposure for complicated cases. After replacement of viscera into abdomen the redundant sac is trimmed at the margins of superficial inguinal ring and sutured with non-absorbable suture material in simple interrupted pattern (Philip *et al.*, 2019).

Umbilical Hernia:

Umbilical Hernia is usually congenital and occurs due to failed fusion of the lateral folds (mainly the rectus abdominis muscle). They are usually presented as a soft, fluctuating, reducible, protruding swelling at the umbilicus. The surgical management is done by closing the hernial ring by non-absorbable suture material in overlapping/waist over-pant suture pattern (Bringman *et al.*, 2010). The edges of the ring should be freshened before closing, and application of bandage should be done for extra support.

Incisional Hernia: An incisional hernia may occur when surgical closure of any body cavity fails or

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disrupts. The most common cause of acute incisional hernia is incorrect surgical technique or excessive tension at the suture site, although increased intra-abdominal pain due to pressure, entrapped fat between wound margins or hernia edges, infection, chronic steroid medication and poor postoperative care can also lead to incisional hernia. The surgical approach usually involves reopening and repairing the entire surgical wound, after freshening the edges.

Conclusion: Hernias confront small animal surgeons with a wide range of intriguing and difficult clinical obstacles to solve. Careful preoperative examination and planning, together with atraumatic surgery, provide for best results.

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