

## Polydactylism along with Uterine Torsion in a Cow: A Case Report

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### Abstract

A full term non-descript pluriparous cow aged six years was presented to Referral Veterinary Polyclinic (Veterinary Gynaecology and Obstetrics wing) of the Indian Veterinary Research Institute, Izatnagar with the history of intermittent abdominal straining but unable to calve. Clinical observation revealed that cow was restless, exhibiting other imminent signs of parturition such as teat engorgement along with udder enlargement, relaxation of sacro-sciatic ligaments and vulvar oedema. Per-vaginal examination revealed mild degree of torsion  $< 180^\circ$  where fetal part and cervix was palpable. Animal was restrained and torsion was corrected by simple rolling method without the application of plank. After one roll, uterus was detorted and per-vaginal maturation was performed to correct fetal maldisposition, then, three point tractions were applied and live female fetus was extracted out. Gross examination of fetus revealed polydactylism *i.e.* accessory/duplication of phalanges in all the four limbs and this duplication was more pronounced in hind limbs. Further detail history revealed that the bull to which cow was bred had similar condition that relates it to be genetically linked disease. The animal was discharged on same day with administration of systemic antibiotic, anti-inflammatory along with herbal ecboic and recovered uneventfully within three days of treatment.

**Keywords:** Polydactylism, Uterine torsion, Cow, Genetically linked disease

Polydactylism is a malformation which is characterized by the presence of one or more additional digits. This anomaly has been described in animals, *e.g.* cats (Sis, 1968), dogs (Hansen *et al.* 1972), horses (Giofré *et al.* 2004), and cattle (Johnson *et al.* 1981; Murondoti and Busayi, 2001; Bähr *et al.* 2003). Polydactylism is mainly reported in Simmental, Holstein Friesian and Hereford breeds of cattle. In Simmental breed, polygenic mode of inheritance *i.e.* one dominant gene at one locus and two homozygous recessive genes at another locus was found to be responsible (Johnson *et al.*, 1981), while, in other breeds of cattle, autosomal dominant with incomplete penetrance as mode of inheritance has been reported (Roberts, 1971).

Uterine torsion is maternal cause of dystocia mostly occur during late 1<sup>st</sup> stage or early 2<sup>nd</sup> stage of labor which is characterized by spiral twisting of uterus on its longitudinal axis either

in clockwise (right sided) or in anticlockwise (left sided) direction. Case of uterine torsion is considered an emergency and handling must be done as early as possible. Correction by rolling the animal utilizes the principle of rolling the animal around its uterus while the uterus remains static or fixed. Uterus is fixed by plank method when degree of torsion is  $> 180^\circ$  while in  $< 180^\circ$  torsion cases, uterus is generally fixed by grasping fetal parts if cervix is opened and fetal parts are accessible.

### History and Clinical Examination

A non-descript cow of 6 years of age was presented to the Veterinary Gynaecology and Obstetrics wing of the Referral Veterinary Polyclinic of Indian Veterinary Research Institute, Izatnagar with the history of full term gestation, restlessness, straining and frequent

micturition since morning on the day of presentation but unable to proceed into calving. Clinical observation revealed that cow was restless and exhibited intermittent abdominal straining, apart from that other imminent signs of parturition were also present like teat engorgement along with udder enlargement, relaxation of sacro-sciatic ligaments, vulvar oedema and relaxation. Bilateral polydactylism affecting only hindlimbs *i.e.* *tridactyly* condition in both hind limbs was observed in animal symbolizing abnormal hoof conformation. Forelimbs were not affected and were normal. The per-vaginal examination revealed post-cervical, right side (clock-wise) uterine torsion of mild degree *i.e.*  $< 180^\circ$ , however, cervical os was opened and one forelimb which was present in birth canal was palpable.

### Obstetrical and therapeutic management

Animal was restrained and laid down in lateral recumbency in the same direction as direction of torsion. Both forelimbs and hind legs were tied with a rope separately. Torsion was corrected by simple rolling method without application of plank. Fetal part was grasped per-vaginally and animal was rolled in same direction *i.e.* right side as direction of torsion of the uterus. After one roll, uterus was successfully detorted. Animal was checked for fetal disposition. Presentation was anterior longitudinal, position was dorso-sacral and posture was unilateral shoulder flexion along with downward deviation of head (Nape presentation or breast-head posture). For correction of this maldisposition, the forelimb present in birth canal was secured with snare and repelled back in the abdominal



**Fig. 1:** Cow presented at Referral veterinary polyclinic



**Fig. 2:** Imminent signs of parturition observed



**Fig. 3:** Unaffected forelimbs of cow (Lateral view)



**Fig. 4:** Affected (polydactylic) hindlimbs (Dorsal view)



**Fig. 5:** Casting of animal in lateral recumbency



**Fig. 6:** Sudden rolling of animal in direction of torsion (Right side)



**Fig. 7:** Animal held in supine position to correct fetal maldisposition



**Fig. 8:** Extraction of live female fetus

cavity behind the pelvic brim. Thereafter, the dam was made in supine position and muzzle of the fetus was grasped and traction was applied, with other hand neck was repelled slowly and by this way head was brought into the birth canal. Thereafter, both forelimbs were also straightened, then, three point tractions were applied and live female fetus was extracted out.

The gross examination of fetus revealed accessory/duplication of phalanges in all the four limbs and this duplication was more pronounced in hind limbs. However, similar

situation was observed except forelimbs in the dam. Further detail history revealed that the bull to which cow was bred have similar condition that proved it to be genetically linked disease. Enrofloxacin (Fortivir<sup>®</sup>, Virbac, India) 30 mL IM once (single dose) and Meloxicam (Melonex<sup>®</sup>, Intas Pharmaceuticals Ltd, India) 10 mL IM *sid* for 3 days were prescribed. To facilitate expulsion of fetal membranes, herbal preparation (Liq. Exapar<sup>®</sup>, Ayurved limited, India) 100 ml P.O. *bid* on first day followed by 50 ml *bid* daily for 3-5 day was prescribed.



**Fig. 9:** Right forelimb of calf (*Tridactylus*)



**Fig.10:** Left forelimb of calf (*Tridactylus*)



**Fig. 11:** Right hind limb of calf (*Tridactylus*)



**Fig. 12:** Left hind limb of calf (*Tetradactylus*)

## DISCUSSION

Polydactyly is a malformation characterized by accessory/duplication of phalanges. Usually both forelimbs are reported to be affected by polydactyly, but, less frequently a malformation involving all four limbs is described (Johnson *et al.*, 1982). In present case, dam had this condition affecting hind limbs and not the forelimbs. However, calf had polydactyly condition affecting all four limbs showing presence of surplus digit at the medial aspect of forelimbs and hind limbs as previously reported by Mather (1987). Polydactyly in cattle can be classified into seven types (Type I to VII) as described by Johnson *et al.* (1982). Type I –Bilateral polydactyly of both forelimbs; Type II- Unilateral polydactyly of one forelimb

or one pelvic limb; Type III- All four limbs have additional digits; Type IV- Bilateral duplication of digits either of forelimb or hind limb- a rare occurrence; Type V- Polysyndactyly; Type VI- Bilateral incomplete formation of metacarpal (MC) II; Type VII- Polydactyly along with a malformation-complex. A genetic cause was thought to be responsible for polydactyly Type I to VI (Johnson *et al.*, 1982). In this present case, dam and calf were suffered from polydactyly (Type IV) and (Type III), respectively.

Abnormal hoof conformation due to polydactyly condition increases the likelihood of sole sore, sole ulcer and lameness due to asymmetrical distribution of body weight with increasing age of the animal. It is important from economic point of view as it leads to pain, stress, drop

in body weight (Blowey, 1983), decrease in milk yield (Rajala-Schultz *et al.* 1999), and ultimately antagonize reproductive efficiency of the animal. Therefore, owner was advised not to breed their animals further with affected bull and was advised for artificial insemination when animals come in estrus or to breed with the bull which is not affected with polydactylism. The animal was discharged on same day and recovered uneventfully within three days of treatment.

### CONCLUSION

A rare case of polydactylism in both dam and calf along with uterine torsion in cow and its successful management is detailed.

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