

**TUMOR REMOVAL:**

**What factors are in play when surgically treating a mass-effect on the outside surface of a patient**

**Synopsis**

Removing what turns out to be a benign lipoma with lots of extra skin is a breeze, in retrospect. Removing an aggressive, highly invasive soft tissue tumor with large portions of normal anatomy can, in retrospect, be a medical management and client-relations nightmare. Finding the sweet spot in these scenarios is highly dependent upon preparations—both in medical care and client education.

**What is it?** You could argue that we'll know the answer to that question once it's off, and the pathologist sends the histopathology report. I'd argue that more data is generally good for preparations. "More data" is conditional, as usual, as it relates to the patient morbidity that occurs in collecting that data. A good needle aspirate cytology reviewed by highly educated eyes rarely tips the scale toward "too much morbidity". An MRI under general anesthesia might be too much, or not. This balancing act is one that involves client discussions of patient morbidity and the costs involved—"What medical/financial risks are you willing to take to get information that might change the plan and protect your pet from illogical/harmful procedures?" (You can pivot that to a positive question too.) Pet owners are a diverse group and will answer these questions in diverse ways.

The more surgical morbidity involved with removing it "the correct way", the more data I like going in. We should not amputate a leg for a spontaneous, organizing hematoma, but maybe we should for a high-grade mast cell tumor. If a low-grade tumor is small and the patient is geriatric, maybe radical resection is illogical in the face of anticipated longevity and quality of life.

Surgically removing something that has already metastasized is usually a bad decision relative to patient quality of life and longevity. Occasionally the removal of a necrotic/painful/disabling mass in the face of known disease elsewhere can be an improvement to quality of life, if not longevity. Preoperative staging, to some extent, is usually beneficial when including the low morbidity tests available (physical exam, radiographs, tumor or lymph node cytology).

**What will it take to get rid of it?** We can all appreciate that "huge" does not necessarily mean bad—lipoma case-in-point. But big is challenging from the surgical perspective. From clip margins to wound closure, big masses command more preparatory respect! Also, location is critical for several reasons: 1) movable structures make for more difficult healing, 2) vital/essential anatomy may be in proximity and can't be disturbed, and 3) surrounding skin is generous in some locations and skimpy in others.

Preoperative and intraoperative surgical planning involves choosing the best route to recovery, balancing the risks of close/dirty margins with postop morbidity, life expectancy, co-morbidities, and availability/willingness to use adjunctive therapies.

- Choosing to allow healing by second intention (morbidity) to improve margins and minimize the need for 2<sup>nd</sup> or 3<sup>rd</sup> procedure might be a good choice; several weeks of bandage care is the management tradeoff, for example.
- Choosing to do a major resection and two minor skin flap procedures (versus one procedure resection/skin graft with 6wks of bandages) might be the best course for a large breed dog during a wet springtime owned by a mobility-impaired owner.
- Choosing to remove a mass with complete margins the first time (versus "debulking" (*boo, hiss*) and seeing if it comes back), might optimize longevity, quality of life and financial expenditure over the life of the patient.

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

- **Bandages may be needed** for an extended time, with their associated frequent changes and clinic visits.
- **Drains may be needed**, with their associated owner supervision/management and clinic visit for removal.
- **Wound margins may dehiscence**; some will be minor marginal necrosis and others will leave wounds to be addressed and managed (2<sup>nd</sup> intention or surgical revision.)

**Poor postoperative outcomes may be due to the above complications, and/or:**

- Skin flap/graft **failure**; may require additional surgery or 2<sup>nd</sup> intention healing.
- Local tumor **recurrence**; dependent upon tumor type, grade, anatomic limitations.
- Distant tumor **metastasis**; dependent upon tumor type, preoperative staging
- **Functional disability** created by surgical resection; may be related to impaired or absent limb or local contracture created by 2<sup>nd</sup> intention healing.

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

- Photo images of the mass or hands-on exam.
- Access to the client for decision-making on the day of surgery (by phone.)

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

- *Difficult and/or painful anesthetic recovery (variable; may require additional medications or re-hospitalization)*
- *Incisional infections (rare, minor; usually require oral antibiotics)*
- *Incisional dehiscence (rare, minor or major; may require surgical revision)*
- *Adverse anesthetic event (rare, major; may result in serious impairment or death)*

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