

**Bilateral Polydactyly in a Nondescript Calf**

Mudasir Bashir Gugjoo*, Irawati Poleshwar Sarode, Sandeep Kumar, Amarpal

Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122, Uttar Pradesh, India

Accepted 30 March 2013

Abstract

A 7 day old non-descript female calf was presented to the Referral Veterinary Polyclinic, Indian Veterinary Research Institute-Izatnagar with a history of limping and unusual appearance of hindlimbs from birth. Physical examination revealed additional digit on the metatarsal regions of both the hind limbs. Radiographic examination confirmed the presence of supernumerary digits unaccompanied by any other congenital malformation. It was diagnosed as Polydactyly type IV. Surgical intervention was done to remove the extra digit in both the hind limbs. This clinical article reports the successful management of bilateral polydactyly in a non-descript calf.

Keywords: Calves; congenital polydactylism; hindlimbs

Introduction

Polydactylism is a malformation characterized by the presence of one or more additional digits. It has been reported in both humans and animals, and most commonly involved are lower portion of limbs (Leipold and Dennis, 1987; Talamillo *et al.*, 2005). Although the frequency in cattle is very less, affected cases show abnormalities in forelimb compared to hind limb (Johnson *et al.*, 1982). However, in the present case bilateral polydactylism of hindlimbs was observed in a calf.

Case history and observations

Seven days old non-descript female calf was presented to Referral Veterinary Polyclinic, Indian Veterinary Research Institute, Izatnagar with the history of extra digits on both the hind limbs. Dam of the calf was served with bull, which also had history of polydactyly in its younger age. On admission, the calf appeared in good body condition. However, Owners reported limping and unusual appearance of hindlimbs since birth.

Clinical examination revealed slight limping.

Physiological parameters were normal. Physical examinations revealed additional digit on the metatarsal region of both the limbs (Fig. 1). Radiographic examination revealed that both the supernumerary digits had fully developed metatarsal bone and well developed phalanges (Fig. 2). Supernumerary digits were not accompanied by any other congenital malformation.



Fig. 1. Bilateral polydactyly in a non-descript calf

Anaesthetic and surgical management

Bilateral amputation of supernumerary digits was performed after proper consent from owners. Lumbo-sacral spinal anaesthesia was done using 2 ml

*Corresponding author: Mudasir Bashir Gugjoo

E-mail address: mbgugjoo@gmail.com

Local anesthetic (2% lignocaine) and surgical site was shaved and scrubbed with anti-septic solutions using savlon followed by betadine.

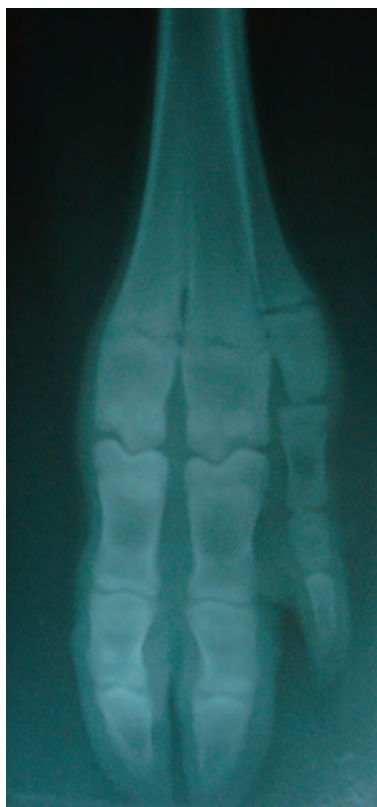


Fig. 2. Radiograph showing the supernumerary digits on medial side of the hindlimbs.

Incision was made on the medial aspect of respective hind limbs from metatarsus of the extra digits and continued up to coronary band, subcutaneous tissue was blindly dissected, vessels were ligated proximally and first phalange was dislocated from its articulation without disturbing other joints. Fascia and subcutaneous tissue were sutured by using No. 0 catgut with simple continuous suture. The skin was closed with simple interrupted horizontal mattress sutures using nylon (Fig. 3). A sterile, modified Robert-Jones bandage was applied to the limb. The same surgical procedure was followed on the other limb.

Postoperative treatment

Post operative care was given with ceftriaxone at 15mg/kg intra muscular for 7 days, meloxicam at 0.5mg/kg intra muscular for 3 days. The cast was changed weekly for one month. After one month animal was able to walk normally without any complication.



Fig. 3. Post-surgical appearance of hindlimbs

Discussion

The occurrence of polydactyly may be due to the genetic defect or foetal interaction with environmental causes (Alam *et al.*, 2007). Polydactyly in cattle can be subdivided into seven types: Bilateral polydactyly of both forelimbs (Type I), i.e. additional metacarpal or phalanges. Unilateral polydactyly of one forelimb or one pelvic limb (Type II), i.e. additional metacarpal or metatarsal bones and phalanges. All four limbs have additional digits (Type III). Bilateral duplication of digits either of the forelimb or hindlimb (Type IV), a rare occurrence. Polysyndactyly (Type V). Bilateral incomplete formation of metacarpal (MC) II (Type VI). Polydactyly in combination with a malformation-complex (Type VII). A genetic cause is thought to be responsible for polydactyly Type I to VI (Johnson *et al.*, 1982) and Type VII polydactyly is described to be due to environmental factors (Johnson *et al.*, 1982). Murondoti and Busayi (2001) also opined that polydactyly may occur in both the fore limbs and hind limbs, one fore limb/pelvic, all the limbs or any of the above combinations in the same animal.

The presented calf was affected with Type IV bilateral hind limb polydactyly. Commonly the extra digits occur in the medial side of the limbs (Mather, 1987) as was in the present case. The calf was born to a mother served with the bull having the history of polydactyly in its younger age that had been treated surgically. This suggests that the polydactyly in the present case may be of congenital origin due to sex linked recessive autosomal trait (Singh and Tayal, 1993). This clinical article reports the successful management of polydactyly

by surgical procedure.

Acknowledgement

Authors are highly thankful to the Director of Indian Veterinary Research Institute, Izatnagar-243122, Uttar Pradesh, India for providing necessary facilities.

References

- Alam, M.R., Lee, J.I., Lee, H.B., Ko, J.J., Lee, K.C. Kim, N.S., 2007. Supernumerary ectopic limbs in Korean indigenous cattle: four case reports. *Veterinarni Medicina* 52, 202.
- Johnson, J.L., Leipold, J.W., Guffy, M.M., Dennis, S.M., Schalles, R.R., Mueller, M.S., 1982. Characterization of bovine polydactyly. *Bovine Practitioners* 3, 7.
- Leipold, H.W., Dennis S.M., 1987. Polydactyl in cattle. *Irish Veterinary News* 9, 11.
- Murondoti, A., Busayi, R.M., 2001. Perineomelia, polydactyly and other malformations in a Mashona calf. *Veterinary Record* 148, 512.
- Mather, D.B., 1987. Polydactyly in calves. *Veterinary Record* 120, 487.
- Singh, A.P., Tayal R., 1993. Joints in Ruminant Surgery. (Tyagi R.P.S and Jit singh, eds.) CBS, pp. 336.
- Talamillo, A., Bastida, M.F., Fernandez-Teran, M., Ros, M.A., 2005. The developing limb and the control of the number of digits. *Clinical Genetics* 67, 143–153.