DIMENSIONS IN SURGERY

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Surgical Case Report:

Ischial Tuberosity Resection

EMPHASIS:
When persistent pressure is present over a bony prominence, ischemic necrosis of the soft tissues may occur, resulting in a pressure sore (decubital ulcer). Most commonly this occurs in patients who are recumbent due to trauma or neurological conditions such as disc rupture. In particular, patients who are deep pain negative in the hindquarters are at risk. In some thin dogs, sores may occur with no specific predisposing cause, merely by the pressure generated when the patient is sitting or lying down.

Despite the preventive measures of soft bedding, good hygiene, and frequent turning of the patient so he/she is not constantly lying on one side, pressure sores may still occur. Once they have developed, the prognosis for resolution is guarded with conservative management. Circular bandages or tie-over bandages can be placed, but these do not address the underlying etiology of the pressure sore. Even with intensive maintenance and frequent bandage changes (particularly in neurological patients who are incontinent), the chance of healing is not high.

Several surgical management options exist. Primary closure can be attempted, but is rarely successful. Similarly, a skin graft, or a myocutaneous graft, can close the defect, but since this does not eliminate the underlying problem (pressure over a bony prominence) failure is frequent.

The most effective option is resection of the underlying bony prominence, since this eliminates the underlying cause of the pressure sore. We have found this procedure to be highly successful, even in patients who have complete posterior paralysis and are incontinent. In this paper we will describe the treatment of an ischial pressure sore by resection of the caudal portion of the tuber ischii.

AXIOM: This article will discuss only ischial pressure sores, but the same principle (resection of the underlying bony prominence) can be applied to pressure sores at the elbow or the greater trochanter.

AXIOM: For deep-pain-negative hemilaminectomy patients, it may be worthwhile for the client to purchase a canine cart and have the dog begin to use this immediately postop. This will diminish the incidence of pressure sores; however, since the dog will not be in the cart for twenty-four hours a day, pressure sores over the ischium can still develop in some cases.

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Figure One: This schematic drawing depicts the patient in sternal recumbency lying on a perineal support.
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PREOPERATIVE DIAGNOSTICS:
1. Complete physical examination.

AXIOM: If the patient is not recumbent and has no other predisposing illnesses or conditions, radiographs are advised to rule out neoplasia or other bony lesions.

PREOPERATIVE CARE:
1. Indwelling cephalic catheter.
2. Intravenous anesthetic induction protocol (Ketamine/Valium, Propofol, etc.)
3. Endotracheal intubation and inflate cuff.
4. Isoflurane inhalant anesthesia to effect.
5. Lead II ECG and pulse oximetry monitoring during prep and surgery.
6. Place the patient in sternal recumbency, in standard position for perineal surgery.
7. Clip and prepare the region for surgery.
8. Cephalexin 20 mg/kg and enrofloxacin 5 mg/kg IV immediately preop.

SURGICAL TECHNIQUE:
1. Debride the bruised and necrotic skin edges around the periphery of the pressure sore (See Figure 1).

AXIOM: All questionable tissue should be removed, rather than just the obviously necrotic edges. Often, the tissues that appear only bruised at the time of surgery will continue to devitalize for 1-2 days postoperatively. Insufficient debridement at the time of surgery could then result in necrosis and dehiscence.

AXIOM: Warn the clients preoperatively that, on occasion, despite assertive debridement of the questionable areas of the skin, there may be slight further skin necrosis along the surgical incision edges. Therefore, occasionally, resuturing of a portion of the incision may be needed. Tell the clients not to be alarmed; after debridement and resutting of the skin, the prognosis is still very optimistic for complete healing.

2. If necessary, incise the skin at the lateralmost edge of the opening, to expose the entire caudal margin of the tuber ischii.

AXIOM: This is usually not necessary. In most cases, debridement of the necrotic tissues will give sufficient access to the tuber ischii.

3. Incise the insertion of the internal obturator muscle on the dorsocaudal aspect of the ischium (See Figure 2). Delicately elevate the muscle to expose the entire dorsal surface of the caudal half of the tuber ischii.

AXIOM: The origin of the ischiocavernosus muscle is also elevated on the dorso medial aspect of the ischium.

AXIOM: Work gently to minimize muscle trauma. Since these muscles will be closed over the cut edge of the ischium, it is important that the viability of the muscle be preserved.

5. Elevate the insertions of the semimembranosus, external obturator and quadratus femoris from the ventral aspect of the ischium.

6. Dorsally and ventrally, the elevation should be continued cranially to a line from the ischiatic tuberosity to the midpoint of the ischiatic arch (see Figure 3).

AXIOM: An ischial ostectomy can now be performed, along the dotted line shown in Figure 3. This will eliminate the medial angle of the ischiatic tuberosity (the pressure point) and create a flat surface along the entire caudal aspect of the ischium.

AXIOM: The caudal one-third of the lateral extent of the ischiatic tuberosity is resected (see Figure 3). This will preserve the origin of the biceps femoris and semitendinosus muscles.

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Figure Two: This schematic drawing depicts the caudal pelvis. The internal obturator muscles insert on the ischium.
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7. Using an oscillating saw, cut the ischium along the line shown in Figure 3.

8. Using a high-speed nitrogen-driven drill, round off the dorsal and ventral edge of the osteotomy site, so there will be no sharp bone edges to traumatize the overlying muscles. (See Figure 4).

9. Using horizontal mattress sutures of 2-0 monofilament absorbable material, close the musculature dorsal and ventral to the cut edge of the ischium (See Figure 4).

10. Place a Penrose drain, exiting ventral to the site.

11. Routine subcutaneous and skin closure.

POSTOPERATIVE CARE:

1. Broad spectrum antibiotics for 7 days postoperatively.

2. Drain removal 4 days postoperatively.


4. Maintain the patient on soft bedding or towels.

5. Continued nursing care: hygiene, frequent changes of position to prevent the patient from constantly generating pressure on the site, and soft bedding.

6. For posterior paralysis patients, use of a cart as frequently as possible during the day.

PROGNOSIS:

Even in patients who have posterior paralysis and are deep pain negative, the prognosis is still extremely optimistic for healing of the site and no recurrence.  
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Coming Attractions

Enterotomy and intestinal resection/anastomosis are routinely performed in most veterinary practices. Gastrointestinal foreign bodies, intestinal neoplasia, intussusceptions, and penetrating trauma are all frequent indications for intestinal surgery.

Next month, we shall present our updated surgical protocols for these procedures.

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