

# Medical and Surgical Treatment of Sacral–Coccygeal Pathology

Barrie D. Grant, DVM, MS, Dipl. ACVS; Joseph H. Cannon, DVM, Dipl. ACVP;  
Norman W. Rantanen, DVM, MS, Dipl. ACVR;  
and Raymond J. Linovitz, MD, FACS

Injuries of the sacral and coccygeal bones can result in lameness and gait abnormalities as well as micturition and defecation dysfunction. A diagnosis is made with the results of a careful physical exam and radiographs. The response to epidural corticosteroid injections has been rewarding. Surgical intervention is also indicated and beneficial in selected cases. Authors' addresses: San Dieguito Orthopedic, 320 Santa Fe Dr., Encinitas, CA 92024 (Linovitz) and San Luis Rey Equine Hospital, 4211 Holly Ln., Bonsall, CA 92003 (all other authors). © 1998 AAEP.

## 1. Introduction

The pathology of the sacrococcygeal area of the horse is only infrequently documented.<sup>1–3</sup> Trauma from a sudden fall is the most common history. Presenting signs vary with the extent of the pathology and the direct or indirect involvement of the caudal sacral, coccygeal, and pudendal nerves. If the trauma is at the level of S3–S4, then the patient is unable to defecate, micturate, or use the tail. Trauma to the coccygeal area may present with only a deviation of the tail or an obscure lameness that is noticed when the leg is flexed, as in the application of horseshoes to the feet. The purpose of this paper is to discuss the clinical signs, diagnostic tests, and medical, surgical, and physical therapies associated with sacral–coccygeal pathology.

## 2. Materials and Methods

During the period of 1993–1997, ten horses were presented to our hospital for a diagnosis and treatment of injury to the sacral–coccygeal area. Pre-

senting signs included failure to defecate and micturate (2/10), distortion of the caudal pelvis and tail (5/10), gait abnormalities and lameness (8/10), pain on digital pressure over the sacrum and coccygeal area (10/10), and increased pain with hindleg flexion while being examined or shod (3/10). In 4/10 horses the sudden onset of clinical signs began after a traumatic episode—usually a fall or sitting down after pulling against a firmly applied lead shank. No single incident could be documented with the remaining cases.

## 3. Diagnostic Modalities

A physical examination was conducted on all patients, with particular emphasis on abnormal conformation, paresis of the tail, pain on digital pressure over the sacrum and the coccygeal area, a positive response of hindleg flexion, a lack of anal tone, and any unusual pelvic enlargements found during the rectal examination (Table 1). Radiographs of the caudal pelvis, sacrum, and coccygeal areas were

---

## NOTES

## ORTHOPEDIC: LAMENESS

Table 1. Physical Examination Results

Horse No.	Breed	Age	Sex	Use	Lameness/ Gait Abnormality	Micturation or Defecation Dysfunction	Pain to Palpation
1	TB	3	Filly	Racing	Yes	No/Local sweating	Yes
2	TB	3	Gelding	Racing	Yes	No	Yes
3	Qtr	5	Mare	Cutting	Yes	No	Yes
4	Qtr	11	Gelding	Pleasure	Yes	No	Yes
5	TB	18	Stallion	Showing	Yes	No	Yes
6	Qtr	12	Gelding	Showing	No	No	Yes
7	Qtr	5	Stallion	Showing	Yes	No	Yes
8	TB/X	14	Gelding	Jousting	No	Yes	Yes
9	TB	2	Filly	Racing	Yes	Yes	Yes
10	TB	1	Gelding	Racing	Yes	Yes	Yes

obtained for 8/10 patients, with positive findings noted on 7/8. Nuclear imaging was also used on 4/10, and all had increased isotope intake in areas that were compatible with clinical signs (Table 2). Electromyography was only used on 2/10 patients, and the results were not conclusive.

An epidural contrast study was performed on one patient, and the results confirmed compression.

#### 4. Medical Treatment

The use of epidural corticosteroids for the treatment of chronic back pain in people is a very common but controversial procedure. The standard protocol in humans is the use of dexamethasone once a week for 3 weeks. A caudal epidural injection of a repositol corticosteroid was used on 7/10 horses, with a positive response seen with 5/7. Methylprednisolone acetate 200 mg diluted in 15 cm<sup>3</sup> of distilled water q s to 20 cm<sup>3</sup> was injected into the caudal epidural space. The patient was sedated, and the caudal epidural injection site was desensitized with lidocaine. An 18-gauge spinal needle was then inserted into the epidural space and the medication was injected. A clinical response was usually noted within 3 days. Four of the seven patients had the treatment repeated in 2–3 weeks if the pain to digital palpation over the sacral area was still present. All three Thoroughbred racehorses had a dramatic improvement in racing performance, with one of the horses

going from a maiden claimer to an allowance horse and the other two becoming graded stake winners after therapy. The cutting horse and the dressage horse also had improved performance.

#### 5. Surgical Treatment

A surgical intervention was performed in 2/10 patients.

##### A. Case 1

A 2-year-old Thoroughbred filly was presented with the sudden onset of a caudal pelvic deformity when she fell after rearing in a postexercise area. She also had a distended bladder and fecal retention. Her coccygeal area was very responsive to manipulation to the extent that it was dangerous to examine her. Radiographs confirmed a comminuted fracture of the first coccygeal vertebra with ventral displacement of the remaining coccygeal vertebra. She was placed in lateral recumbency after the induction and maintenance of general anesthesia. With the use of an aseptic technique, the Sr and C1 were exposed through a dorsal approach. The unstable comminuted coccygeal vertebra was stabilized by using a combination of compression plates, orthopedic wire, and bone cement in a tension band arrangement. The filly had a return of bladder function within the first week. Defecation required a longer time to return to normal, possibly because of the continued

Table 2. Test Results

Horse No.	Positive Rectal Exam	Radiographs	Nuclear Imaging	Ultrasound	Therapy		
					Medical (Pos/Neg/No Chg)	Surgical	Physical
1	Not done	No	No	No	Yes/Pos	No	No
2	No	No	Yes +	No	Yes/Pos	No	No
3	No	Yes	Yes +	Yes	Yes/Pos	No	No
4	No	Yes/Fx	No	No	Yes/Pos	No	No
5	Not done	Yes/Fx	No	No	Yes/Pos	No	No
6	Not done	Yes/Fx	No	No	No	No	No
7	Not done	Yes/Fx	No	No	No	No	+ Tail brace
8	No	Yes/No	No	No	Yes/No Chg	No	No
9	Yes	Yes/Fx	Yes	No	No	Yes	+ Tail brace
10	Yes	Yes/Fx	Yes	Yes	Yes	Yes	No

pain of the fracture. The surgical area did not heal by primary intention and continued to require daily wound care for 10 weeks. Sinus tracts associated with the suture material and the implants persisted until they were removed with the patient sedated at postoperative week 16. The fracture had at 16 weeks become stable and pain free. There was a dramatic response of the surgical site to the removal of the implants. Four weeks later the incision area was completely closed and the filly returned to active training. She was not raced during her 2-year-old year as the result of a peritoneal reaction around a rudimentary metacarpal bone splint. She is currently in active training.

#### B. Case 2

A yearling Thoroughbred had a sudden onset of pelvic pain, paresis of the tail, failure to defecate and micturate, and a left hind lameness. He had difficulty in rising. A lumbosacral cerebrospinal fluid sample was xanthochromic and was negative for antibodies for *Sarcocystis neurona* and neurotropic viruses. A rectal exam revealed a soft swelling associated with the body of the fourth sacral segment. A pelvic ultrasound exam showed the swelling to be consistent with a seroma. In addition, there was a distortion of the normal contour of the sacrum that was consistent with a fracture. Radiographs of the sacrum were not conclusive, but nuclear imaging showed an increase in radioactive isotope activity. Positive contrast media injected into the caudal epidural space showed compression at the region of the fourth sacral segment.

The horse was placed in lateral recumbency after induction and maintenance with general anesthesia. With the use of an aseptic technique, the dorsal arch of the third and fourth sacral segments was removed with bone rongeurs. The neural canal was narrowed in this area and was enlarged by removing the lateral aspect of the canal. The epiaxial tissue was closed in a two-layer closure and the skin was apposed with skin staples. Primary healing was obtained. The neurological control of micturation and defecation returned very slowly. This necessitated the manual removal of feces and the evacua-

tion of the bladder three times a day for 4 months. A urethrostomy was performed to reduce the need for catheterization but was effective for only 4 weeks. The lameness improved after 8 weeks, and the horse has been returned to active race training while the manual fecal evacuation and catheter drainage of the bladder continues.

#### 6. Physical Therapy

Physical therapy consisted of placing the tail through a crouper from a racing Standardbred harness. The crouper had extra padding applied to it to increase its thickness to aid in elevating the tail head in an attempt to have the fracture heal in a more dorsal position. The crouper was held in place by the use of a harness with a backpad and girth. The caretakers were instructed to reset the harness daily and check for any areas of skin ulceration. The crouper was used for a period of 4 weeks for cases 7 and 9.

#### 7. Discussion

The diagnosis and treatment of sacrococcygeal trauma are based on sound medical protocol and procedures available to equine practitioners. The benefits of surgical intervention are based on decompression of the spinal canal. The use of caudal epidural steroid injections for the reduction of inflammation in the epidural space is common practice in human medicine, and our preliminary experience with horses has been encouraging.

#### References

1. Wagner P, Long G, Chatburn C, et al. Traumatic injury of the cauda equina in the horse: a case report. *J Equine Med Surg* 1977;1:282-285.
2. Nixon A. *Equine fracture repair*. Philadelphia: Saunders, 1996;310-311.
3. Collatos C, Allen D, Chambers J, et al. Surgical treatment of sacral fracture in a horse. *J Am Vet Med Assoc* 1991;198:877-879.
4. Rydevik BL, Cohen DB, Kostuik JP. Spine epidural steroids for patients with lumbar stenosis. *Spine* 1997;22(19):2313-2317.
5. Markey BT, Graham M. Management of chronic pain with epidural steroids. *AORN J* 1997;65(4):791-792, 795-798.