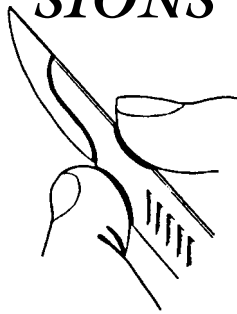


DIMENSIONS IN SURGERY



by SCOTT ANDERSON, DVM, Diplomate of the American College of Veterinary Surgeons, Diplomate of the American College of Veterinary Emergency and Critical Care, Diplomate of the American Board of Veterinary Practitioners
PHIL GILL, DVM, Diplomate of the American College of Veterinary Surgeons
LARRY LIPPINCOTT, DVM, Diplomate of the American College of Veterinary Surgeons
MARY SOMERVILLE, DVM, Diplomate of the American College of Veterinary Surgeons
SHARON SHIELDS, DVM, Diplomate of the American College of Veterinary Surgeons
RAVIV J. BALFOUR, DVM, Diplomate of the American College of Veterinary Surgeons
ERIN WILSON, DVM, Staff Surgeon

Dimensions in Surgery is now in its 17th year!

Surgical Case Report: Sacral Fracture

EMPHASIS:

Sacral fractures are uncommon; in the great majority of patients with trauma to this area, a sacroiliac luxation occurs. When the sacrum itself does fracture, the degree of pain is often excruciating, due to trauma and compression of the nerve roots. Therefore, these fractures should always be surgically stabilized, both to restore anatomic alignment and to alleviate the severe pain. In this paper, we will discuss the technique for stabilization of sacral fractures.

PREOPERATIVE DIAGNOSTICS:

1. Physical examination.

AXIOM: An accurate neurologic evaluation is mandatory. Any deficits should be documented; otherwise the client may believe that deficits seen postoperatively are the result of iatrogenic surgical trauma.

2. Complete blood count and serum chemistry panel.
3. Radiography:
 - a). Two view thoracic and abdominal radiographs.

AXIOM: Where damage to the lower urinary tract is suspected, a positive contrast cystourethrogram should be done if the bladder cannot be clearly identified. Even if the bladder is visible, there may still be trauma to the urethra, ureters, etc. The urine output should be monitored and, if necessary, a positive contrast cysto-urethrogram or an excretory urogram, may be advisable.

- b). Two view pelvic radiographs.

AXIOM: All areas which were painful on physical examination should be radiographed.

DIAGNOSIS: Left Sacral Fracture

AXIOM: If the fracture is more than 10-14 days old, there will usually be enough callus formation to make mobilization and reduction difficult or impossible. Such cases may best be managed conservatively.

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. Clip and prepare the left hemipelvis for aseptic surgery.
7. Cephalexin 20 mg/kg I.V. immediately preoperatively.

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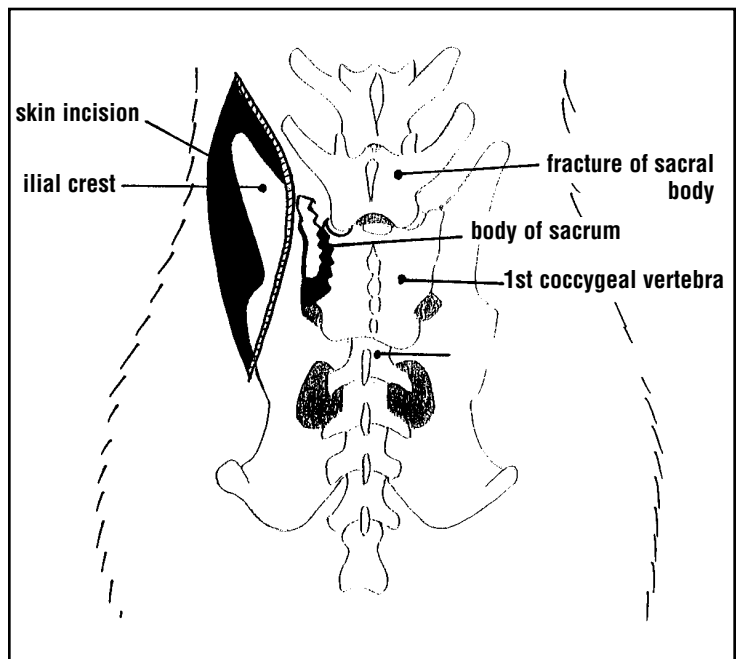


Figure 1: This schematic drawing depicts a patient in ventral recumbency. An incision has been made over the entire length of the left ilial crest delineating the sacroiliac joint.

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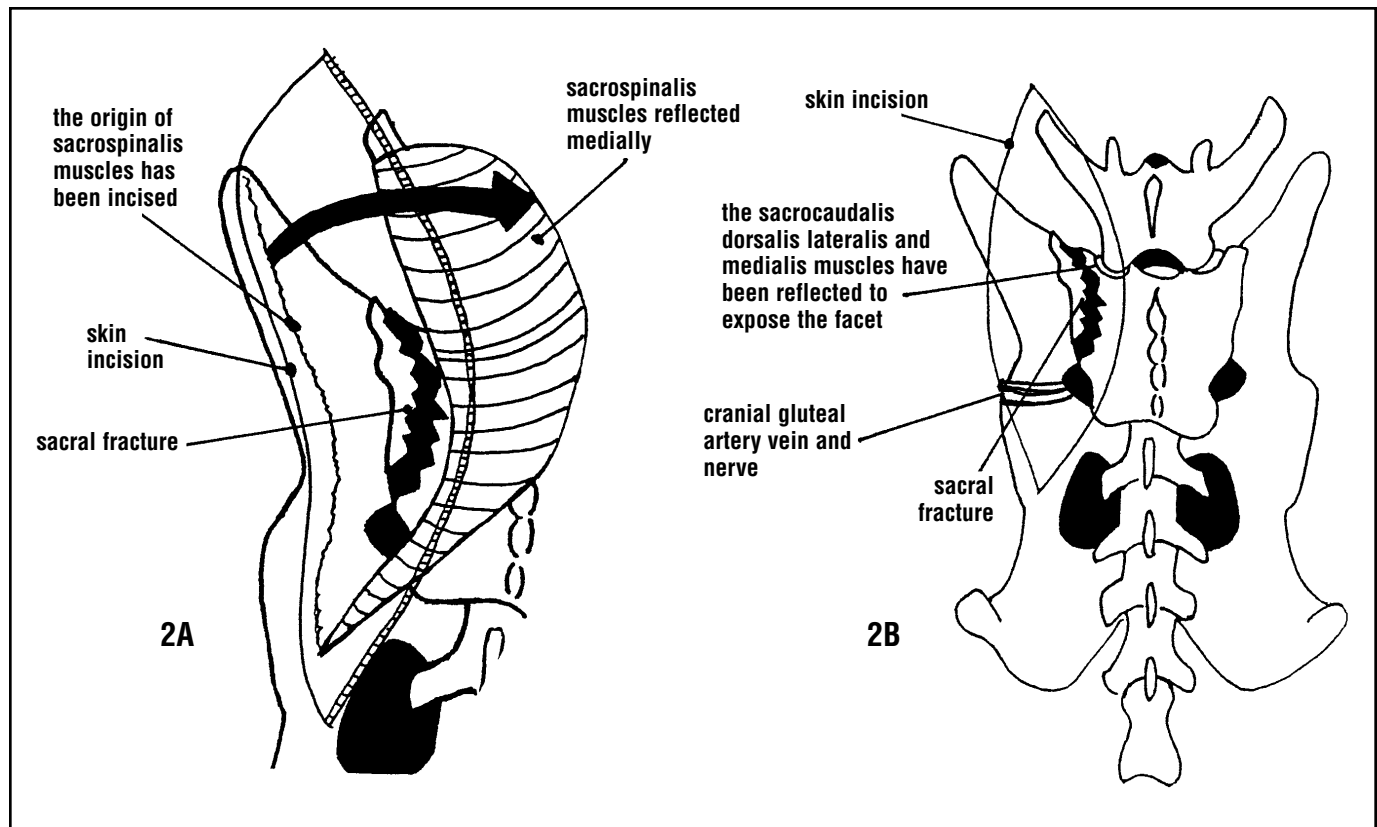


Figure 2: 2A) This schematic drawing depicts a longitudinal incision through the insertion of the sacrospinalis muscle group. The muscles are reflected off the medial side of the ilium exposing the fractured sacrum. In this drawing, the fracture did not necessitate exposure of the facet. **2B)** In this drawing, the sacral fracture necessitated exposing the facet.

AXIOM: *The patient can be positioned either in sternal or lateral recumbency.*

1. Skin and subcutaneous incision over the entire length of the iliac crest. (See Figure 1).
2. Incise the periosteal insertion of the middle and superficial gluteal muscles on the iliac crest, and elevate these muscles to expose the lateral aspect of the wing of the ilium.
3. Elevate the sacrospinalis muscle from the medial aspect of the iliac crest, to expose the medial aspect of the ilium and the dorsal aspect of the sacroiliac joint. (See Figure 2).
4. The sacrocaudalis dorsalis lateralis and medialis can be undermined and elevated to expose the L7, S1 articular facet. (See Figure 2).

AXIOM: *Realigning the articular facet confirms that the sacral fragments are properly aligned.*

5. If the fracture is near the midline, then incise the lumbar dorsal fascia, and elevate the sacrocaudalis dorsal medialis and lateralis from the lateral aspect of the L6 – S3 dorsal processes. (See Figure 3).

AXIOM: *This will give a good dorsal exposure of a fracture near the midline.*

6. Lag screw fixation can now be performed, similar to the repair for a sacroiliac luxation. Alternatively, cross pinning can be performed (see figure 4).

AXIOM: *Ideally, two screws are preferred, since a single lag screw does not provide good*

resistance to rotary instability.

7. Reappose the superficial fascia of the muscles medial and lateral to the ilium, with interrupted 2-0 PDS sutures crossing over the iliac crest.
8. If the lumbar dorsal fascia was incised, close with 2-0 PDS in a continuous pattern.
9. Routine closure of subcutaneous tissues, and skin.

POSTOPERATIVE CARE:

1. Postoperative two view radiographs.
2. Postop pain management using oral, injectable or transdermal analgesics.
3. Postoperative confinement: leash walk only until the fracture is healed. Confinement to a single room or similar area for the first 4

DANGER:

Work carefully to avoid traumatizing the cranial gluteal artery, vein and nerve, which pass over the ilium. (See Figure 2).

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weeks is advisable. If the patient is very active, a non-weight-bearing sling can be used for 2 weeks post-op.

4. Suture removal 2 weeks postoperatively.
5. Followup radiographs 4 weeks postoperatively with the patient sedated.
6. Normal activity may be permitted after 6-8 weeks.

PROGNOSIS:

Very optimistic, if nerve deficits are not present.

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AUTHOR'S NOTE

If you have any questions concerning this paper, additional references, surgical supplies or sources of products mentioned or used in this protocol, please FAX us at 1-310-479-8976. We will answer your questions promptly.

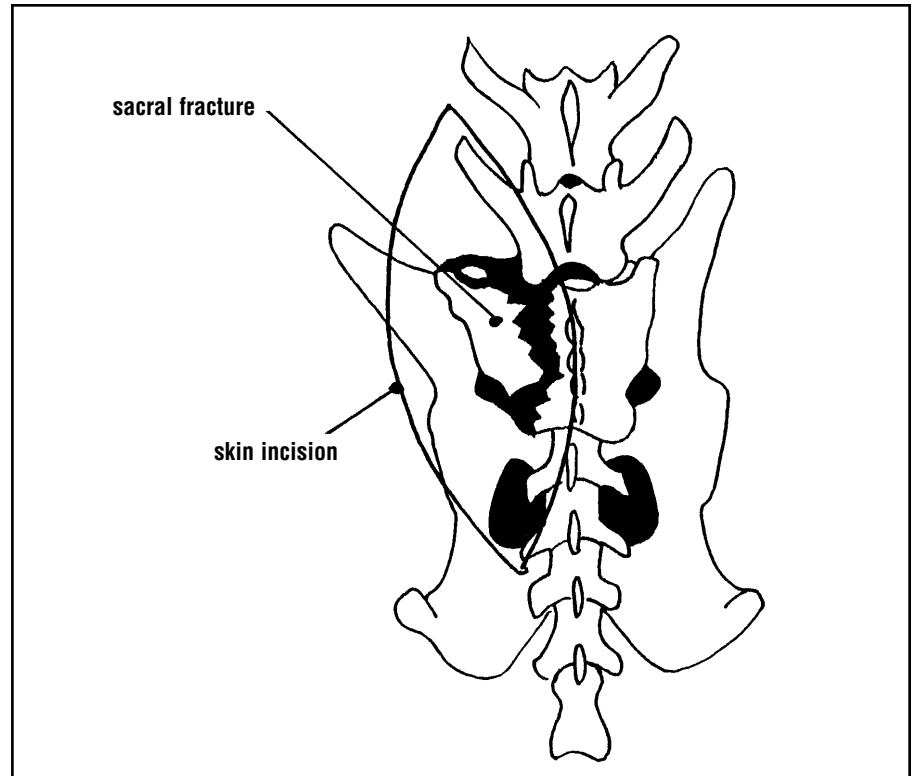


Figure 3: This schematic drawing depicts a sacral fracture near the midline.

- the skin incision is made
- the dorsal lumbar fascia is incised
- the sacrocaudalis dorsal medialis and lateralis muscles are elevated from the lateral aspect of L6-S3.

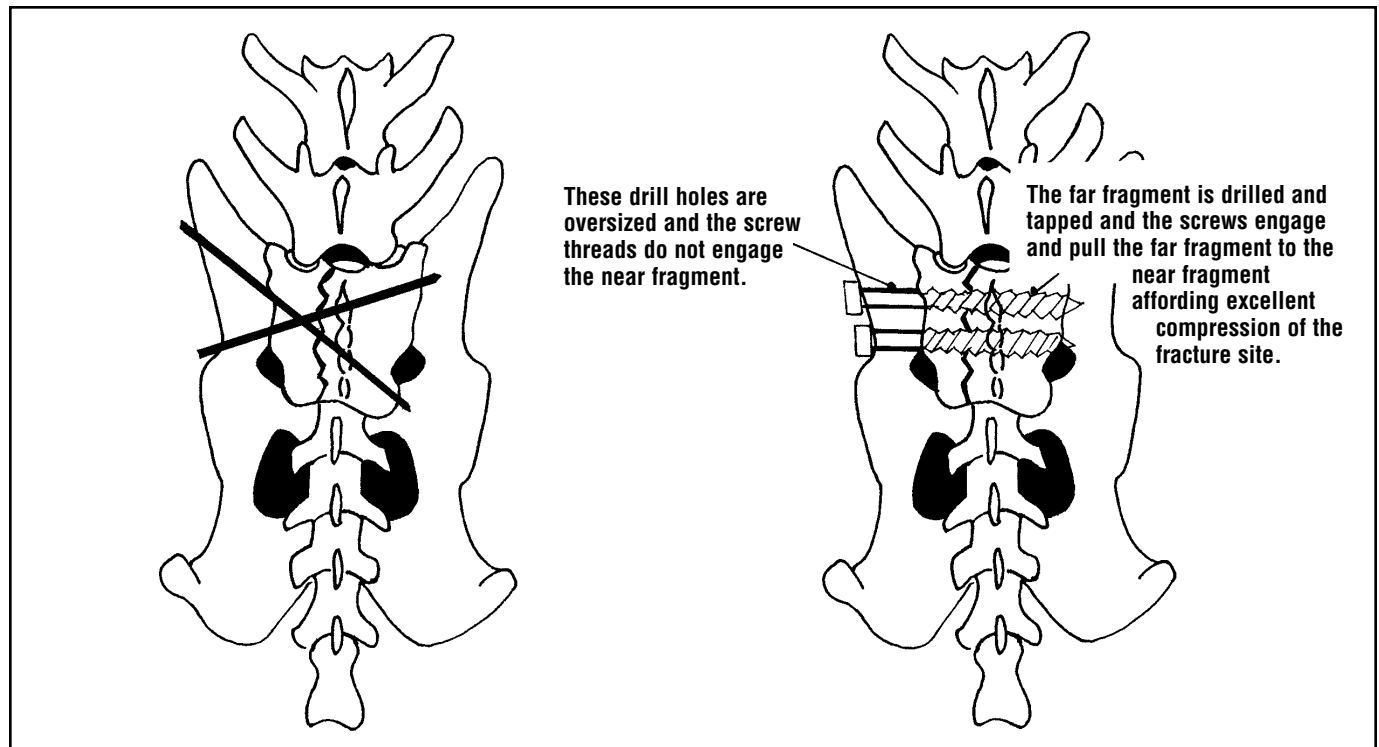


Figure 4: This schematic drawing depicts: **4A)** The use of cross pins to stabilize the sacral fracture. **4B)** The use of lag screw fixation to stabilize the sacral fracture.

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Coming Attractions

For cervical intervertebral disc herniations, ventral slot decompression is the treatment of choice. The approach is minimally traumatic to the musculature: the stability of the vertebral column is not adversely affected by the procedure; and direct access to and removal of the offending disc material is achieved.

However, there are some cases in which the ventral slot will not give suitable results. Occasionally, a very lateralized herniation of the disc material occurs. Similar to what we commonly see in the thoracolumbar region. In addition, some cases of cervical vertebral instability may have a greater dorsal component of hypertrophic soft tissue. On occasion, neoplasia of the spinal cord, or trauma, many necessitate a dorsal approach.

See you then!

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