MULTIPLE CHOICE QUESTIONS

1. Which of the following is NOT a feature of the cat as a candidate for laparoscopy, compared to the dog?
 - (A) More operative space than an equivalent weight dog
 - (B) Less falciform fat
 - (C) Increased risk of splenic injury
 - (D) Increased risk of cannula slippage
2. Which of the following best describes the procedure for laparoscopic-assisted full-thickness bowel biopsy?
 - (A) A loop of bowel is grasped within the abdomen and a biopsy performed with monopolar biopsy forceps
 - (B) A loop of bowel is brought up to the abdominal wall and a biopsy performed with a punch biopsy
 - (C) A small loop of bowel is grasped, brought through the abdominal wall and a biopsy performed by incision or punch biopsy
 - (D) A large loop of bowel is brought through the abdominal wall and several biopsy specimens taken at different sites
3. Which of the following best describes the procedure for laparoscopic-assisted cystoscopy in the cat?
 - (A) The abdomen is insufflated and an endoscope is passed through a cannula in the abdominal wall and into the bladder
 - (B) The bladder is held against the abdominal wall with forceps and a cannula is passed directly through into the lumen of the bladder
 - (C) The bladder is distended with saline and a cannula is inserted through the abdominal wall directly into the bladder
 - (D) The bladder wall is grasped at the apex and brought up to the linea alba where it is sutured to the incision

Angular limb deformities

Kevin Parsons

Angular limb deformities most commonly affect the radius and ulna. Underlying causes include:

- Premature closure of the proximal or distal physis of the ulna
- Asymmetric closure of the proximal or distal physis of the radius
- A combination of both.

Aims of treatment include alleviating pain (most commonly achieved by addressing joint incongruity), correcting bony deformities that impair function and addressing clinically significant limb shortening. Growth potential also needs to be factored into planning.

Thorough investigations, including the clinical history, orthopaedic examination and diagnostic imaging, are necessary to evaluate the case fully. Traditionally the classification of the type and extent of the deformity and subsequent surgical planning have been performed from radiographic studies. More recently computed tomography (CT) has been used to enable quantification of torsion on preoperative imaging, permitting more objective presurgical planning.

A number of factors need to be considered when formulating a treatment plan including:

- Whether surgery is necessary at all
- The timing of surgery
- The surgical methods employed
- Which components of the deformity to address (joint incongruity and/or bone deformity).

When planning corrective surgery, accurate localization and quantification of the deformity is critical. It is well described that the determination of the centre of rotation of angulation (CORA) is important to identify where to centre osteotomies. If two CORAs exist, two osteotomies may be required. In addition to determining frontal and sagittal plane components of deformities, torsion must also be considered.

Once the decision has been made that surgery is indicated to straighten the affected bone, one needs to decide whether to perform acute or a gradual correction (most commonly using a circular external fixator). The creation of three-dimensional (3D) anatomical models from CT data allows a rehearsal surgery which contributes to successful planning and execution of surgery.

Techniques reported for addressing angular limb deformities include acute correction via osteotomy stabilized with either external or internal fixation. Alternatively, in the immature patient, gradual correction using Ilizarov methodology can be considered. When performing acute corrections with internal fixation the ability to make postoperative adjustments is limited.

The effect of addressing bony deformities on the surrounding soft tissues needs to be considered. In some cases of marked pro-curvatum, the caudal soft tissues may not tolerate acute lengthening.

Recently the use of virtual 3D surgical planning has become accessible. Working with CAD software, imaging data is processed to create on screen 3D models. This then allows 'virtual' surgery to be performed, with the creation of osteotomies and realignment of bone segments. Once completed on the virtual screen, cutting and repositioning guides can be created. These guides allow precise correction of the deformity during surgery with predictable bone realignment to match that of the virtual surgery performed earlier.

KEY LEARNING OBJECTIVES

- To determine whether surgery is indicated for an antebrachial deformity
- Have knowledge of the treatment options available for an antebrachial deformity
- Select appropriate surgical methods for presenting angular limb deformity cases

MULTIPLE CHOICE QUESTIONS

1. What percentage of ulna length does the distal ulna growth plate contribute?

(A) 100%	(C) 60%
(B) 80%	(D) 40%

2. In a dog that is under 5 months of age, over what valgus deformity would ulnar osteotomy be frequently unsuccessful?

(A) 10 degrees
(B) 15 degrees
(C) 20 degrees
(D) 25 degrees
3. What proportion of condrodystrophic dogs with antebrachial deformities have biapical deformities?

(A) 20%
(B) 40%
(C) 60%
(D) 80%

Getting the most out of surgical staplers

Rachel Hattersley

Surgical staplers are used in all aspects of veterinary surgery from skin closure to gastrointestinal surgery. Devices are usually tailored to a specific purpose and for each type of staple. Staple height is determined by the leg length of the staple after closure and the thickness of the tissue should be considered when deciding on which staple size to choose. There are five main types of staplers.

- Skin staplers. These are available in regular and wide dimensions. Staple height or leg length is also variable and is approximately 3.4–3.9 mm for regular staples and 3.9–4.1 mm for wide staples. Skin staplers tend to evert the skin edges and thus need to be placed carefully. The main advantage is speed of placement. The use of skin staplers has also been reported for closure of enterotomy wounds
- Vascular clips. Haemostatic clips can be useful for ligating vessels in challenging areas where access precludes the use of traditional suture ligatures. Reusable handpieces and disposable versions are available. The ligate and divide stapler (LDS) combines haemostatic clips with a carbon dioxide-powered blade which applies two clips and divides the tissue between the two. Such devices are single use only
- Thoracoabdominal (TA) stapler. Linear stapling devices are available in a variety of lengths (30–100 mm) and staple height (the colour of the cartridge usually denotes the staple height). These staplers fire either two (green or blue cartridges) or

three (vascular stapler which is white) staggered rows of B-shaped staples. These are predominantly used for liver and lung lobectomy but are also used in stapled gastrointestinal anastomosis. The handpieces are designed to be single-use which are reloadable for the same patient within the theatre. In reality, handpieces are often used more than once, but it should be noted this is not the manufacturer's recommendation

- Gastrointestinal (GIA) stapler. GIA staplers are also linear staplers which are combined with a cutting device. Two lines of staples are deployed on either side of a blade, which cuts the tissue after or while staples are placed. They are most commonly used for side-to-side gastrointestinal anastomosis but can also be used for cholecystoduodenostomy. Endoscopic linear staplers (endo-GIA) have staples that continue around the distal end of the blade to ensure that incomplete incision into vessels or hollow organs will not result in leakage
- Circular stapler. Circular stapling devices are designed to perform an end-to-end anastomosis in the gastrointestinal tract via an intraluminal approach. A double, staggered, circular row of staples is placed, and a stoma is created within the staples. The resulting anastomosis is inverted. Use of these devices is limited by the diameter of the bowel and they are therefore not commonly used in small animal surgery.

KEY LEARNING OBJECTIVES

- Become familiar with what surgical staplers are available
- Understand in what clinical situations to use surgical staplers
- Learn about complications of surgical staplers

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On: Wed, 26 Apr 2023 12:31:55