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Clinical Report

The First Report of Surgical Treatment of Lumbar Fracture and Lumbosacral Luxation in a Dog in Iran

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Abstract

Case Description- A two-year-old non-ambulatory intact male Pekingese breed dog was referred to private clinic.
Clinical Findings- The clinical examination revealed non-weight bearing of hindlimbs, back pain and constipation, urinary continence with normal appetite.
Treatment and Outcome- Reduction and stabilization were performed by transilial pinning. Defecation and urination became normal immediately the first day after operation and dog started gaiting and weight bearing, eighth days post-operation.
Clinical Relevance: Transilial pinning technique changed the non-ambulatory dog to standing condition within 8 days, and to athletic condition within six months after surgery.
Key words: Lumbar fracture, Luxation, dog

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Case Description

A two-year-old, 5.5 kg weight, non-ambulatory intact male Pekingese dog was referred to private clinic due to a car accident. The clinical examination revealed non-weight bearing of hindlimbs, back pain and constipation, urinary continence, involving cauda equina with normal appetite. Temperature, hydration condition and mucosal color were also normal. Hematological and biochemical profiles were all within normal ranges. Based on clinical signs, survey radiographs were taken in ventrodorsal and lateral-lateral positions. Radiographic evidences confirmed L_7 fracture with lumbosacral luxation with craniovetral displacement of the caudal part of the vertebral body (fig. 1). According to above finding operation was planned for treatment of both problems.

Treatment and outcome

Surgery was started with an intravenous line and dog received dextrose-normal saline solution at 20 mg/kg/hr. Cefazolin (22 mg/kg, IV) was administrated as a prophylactic antibiotic before inducing the anesthesia. The anesthetic protocol was: atropine sulfate (0/03 mg/kg, SC) as premedication, and diazepam (0/27 mg/kg, IV) and ketamine hydrochloride (5/5 mg/kg, IV) as induction agent and thiopental sodium (15 mg/kg, IV) as maintenance[2]. The patient was positioned in sternal recumbency. Lumbar dorsal region was clipped and prepared for an aseptic procedure. The skin was incised on dorsal spinous process and laminea of L_6, and sacrum to the first coccygeal vertebra. The epaxial muscles were elevated from their attachments on the lateral aspect of dorsal spinous processes, lamina, articulate facets, and pedicles by the periosteal elevator bilaterally[1-4]. The tip of hemostatic forceps has been placed in the lumbosacral junction carefully to avoid injuring quada equina[3-6]. The fracture and luxation were then reduced with gentle traction on the patient's head cranially and using hemostatic forceps caudodorsally[2-6]. After stabilizing the articulate facets of L_7-S_1 using 1 mm Kirschner wires bilaterally and elevating the middle gluteal muscles, 2 and 3 mm steinmann pins were placed through both ilial wings, across the dorsal lamina of L_7 and touched its dorsal lamina. Two ends of pins were bended at a 90 degree angle[3-6]. Finally the Kirschner wires were removed after permanent reduction of fracture and luxation to avoid involving of joint surfaces. Wound region was lavaged using copious amount of sterile normal saline solution[4]. Gluteal fascia and epaxial muscles and subcutaneous layer were closed by 2-0 and 3-0 polyglactin 910 suture, respectively. Skin was sutured by 3-0 nylon routinely[1-6]. The skin was bandaged to prevent self-mutilation and contamination[1-6]. Dog tolerated operation well and received penicillin (20000 IU/kg, IM, q 24) and gentamicin sulfate (8mg/kg, IM, q 24) daily for 5 days. Defecation and urination became normal immediately the first day after operation. Dog also started gaiting and weight bearing eighth days post-operation. The patient received passive physiotherapy after four days, for 15 minutes. twice a day by owner because of avoiding muscle weakness. The clinical signs confirmed sound gaiting with no complication in sixth month (fig. 2).

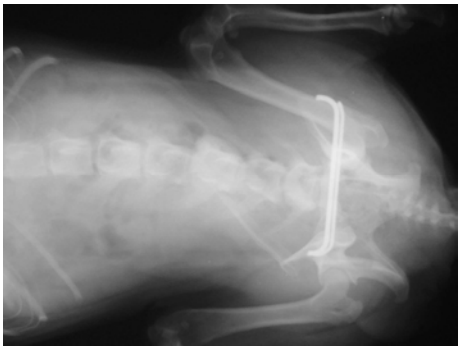

Fig. 1: Lateral radiograph, oblique fracture of the body of L_7 and L_7-S_1 luxation

Fig. 2: Ventrodorsal view. Stabilization was achieved by means of two 2 and 3 mm Steinmann pins

Discussion

Traumatic and pathologic disruption of osseous and supporting soft-tissue structure of the caudal lumbar, sacral, and first caudal vertebrae may result in vertebral fracture or luxation and subsequent nerve root compression. There is no specific age, sex, or breed predilection for canine or feline lumbosacral fracture and luxation. However, dogs are more likely to sustain this injury than cats, and there is a trend of dogs less than 3 years of age being affected more frequently[1-6].

Other reports showed that most dogs with fracture/luxation involving the cauda equine start weight bearing 3 to 4 weeks postoperatively using transilial pinning and lag screw fixation trough articular facets of L_7-S_1[5]. Response to surgical treatment in the present clinical report revealed that urgent suitable and simple technique with only transilial pinning could relieve back pain within shorter recovery time in dog who suffered from cauda equine syndrome[7]. Therefore, it can be concluded that transilial pinning is introduced for avoiding the eventual iatrogenic trauma to nerve roots. On the other hand, removing the two Kirschner wires from articular facets of L_7-S_1 showed no overriding or neurologic dysfunction signs within 6 months. However, articular facets fixation using lag screw or Kirschner wires are considered as a auxilliary technique.

References

1- Denny HR, Butterworth SJ. Lumbosacral diseases. In: Denny HR, Butterworth SJ, eds. *A guide to canine and feline orthopaedic surgery.* 4th ed. London: Blackwell Science, 2000;263-277.

2- Sharp NJH. Neurological deficits in one limb. In: Wheeler SJ, ed. *Manual of Small Animal Neurology.* 2nd ed. Cheltenham: British Small Animal Veterinary Association Publications, 1995;172-173.

3- Slocum B. Slocum TD. L_7 –S_1 Fixation- Fusion technique for cauda equina syndrome. In: Bojrab MJ, Ellison GW, eds. *Current techniques in small animal surgery.* 4th ed. Baltimore: Williams and Wilkins, 1998;861-864.

4- Smith GK, Walter MC. Fractures and luxations of the spine. In: Newton CD, Nunamaker DN, eds. *Textbook of small animal orthopedics.* 1st ed. Philadephia: Lippincott, 1985;328-329.

5- Fossum TW, Hedlund CS, Hulse DA, et al. Surgery of the small intestine. In: Fossum TW, Hedlund CS, eds. *Small animal surgery.* 2nd ed. St. Louis: Mosby, 1997;1141-1147.

6- Sturges BK, LeCouteur RA. Vertebral fractures and luxations osteoarthritis. In: Slatter D, ed. *Textbook of small animal surgery.* 3rd ed. Philadelphia: W.B. Saunders Co, Vol 2, 2003;1256-1257.
7- Ullman SL, Bourdrieau RJ. Internal skeletal fixation using Kirschner apparatus for stabilization of fracture/luxations of the lumbosacral joint in six dogs. *Vet Surg* 1993;22:11-17.

چکیده

اولین گزارش درمان جراحی شکستگی مهره کمری و دررفتگی خاجی - کمری در ایران

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توصیف بیمار و یافته هاي بالیني: درارديبهشت ماه سال ۱۳۸۵ یک قلاده سگ پکینز نر، با سن تقریبی ۲ سال و وزن ۵/۵ کیلوگرم به کلینیک دامپزشکی بخش خصوصی مراجعه نمود. معاینه بالینی عدم وزن گیری روی اندامهای حرکتی خلفی، درد کمر و عدم دفع مدفوع با اشتهای طبیعی و اختیار در ادرار کردن را نشان داد. درجه حرارت، وضعیت هیدراتاسیون و رنگ مخاطات در وضعیت طبیعی قرار داشته و پروفیل های خونی و سرمی متعاقب آزمایش خون شناسی و بیوشیمیایی در دامنه طبیعی قرارداشتند. رادیوگرافی بعمل آمده از نمای شکمی - پشتی و جانبی - جانبی شکستگی مهره هفتم کمری و دررفتگی خاجی- کمری را تائید نمود.

درمان و نتیجه أن: پس ازآماده سازی بیمار از نظر جراحی، بیمار در وضعیت سینه ای حالت گماری شده و با آماده شدن گروه جراحی و شان گذاری بیمار، برش پوست از مهره چهارم کمری تا اولین مهره دمی برروی خط وسط انجام شد پس ازجداسازی دو طرفی عضلات بالای محوری، و احیای شکستگی و تثبیت زوائد مفصلی مهره اول خاجی به مهره کمری با استفاده از میله کریشنر، میله گذاری بین بال خاصره ای با استفاده از میله هاي شماره دو و سه انجام پذیرفت و شکستگي تثبیت گردید. سپس با برداشت میله کریشنر، عضلات و پوست به شیوه متعارف بخیه شدند. بیمار پنج روز تحت درمان آنتی بیوتیکی قرارگرفت و روز دوم پس از جراحی دفع مدفوع به وضعیت طبیعی برگشته و بیمار در روز هشتم شروع به وزن گیری بر روی اندام های خلفی نمود.

کاربري بالیني: روش میله گذاری بین بال خاصره ای بیمار را از وضعیت زمین گیر به حالت ورزشي در مدت ٦ ماه بهبود داد.

کلید واژگان: شکستگي کمر، دررفتگي، سگ