

**DIGIT AMPUTATION:**

**From broken to malignant, there is a cure in there**

**Synopsis-- Anatomy and the Disease**

There are several reasons for elective digit amputation. Comminuted or intra-articular fractures of the digit can be challenging or impossible to surgically reconstruct; they often go on to non- or malunions or severe DJD with persistent patient lameness. Similarly, a deep osteomyelitis associated with nail bed infection may require a long course of antibiotics and still result in chronic lameness after infection is resolved. In both of these scenarios, amputation of the offending digit(s) may be the most efficient solution relative to time, cost and morbidity.

The most common reason digits are removed is neoplasia. Some tumors manifest similar to a non-responsive/recurrent nail bed infection. Other tumors are distinct masses associated with the skin, SQ or pads. Digit tumors are common in dogs and are more likely to be malignant than benign. Digit tumors in cats are rare but like dogs, the majority are malignant (squamous cell CA, fibroSA, osteoSA, hemangioSA). Surgery can, in many cases, be curative with primary tumors even when malignant.

Radiographs of the foot are helpful in determining the extent of disease and the surgical margins for resection. Bone lysis is demonstrative of an aggressive process, but malignant tumors can be present in the absence of bone lysis (i.e. lysis is uncommon in cases of soft tissue SA or MCT).

**Surgical Overview:**

Disease location and severity both factor into surgical decision-making. Consideration is given to how many bones/digits and how much skin/pad must be removed to achieve treatment goals. Typically, the digit is amputated at the level of the MC/MT-phalangeal joint or just above removing the innervated condyles/joint capsule of distal MC/MT. *Preservation of the metacarpal/metatarsal pad* is one of the biggest factors resulting a relatively uncomplicated, functional outcome. Depending on disease process and location ventral skin/pads or dorsal skin may be preserved to achieve wound closure.

It is possible to remove multiple/all digits and have a functional, painfree foot if the MC/MT pad is well preserved. The goal with tumor therapy, in particular, is to achieve disease-free margins; it is *more effective toward a cure to remove more digits than risk contaminated surgical margins with fewer digits removed.*

The **indications & rationale** for surgical treatment are:

- Confirmed tumor associated with digit (cytology or histopathology)
- Non-responsive nail bed infection, particularly with bone lysis
- Painful or restrictive phalangeal or MC-MT/phalangeal DJD

**Supportive/ancillary** options with surgical treatment are:

- Incisional biopsy to confirm tumor type with histopathology may allow more specific surgical planning (i.e. a benign tumor will not need as wide or as numerous a digit resection)
- Patient staging sufficient to meet owners' needs and expectations.
  - CBC/Chem/UA to screen underlying related/unrelated disease
  - Palpation and/or cytology of the draining LN
  - Planning for LN removal (at time of digit amputation) if LN diseased or needed for additional staging data

- Chest radiographs
  - 32% of dogs with melanoma had lung mets at toe diagnosis
  - 13% of dogs with squamous cell CA lung mets at toe diagnosis

The **perioperative experience** for pet and owner includes:

- Digit amputation is generally very well tolerated by patients. Dogs are usually bearing some weight immediately after recovery.
- Bandages/splints are commonly used for 1-3wks to protect incisions and provide support/padding during early weight bearing.
  - Bandage change intervals depend on surgery performed and bandage wear at home. Plan for initial 2-3d change, then adjust frequency based on health of incision and surrounding skin. Discontinue bandages if moist pododermatitis is likely to become overwhelming.
- Post-operative antibiotics are usually recommended given relatively contaminated location.

**Expectations** for outcome are:

- Majority with excellent functional outcome even with removal of multiple digits.
- A non-painful, functional gait deficit may result early; most animals accommodate/adapt with time.
- Histopathology results will guide long term prognostication.
  - Benign or low-grade tumors are likely cured with digit amputation.
  - Malignant tumors may result in disease elsewhere, but digit amputation will reduce foot-related pain during palliative or adjunctive therapy.

**Complications** that may arise with this procedure are:

- Minor incisional infection/dehiscence (not uncommon). Most minor dehiscence is monitored thru second intention healing; more extensive dehiscence may need touch-up surgery in the first 1-3wks.
- Incisional infection (common; minor; short course empirical antibiotics)
- Lameness (common; 3-6wks; oral NSAIDs prn)

Postoperative **outcomes may be poor** due to the above complications, and/or:

- Metastatic neoplastic disease

What a surgeon needs **prior to surgery**:

- Affected leg/body part “marked” by owner for confirmation (wax “costume makeup” works well)
- Owner available by phone, as needed, to discuss surgical plans after presurgical examination

**General considerations and complications** for all surgery/anesthesia procedures are:

- *Unrelated Hx, PE, CBC/chem/UA findings may dictate timing or prudence of digit amputation (discuss with surgeon prn)*
- *Difficult and/or painful anesthetic recovery (variable; may require additional medications or re-hospitalization)*
- *Adverse anesthetic event (rare, major; may result in serious impairment or death)*

Proper owner expectations are important to a successful experience and patient outcome. Please discuss this information with your clients while assisting them with decision-making. In cases of suspected neoplastic disease, patient staging preoperatively vs. postoperatively may change treatment planning; explore these options with your clients through the planning process.

Proper owner expectations are important to a successful experience and patient outcomes. Please discuss this information with your clients while assisting them with decision-making for **Digit Amputation**.

Resources:

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- Wobeser BK, Kidney BA, Powers BE, Withrow SJ, Mayer MN, Spinato MT, Allen AL. Diagnoses and clinical outcomes associated with surgically amputated feline digits submitted to multiple veterinary diagnostic laboratories. Vet Pathol. 2007 May;44(3):362-5.

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