Nigerian Veterinary Journal Vol. 25 (1), 45-48 (2004)

Case Report

INTERNAL FIXATION OF AN OBLIQUE FEMORAL FRACTURE IN A GERMAN SHEPHERD PUPPY: A CASE REPORT

OGO*[1], N. I., USMAN[2], Y. J. AND JOSEPH[3], M. F

[1]Vetcure Konsults, 3, Afodume Street, Jos. E-mail- ogoendy@yahoo.com
[2]Yaks & Yaks Veterinary Consultancy & Clinic Ltd, 16 Ahmadu Bello Way, P. O. Box 2203, Jos. E-mail: yaksyaks@hotmail.com
[3]Parasitology Department National Veterinary Research Institute, Vom - Plateau State.

*Correspondence

SUMMARY

A 6 month old puppy with oblique femoral fracture on the right hind limb was treated by surgical manipulation which required internal stabilization using a lagscrew fixed in a craniocaudual direction, and a bone plate fixed laterally. Bone healing occurred without complications and the dog's limb was restored to its normal use after seven (7) months.

KEYWORDS: Oblique femoral fracture, neuroleptanalgesia.

CASE HISTORY

A 6 month old female German shepherd puppy light brown colour, weighing 15kg was presented to the clinic on August 3rd, 2001 with complaint of being run-over by the owner's car two days before presentation.

Clinical examination showed trauma on the right hind limb, which was swollen. The dog felt severe pain when the affected thigh (femoral) area was palpated, a grinding sensation (crepitation) was also heard and the positioning of the limb was abnormal. Thus the right limb was lame and could not bear weight. The dog was placed on piroxicam® capsules (anti-inflammatory cum analgesic) 20mg orally for two days and radiograph of the affected limb was recommended.

The radiograph (Fig. 1) showed a complete oblique mid-shaft femoral fracture, and the client was advised to withhold food and water for 24 and 12 hours respectively prior to surgery which was done on the 6th August, 2001.

Fig. 1: Complete oblique mid-shaft femoral fracture

Surgery

Clinical examination on the day of surgery showed that the puppy was in a stable state, while the swelling on the affected limb had

subsided. The dog was pre-operatively prepared by liberally shaving the thigh of the right limb, cleaned with soap and chlorhexidine, then was premediated using Atropine 600µg (50µg/kg), Diazepam and Ketamin HCl were given at a ratio of 0.5ml: 1.5ml intravenously to effect to achieve neuroleptanalgesia, and finally anesthesia was induced using thiopentone sodium (30mg/kg) on a continuous basis in small doses given intravenously.

A craniolateral skin incision of about 6 inches was made up to the tensor fascia lata before getting to the muscles (quadriceps and hamstrings), which were separated to expose the fracture site (there were haemorrhage and inflammatory response evident at the site). The fractured ends of the right femur were exteriorized and explored to check the extent of damage done before being stabilized using a lagscrew (2.5cm x 3mm), which was inserted in a carniocaudal direction through the proximal fracture, and drilled downwards into the distal (lower) part of the bone. Further stabilization of the fractured femur was achieved using a 6-hole Wright® Venables bone plate (13.75cm), which was fixed on the lateral side of the bone by drilling appropriate screws (2.5cm x 3mm). After aligning and fixing of the plate, the site was closed in four (4) layers starting from the muscles, through the tensor fascia lata to the subcutis using chromic catgut (Size 1) in a simple continuous suture pattern, while the skin was closed with nylon (size 0) using the blanket pattern.

The following post operative treatment was carried out;
-Ramox® L.A 3mls i/m (150mg/ml) repeat after the 3 days
-Tridox® L.A 3mls i/m (200mg/ml) stat
-Liberal spread of oxyspray®. (Oxytetracycline and Gentian violet)

The dog recovered from anaesthesia and was discharged on the same day, but was brought everyday for evaluation and necessary treatment which were done as follows:

07/8/01	Hematopan B® 2ml s/c (Amino acids and Vitamins)
10/8/01	Ramox ® L.A. 3mls i/m Levajet ® (Levamisole Hcl 118mg/ml) 1 ml s/c.
13/8/01	The stitches were removed and a liberal spread of oxyspray ® applied.

14/9/01 The dog was recommended for another radiograph which was done, and the result showed enough bone healing to warrant another surgery (Fig. 2) which was scheduled for 25th September 2001 for the removal of the bone plate and lagscrew.

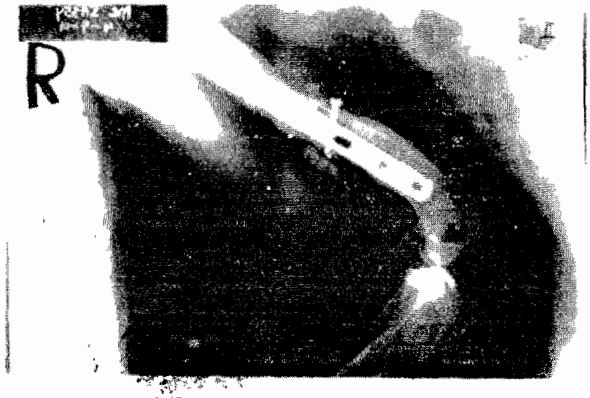

Fig. 2: shows good bone healing

Second Surgery

The clinical findings showed that the dog was very active, with all the vital signs (temperature, pulse, mucous membrane colour etc) normal, and has started to bear weight on the affected limb.

The same pre-operative anaesthetic induction, general anaesthetic and surgical approach as was done in the first surgery was used, then followed by the unscrewing of the plate and removal of the lagsrew, then the incision was subsequently closed in 4 layers as was done in the first surgery. The wound was sprayed with oxyspray® and the following treatment given:
-B-complex inj. 3mls s/c stat
-Ramox® L.A 3mls i/m stat
-Tridox® L.A. 3mls i/m stat.
-Piroxicam® capsules 20mg o.d x 1/52.

The dog recovered from anaesthesia and was discharged on the same day.

The stitches were removed from the wound site and sprayed with oxyspray® on 2nd October 2001. A third (3rd) radiograph was taken on 13th March 2002, and this showed complete bone healing (Fig. 3).

Fig. 3: shows complete bone healing

DISCUSSION

The femur has been shown to be the most frequently fractured long bone in veterinary medicine, with about 20% occurrence (Harvey *et al.* (1991). These authors suggest surgical repair of most femoral fractures since the outcome of externally fixed femoral fractures are poor. Apart from convenience, the lateral approach to the fracture site is the best since a medial approach may lead to damage to the sciatic nerve. The works of Bojirah (1975) and Harvey *et al.* (1991) show that an oblique fracture of the femoral shaft can be reconstructed using lagscrew in conjunction with bone plate; this was exactly done in this case by first inserting the lagscrew before the plate. This helped to compress and also to stabilize the fracture line, of much importance is the fact that the lagscrew was placed craniocaudally so as not to interfere with the bone plate, which was placed laterally.

The choice of anaesthetic agents used for this procedure even though far from ideal was from those within the clinician's reach. As a premedicant, Atropine was used to prevent excessive salivation which occurs when ketamine HCl is used (Hall and Clarke, 1983). In order to minimize the convulsion also associated with the use of ketamine HCl in dogs, a low dose (1.5ml) was given in conjunction with the sedative Diazepam (0.5ml). The dose required to achieve any of the tranquillizing, hypnotic and sedative effects associated with Diazepam vary among individuals (Dundee and Wyatt 1974). The low dose of 0.5ml given helped in achieving the required effect. In effect, the combination of ketamine HCl and Diazepam was used to achieve neuroleptanalgesia before the general anaesthesia was induced using the

ultra short barbiturate thiopentone sodium as a continuous infusion in small doses.

The use of Ramox® L.A (Amoxyeillin trihydrate) and Tridox® L.A (Tetracycline) as choice of antibiotics was made considering the fact that the surgery was conducted in a clinic without most aseptic facilities. Thus Ramox® L.A an aminopenicillin G (Abromowicz, 1984) was used in checking anaerobic infections which are mostly associated with surgery (Finefold *et. al.*, 1975) and also helped in maintaining the normal gastrointestinal bacterial flora of the dog which could be disrupted because of debility (Dow, 1988) and the use of Tetracycline based drugs (Tridox® L.A.) and the topical oxyspray® not minding their minor disadvantage of upsetting the gastrointestinal tract and limited usefulness against anaerobic infection (Hirsch *et. al.* 1979), was because of their wide activity against the gram negative and gram positive bacteria as well as mycobacteria (Brown, 1988). Thus the use of both long acting antibiotics was done to expand the spectrum of activity against many bacteria and to achieve a high serum antibiotic concentration which is necessary for effective penetration into walled -off sites of infection (Dow, 1988) which a surgical site may provide. Generally speaking, the fixation of this case of oblique femoral fracture was quite challenging since the path to achieving this objective was littered with obstacles which ranged from taking radiograph (done in an human hospital) to the use of anaesthetic agents most of which were out of stock. Thus the protocol adapted for this surgery was used to achieve a good result.

ACKNOWLEDGEMENTS

We sincerely wish to thank Dr. (Mrs.) M. J. Mohammed, Dr. E. Irokanulo and Dr. E. Ogunsan all of National Veterinary Research Institute, Vom, for their immeasurable help in the course of putting this paper together.

REFERENCES

ABROMOWICZS, M. (ed) (1984): Drugs for anaerobic infections. *Med-letter Drugs Ther.*, **26**:*87*

BOJRAH, M. J (1975): Current Techniques in Small Animal Surgery. Lea and Febiger, *Philadelphia*

BROWN, S. A. (1988): Treatment of Gram-Negative Infections. *Vet. Clinics N. Am. Small Anim. Pract.,*. **18**: 141-1165.

DOW, S. W. (1988): Management of Anaerobic Infections. . *Vet. Clinics N. Am. Small Anim. Pract.*, **18**: 1167-1182 .

DUNDEE, J. W. and WYATT, G. M. (1974): Intravenous Anaesthesia. *Churchill Livingstone, London.*

FINEGOLD, S. M. BARLET, J.G. and CHEW, A. W. (1975): Management of Anaerobic Infections. *Ann. Int. Med.*, **83**: 375 -389.

HALL, L.W, and CLARKE, K. W. (1991): Veterinary Anaesthesia Balliere Tindall, London.

HARVEY, C. E. NEWTON, C. D. and SCHWARTZ. A. (1991): Small Animal Surgery. *J. B. Lippincott Company Philadelphia.*

HIRSCH D. C. BIBERSTEIN, E. L. and JANG, S. S. (1979): Obligate Anaerobes in Clinical Veterinary Practice. *J. Clin. Microbiol.*, **10**: 188 - 191.