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Clinical outcome by effective physiotherapy after excision arthroplasty in a Labrador

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Abstract

The study was conducted in a Labrador, 10 months of age, and weighted 24 kg to evaluate effectiveness of physiotherapy after femoral head and neck excision surgery. Femoral head and neck excision was performed with osteotome from base of trochanter minor to medial edge of greater trochanter. Effective physiotherapy by physical massage with cold/warm pack application, passive exercise, laser therapy, and swimming. Animal showed complete weight bearing by 4th post-operative day. Post-operative monitoring was done for 3 weeks. On serial follow up examinations dog showed good range of motion, with no or non-significant lameness and pain relief with excellent clinical outcome.

Keywords: Femoral head and neck osteotomy, laser therapy, physiotherapy

Introduction

Canine hip dysplasia is a hereditary tendency to cause degenerative joint disease in younger dogs. Todhuhter and Lust (2003) reported that hip dysplasia was a developmental problem, mainly affecting medium to large-breed dogs. Commonly encountered coxo-femoral joint affections are hip dysplasia (54%), osteoarthritis (28%) and hip luxation (18%) are most common which require newer treatment protocols to satisfy the ethical and welfare concerns (Arunprasad *et al.*, 2012) [8]. Physiotherapists have therapeutic treatments mainly focusing on correcting muscle dysfunctions, relieving pain, joint mobilizations, and advisement on lifestyle modifications could be equally beneficial to the canine patient. Dogs of irrespective sizes, suffering hip disease and pain, underwent Femoral Head and neck excision (FHNE) instead of Total Hip Replacement (THR) failed to restoring all hip mobility and comfort. Presence of pain, movement restrictions, limb shortness and muscle atrophy were more prominent in FHNE cases than THR cases (Jahandideh A and Tabary PZ, 2020) [3]. Femoral Head and Neck Excision (FHNE) is considered as a salvage procedure for improving the quality of life of many pets by eliminating of pain (Ganesh *et al.*, 2017) [2]. The conventional radiographic method (CRM) is used as a definitive diagnosis, and it is based on evidence of joint laxity, degenerative joint disease (DJD) or both (Kapatkin *et al.*, 2002) [9].

The present study describes analgesic therapy and physiotherapy procedures to achieve early pain-free mobility and satisfactory gait in a Labrador after Femoral head and neck excision surgery.

Case History and Observation

The study was conducted on a Labrador, aged 10 months, and weighting 24kg, presented with history of pain, lameness, exercise intolerance, unable to climb stairs and difficulty in jumping. Physical examination revealed joint enlargement, muscle atrophy, stiffness of joint, reduced range of motion and dysplastic femoral head from acetabulum. Standard hip extended ventro-dorsal radiographs revealed hip dysplasia. Radiographic observations included hip joint congruity, flattening of acetabulum and marked subluxation.

Treatment and Discussion

Animal premedicated with xylazine @ 1 mg/kg and ketamine @ 10 mg/kg intramuscularly.

Induction with Butorphanol 0.2 mg/kg and diazepam 0.3 mg/kg slow IV then maintained with 2% Isoflurane. Animals were stabilized with intravenous fluid therapy, use of ceftriaxone sodium has effectively prevented post-operative infection. The craniolateral approach to the hip joint was used, incision curves cranial to greater trochanter and straightened to one-third the length of the femur distally (Fig 1). Then fascia lata incised and vastus lateralis retracted cranially and biceps femoris caudally. Superficial and middle gluteal muscles retracted dorsally (Fig 2) and partial tenotomy of deep gluteal muscles tendon provided best visualization of hip joint (Fig 3). Capsule around head and neck of femur and acetabulum incised and osteotomy was performed from base of trochanter minor to trochanter major. Any rough prominences were removed with rongeurs and joint capsule sutured (DeCamp *et al.*, 2016) [1]. Pre-emptive analgesia with meloxicam 0.2 mg/kg IV followed by carprofen 2.2 mg/kg twice a day post-operatively until pain relief. The skin sutures were removed on 14th post-operative day. Application of cold or warm pack application for initial 3 days. Passive exercise like flexion of femur and extension of hip joint in lateral recumbency or standing 3 times a day. Laser therapy 6 Jouls @ 5 minutes daily once for 7 days (Fig 4). If poor muscle mass was reported in 2nd post-operative week suggested for swimming sessions 30 minutes daily for 2 weeks. Dog showed complete weight bearing by 4th post-operative day (Fig 5). On serial follow-up examination, the dog was in good condition with no or non-significant lameness.

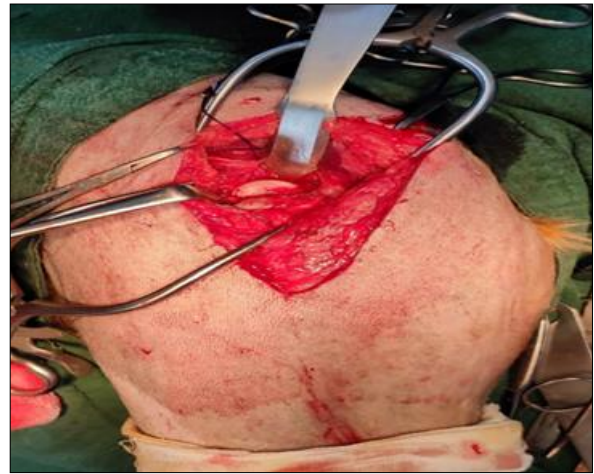


Fig 3: Partial tenotomy of deep gluteus and femur head elevated with bone elevator



Fig 4: Laser therapy on hip joint



Fig 1: Curvilinear incision around hip joint



Fig 5: Complete weight bearing on 3rd post-operative day



Fig 2: Exposed hip joint capsule with muscle retractors



Fig 6: Immediate post-operative radiograph



Fig 7: 90th post-operative day radiograph with good muscle mass after physiotherapy procedures



Fig 8: 90th post-operative day dog showing grade-I lameness

FHNE indicated in degenerative joint disease resulting from hip dysplasia, Legg-Calve-Perthes disease or aseptic/ avascular necrosis of the femoral head and neck, femoral neck fractures, complex acetabular fractures, and irreducible or chronic cox-femoral luxations. Kasstrom (1975) [5] stated that the higher incidence in young animals below one year might be due to very rapid growth, improper skeletal and muscular growth, overloading of articular surfaces and rupture of round ligaments leads to dysplasia. In these cases Total Hip Replacement was not possible technically due to lack of availability of implants (owner's affordability and/or availability). Serial follow-ups with physical and radiographic examinations were best used for patient evaluation concurs with study of Sabiza S *et al.*, 2019 [6] (Fig 5). An immediate post-operatively radiograph was taken to evaluate excision line on the femur (Fig 6). The Patient maintained good muscle mass and good false joint formation in serial radiographic evaluations (Fig 7). Active small-sized patients and younger animals had early weight-bearing and pain-free mobility. Limb shortening was observed in younger patients might be due to damage or excision of physics. Laser therapy, physical massage with cold/warm pack application, passive exercise and swimming post-operatively for 3 weeks provided good range of motion, with no or non-significant lameness and pain relief with excellent clinical outcome in Labrador (Fig 8). We recommend physiotherapy program to reduce long-term use of NSAID's which has potential side effects like gastric ulcer formation and renal failure.

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