

Case report

Intramedullary Fixation Approach to Tibiotarsal Fracture in Ostrich (*struthio camelus*): 2 Case Report

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Abstract

Lameness is one of the most common problems of musculoskeletal injuries faced by birds especially Ostrich (*struthio camelus*) chicks during brooding period. Mostly it occurs due to fracture in long and their associated bones because of development of pathological condition of bone softening. In avian species, external splints and intramedullary pinning are the most common method to manipulate such injuries. In this case report, two ostrich chicks (A & B) were presented with shaft fracture of tibiotarsus of left limb. Surgery was performed for introduction of intramedullary (IM) pin to immobilize the fractured bones. Bird A was approached laterally and B medially to reach the bone. Though, the birds successfully recovered from anesthesia after surgery they couldn't survive longer due to stress and blood loss. We concluded that medial approach is more feasible while dealing with such fractures.

Keywords: Ostrich, Fracture, Tibiotarsus, Intramedullary pinning.

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Introduction

Ostrich are the biggest flightless avian species of present era [1, 2]. These ratites are known for their strong legs which provide them fast running speed. These birds are becoming the center of future farming but this market oriented practice is being hampered by certain problems. Lameness is one of the most common problems during brooding period in farmed ostrich chicks.

These birds have higher feed conversion ratio in early days of life and gain weight rapidly, which make long bones of limbs difficult to bear weight [3]. So, minor slipping and traumatic injuries on hard substrate may lead to fractures [4]. Genetics, nutrition, environment and handling practices are common factors which effect bone health [2, 5-7]. Usually, mortality in such cases occurs owing to tibiotarsal luxation and fracture in ostrich [1, 4, 5, 8].

The objective of this report is to improvise the treatment potential and enhance the longevity of affected birds. Present report will help the surgeons to opt the choices of manipulation in such fractures. In authors' knowledge, it is the first case report describing intramedullary pinning in fractured ostrich chicks.

Case Report

Two ostrich chicks (A&B) of 2 month age weighed 3.0 and 3.5 kg, respectively, were presented on Veterinary Medical Teaching Hospital (VMTH), PMAS-Arid Agriculture University, Rawalpindi, with the complaint of fractures in tibiotarsal bones. Fractures were easily palpable on left limb in both cases (Fig 1 and 7). History revealed weakness of entire flock due to malnutrition. After diagnosis, both birds were prepared for surgical intervention. Bird A was anesthetized and maintained with ketamine + xylazine (4:1), intramuscular @ 5 mg/kg. Skin was aseptically cleaned and 8 cm long incision was made on lateral side. Muscles bellies were separated to expose fractured site (Fig. 2).



Fig. 1: Case A- Palpable simple fracture on left tibiotarsus



Fig. 2: Case A- Making incision to approach from lateral side



Fig. 3: Case A- Inserting intramedullary pin using Hand chuck



Fig. 4: Case A- Inserting intramedullary pin using Hand chuck



Fig. 5: Case A- Suturing muscle bellies

Intramedullary pin of 2.5 mm was inserted from fractured site to proximal end of tibia (Fig. 3) and then pushed to distal portion for fixation (Fig. 4). After insertion of the pin, muscles and skin were sutured with chromic catgut (3/0 USP) using simple continuous pattern (Fig. 5 & 6).



Fig. 6: Case A- Operated area after fixation

Bird B was also anesthetized same as A. This bird was approached from medial side and an incision of same length was made on skin over tibiotarsus. The bone was immediately exposed because of aggressive muscle damage. Hematoma and bone fragments were removed and intramedullary pin of 3mm size was inserted in the same manner as explained in case of bird A. Muscle layer was closed with chromic catgut (3/0) using simple interrupted pattern and skin was sutured with chromic catgut (2/0) with same pattern.



Fig. 7: Case B- Simple fracture on medial side of left tibiotarsus



Fig. 8: Case B- Making incision to clear the area for medial approach

The sutured area was then cleaned with povidine iodine and bandaged with non-adhesive bandage. Both birds recovered from anesthesia smoothly after 20-30 minutes of surgery.

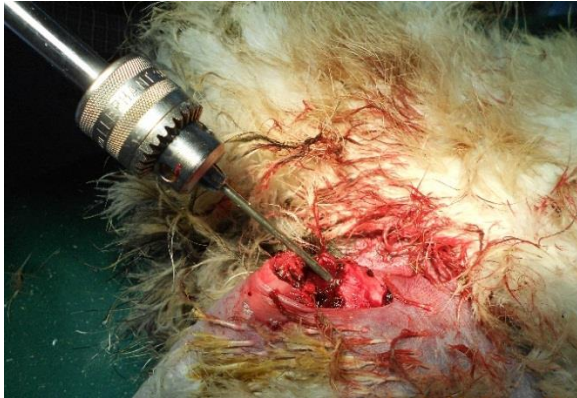


Fig. 9: Case B- Inserting intramedullary pin using Hand chuck



Fig. 10: Case B- Suturing muscle bellies



Fig. 11: Case B- Operated area after fixation

Subcutaneous injection of meloxicam (Metacam[®], Boehringer Ingelheim Vetmedica, Inc.) @ 0.3 mg/kg and intramuscular injection antibiotic KCND[®] (Alfasan International BV, Woerden Holland) @ 0.2ml were used as postoperative in

these ratites. Lactated Ringer's solution was given orally via esophageal intubation in both cases. Bird B was trying to kick fractured leg so it was restrained in sitting posture. These chicks were sent back to farm and owner was advised to offer them soft feed. Death was reported in both cases 3-4 hours after reaching at farm.

Discussion

Fractures of tibiotarsus are common in ostrich chicks during brooding period and mostly they are left untreated [1]. We are reporting a trial to treat such fractures through intramedullary pinning. Same principle of fracture repair are applied in avian species as in other veterinary practices [9, 10]. The adopted approaches to repair tibiotarsal fracture in avian species are splints, casts, external fixator, intramedullary pinning, circlage and hybrid combination of these methods, depending upon the type of fracture and condition of bone and animal health status. Splints are difficult to apply and manage in proximal third of tibial bone because of soft tissue and musculature [9-12]. External fixator is difficult to manage after fixing because ratites can do picking on fixator and collar cannot be applied because of long neck size. Plates are possibility but require bone grip for screws. In such case, where osteoporosis is present, fractures arise easily and are difficult to manage, thus the fractures were tried to fix using intramedullary pinning by lateral and medial approach; medial approach was easier and more successful than lateral. In authors' knowledge intramedullary pinning approach is not yet been reported in young ostrich. The suspected cause of death in both cases was the stress and blood loss. Although, this technique got off the bad start, expectations are lying ahead to expect better results by controlling bleeding and stress in young birds.

Conclusion

The cases presented here were successfully operated upon, but could not survive long. Hemorrhage and previous health status are key factors for selection of fixation technique in ratites.

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