Bangladesh Journal of Veterinary and Animal Sciences, Vol. 7, No. 1, January-June 2019

ISSN 2227-6416

Bangladesh Journal of Veterinary and Animal Sciences

Journal home page: www.bjvas.cvasu.ac.bd

A Case report

Femoral head ostectomy for the surgical correction of coxofemoral luxation in a dog– A case report

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ARTICLE INFO

Article history :
Received : 10/04/2019
Accepted : 19/09/2019

Keywords :
Coxofemoral luxation,
Non-weight bearing, Limping, Dog.

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ABSTRACT

A 4.5-year-old male Lhasa Apso dog weighing 7.5kg came to our SAQ Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University with a history of falling down from the 5th floor of a building. Clinical examination revealed the dog unable to bearing his weight and limping of the left rear leg showing painful to touch and left rear leg shorter than right leg. Physical and radiographical examination led to the diagnosis of Coxofemoral luxation, which was treated surgically. Regular exercise was practiced for three weeks postoperatively. After 3 months of surgery, the dog was healthy and walked normally without any complaints regarding his normal walking.

To cite this paper : *Sutradhar, B.C., Chowdhury, J., Datta, A., Biswas, Su. and Biswas, Sr. 2019. Femoral head ostectomy for the surgical correction of coxofemoral luxation in a dog– A case report. Bangladesh Journal of Veterinary and Animal Sciences, 7 (1): 82-85*

1. INTRODUCTION

Femoral head and neck ostectomy (FHO) is a procedure which involves removal of the femoral head, which results in formation of a pseudoarthrosis in between the cut surface and the acetabulum (Kilic, 2006). Femoral head and neck ostectomy (FHO) is also referred as an excision or excisional arthroplasty of the hip or a femoral head and neck excision (Harasen, 2004). The term Femoral Head and Neck Excision (FHNE) arthroplasty was first described by Gathone Robert Girdlestonein 1926 for the treatment of septic coxofemoraljoints (Horan, 2005). A few decades later this procedure was used in dogs for the treatment of chronic osteopathy and coxofemoral luxation's (Spreull, 1961). Common indications for FHO in dogs and cats are chronic hip dysplasia, coxofemoral luxation, fractures of the femoral neck and acetabulum, aseptic necrosis of the femoral head and neck (Berzon *et al.*, 1980; Off and Matis, 2010).

Surgical options for coxofemoral luxations includes total hip replacement, femoral head and neck ostectomy, capsulorrhaphy, trochanteric transposition, toogle pins, external fixation devices etc. (Bone *et al.*, 1984). FHO is a salvage procedure which is performed to restore normal function to a hip joint when other methods of repair have failed or unsuitable during financial constraints are considered (Smith *et al.*, 2017). FHO suggest a high degree of success with owner satisfaction and overall success is 93-95% (Duff and Campbell, 1977; Berzon *et al.* 1980).

In our case the dog was diagnosed with coxofemoral luxation and was corrected surgically. The objective of this study was to present and evaluate functional outcome of FHO to correct coxofemoral luxation in a dog.

2. CASE PRESENTATION

A 4.5 year-old male Lhasa Apsodog, weighing 7.5kg was presented to the SAQ Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University with a history of falling down from the 5th floor two days back.

Physical examination revealed apparently active and alert animal with normal temperature and mucous membrane. Orthopedic examination revealed non-weight bearing, shorter length and limping of left rear leg, which was sensitive to pain in touch.

Computed radiographs of the pelvis and thorax were performed. Thoracic radiographs showed no remarkable changes; however, pelvic radiographs indicated a craniodorsal luxation of the left coxofemoral joint without any fracture (Figure 1).

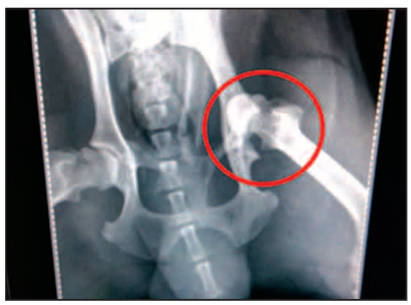

Figure 1. Ventro-dorsal radiographic view of the pelvic region showing craniodorsalluxation of left coxofemoral joint.

Based on physical examination and imaging, Coxofemoral luxation was diagnosed. Before surgery, the dog was sedated with Xylazine (Xylazine®; Indian immunologicals Ltd) at 1 mg/kg intramuscularly and 5% dextrose (Dextrose-N®; The ACME laboratories Ltd) was administered intravenously with IV catheter (5 mL/kg/hour) to correct dehydration and hypoglycemia. Ketamine HCl (Ketalar®; Popular pharmaceuticals Ltd) at 12mg/kg was used for induction of anesthesia and maintained with half dose of Ketamine HCL from previous dose. The dog was placed in right lateral recumbency with affected left limb facing upward and the surgical site was prepared aseptically.

A vertical 8cm long skin incision was made along the craniolateral border of the femur extending to the greater trochanter craniolaterally to the left coxofemoral joint (Figure 2). After incising fascia, the underlying muscles of coxofemoral joint were exposed. The middle and deep gluteal muscles were separated and retracted caudally. The deep gluteal muscle that inserts into greater trochanter was exposed. The tendinous portion of deep gluteal muscle was separated from its insertion on the greater trochanter. An incision was given on the joint capsule from cranioproximal to caudodistal direction to expose femoral head (Figure 3). A Gigli wire was used to perform femoral head ostectomy (Figure 4 and Figure 5). The ostectomy site was smoothed with a bone rasp. Before routine closure, the surgical site was thoroughly irrigated with normal saline (Normal saline®; The ACME laboratories Ltd). The muscles, fascia, subcutaneous tissue and skin were closed routinely in layers (Figure 6).

Figure 2. Vertical incision was making along the craniolateral border of femur.

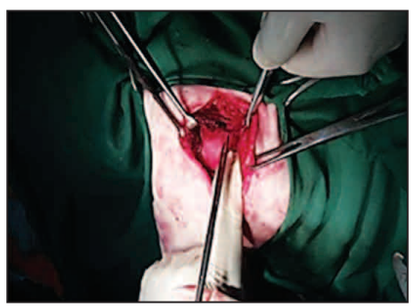

Figure 3. Femoral head and neck were exposed after deep incision.

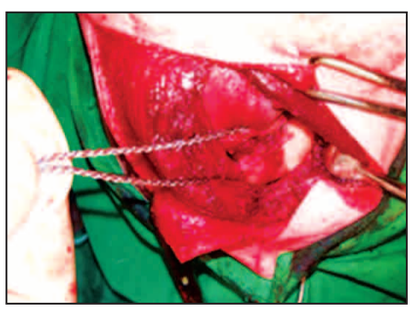

Figure 4. A Gigli wire was used to separate the femoral head from neck.

Figure 5. Femoral head after ostectomy.

Figure 6. Skin suture after surgery.

The dog was discharged from hospital immediately after surgery using hobble bandage to restrict movement. The owner was advised for applying physiotherapy (massage, passive range of motion etc) after seven days of surgery for ensuring good range of limb motion.

Meloxicam (Mel-Vet®; The ACME laboratories Ltd) @ 0.1mg/kg subcutaneously every 24 hours) was administered for 5 days to manage inflammation and pain. Ranitidine (Neotack®; Square pharmaceuticals Ltd) @ 12.5mg/kg orally every 12hours was given to minimize the side effects from NSAID. Antimicrobial coverage was given with Ceftriaxone (Ceftron®; Square pharmaceuticals Ltd) @ 50mg/kg every 24hours for 7 days.

After two weeks, the dog was brought to hospital again and found walking on partial weight bearing condition (Figure 7). Sutures were removed where the skin was healed completely. False joint was found on radiograph (Figure 8).

Figure 7. The dog could stand on his leg after 14 days of surgery.

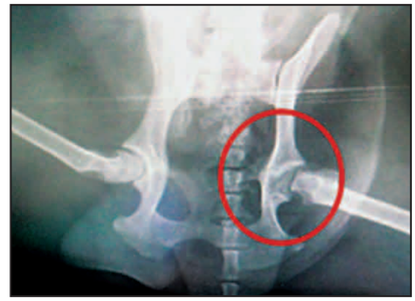

Figure 8. False joint was detected on radiograph after 14 days of surgery.

3. DISCUSSION

This case report describes the successful surgical management of a coxofemoral luxation in a 4.5-year old male Lhasa Apso dog. Coxofemoral luxations are common traumatic injury observed in small animals such as dogs and cats. Both surgical and nonsurgical methods can be applied for the management of coxofemoral luxation. Surgical reduction is recommended when closed or nonsurgical methods fail to maintain the actual position of joint. In our case, closed reduction was tried under fluoroscope but reduction was failed in closed management.

FHO had a good outcome in our case because of smaller size animal (Squire *et al.*, 1991; Peycke 2011). Smaller breeds of dog having body weight upto 25kg were recorded for complete recovery (Berzon *et al.*, 1980; Bonneau and Breton, 1981). Patients with lean body, good muscle tone are reported to rehabilitate faster whereas the fatty patients with poor muscle tone returning to normal function after FHO is tough and takes longer time to rehabilitate (Olmstead, 1995).

Common complication after FHO were pain, pyrexia, wound infection due to inevitable infarction and muscular flap necrosis, minimal muscle atrophy and shortness in related extremities (Dueland, 1984; Bjorling and Chambers, 1986; Lewis, 1992; Dueland *et al.*, 1997; Kilic, 2006). In our case the surgery was performed under aseptic condition and the owner took good postoperative care of the patient. No complication was found within one month of postoperative observation.

Physical therapy was given after surgery to decrease pain, inflammation and recovery time. Various exercise involvespassive range of motion, swimming, and treadmill use (land/underwater), which results in physical movement of the limb, improve function, gait, strength, balance and endurance (Shumway, 2007; Smith *et al.*, 2017). Passive flexion and extension exercises are recommended immediately in postoperative to maximize the range of motion which helps in

developing false joint (Piermattei and Flo, 1997; Olmstead, 1995; Manley, 1993; Dueland, 1984. Dueland *et al.*, 1997; Berzon *et al.*, 1980). In this case, the owner was advised to do some physical exercise such as message, passive range of motion from the second week of surgery. After two weeks, the patient was found partial weight bearing condition and walk freely after one month.

To our knowledge, this is the first report describing FHO of a Lhasa Apso dog in Bangladesh. Fixation of femoral head or replacement of femoral head may be practiced in large breed dog; however, femoral head ostectomy for coxofemoral luxation is very much effective for small breeds weighing less than 25kg body weight.

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