

PER VAGINAL DELIVERY OF SYNCEPHALUS THORACOPAGUS
TETRABRACHIUS TETRAPUS CONJOINED TWINS IN A SURTI BUFFALO

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ABSTRACT

A rare case of dystocia in a Surti buffalo due to syncephalus thoracopagus tetrabrachius tetrapus cryptorchid conjoined male twin which was delivered per vaginum by traction is reported.

Keywords: *Bubalus bubalis*, buffaloes, Surti buffalo, syncephalus, thoracopagus, dystocia, pervaginal delivery

INTRODUCTION

Fetal causes of dystocia are uncommon in the buffalo however, the incidence of congenital malformations/monsters appear to be higher compared to cattle (Purohit *et al.*, 2012). Various predisposing genetic and environmental factors are responsible for these congenital abnormalities (Purohit *et al.*, 2012). The most common group of monsters is conjoined twins which arise from incomplete division of a fertilized ovum. These twins may vary from partial separation to complete duplication of two individuals (Batra *et al.*, 2015). A large number of conjoined twins have been previously reported

(reviewed Chandolia *et al.*, 2016). However, a syncephalus conjoined twin is uncommon and reported in a buffalo (Rao and Sreemannarayana, 1989) and ewe (Chandolia *et al.*, 2009). In this report a syncephalus conjoined twin in a Surti buffalo is reported.

CASE HISTORY AND CLINICAL OBSERVATION

A twelve year old Surti buffalo in its third parity and full term pregnancy with a history of dystocia was presented at Veterinary Gynaecology and Obstetrics Outdoors, Veterinary Clinical Complex, College of Veterinary and Animal Science, Navania, Vallabh Nagar, Udaipur, Rajasthan, India. It was reported that animal had started showing signs of parturition nine hours ago and both allanto-chorionic and amniotic sacs had ruptured six hours before it was presented. Two fetal forelimbs were presented at the vulvar opening without any further progress.

Previous history revealed that the preceding two calvings were normal. Rectal temperature, respiratory rate and pulse rate of the animal were within the normal range. Manual vaginal examination revealed that the cervix

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was completely dilated with the fetus in anterior longitudinal presentation, dorso-sacral position, with normal posture. There was no foetal fluid in the birth canal. Palpation of abnormal nose, head, shoulder girdle of fetus and two pair of ears lead to diagnosis of 'dystocia due to fetal monstrosity'. Further palpation of fetus revealed absence of reflexes, suggestive of dead fetus.

TREATMENT

When traction was applied for delivery of fetus, animal became laterally recumbent. There was a need of plenty of lubrication for the birth canal surface for easy delivery of fetus by traction. Two liters of liquid paraffin was applied initially, with the help of a water pipe into birth canal. Two obstetrical eye hooks were applied on both eye sockets and separate obstetrical ropes on both forelimbs. With the help of an assistant, traction was applied in an arc manner but due to locking between shoulder girdle of fetus and pelvic cavity of dam there was no progress. Then after repulsion of the fetus into the birth canal the fetus was rotated around 20° in anticlockwise manner and after continuous adjustment of the extremities of fetus, again forceful traction was attempted in upward direction towards the animal's tail. After few attempts it was observed that the shoulder girdle of the fetus was relieved from the pelvic girdle of dam as there was obvious progress in traction. Again traction was applied along with application of copious amount of paraffin and the whole fetus was eventually delivered.

The delivered fetus had one head with single nose, a single pair of eyes but with two pair of ears, one neck, fused thorax, two pair of forelimbs, two pair of hind limbs, separate

vertebral column and tails were present. Thus the fetus was considered a syncephalus, thoracopagus, tetrabrachius, tetrapus conjoined twin (Figure 1).

The buffalo was discharged after administering and prescribing dexamethasone 20 mg, antibiotic ceftriaxone tazobactam 3.375 g at 12 h interval, meloxicam (Melonex, Intas Pharma) 125 mg at 12 h interval, vitamin B₁, B₆, B₁₂ (Tribivet, Intas Pharma) with intravenous fluid therapy comprising Intalyte 1 liter, Mifex 450 ml, DNS 3 liter, RL 2 liter, metronidazole 600 ml, orally serratiopeptidase bolus and liquid Uterotone.

Measurement of fetus and later on anatomical dissection of monster was done. The circumference at sternum was 99 cm. Length from nostril to poll was 29 cm. Length from umbilicus to sternum was 30.5 cm. There were two livers, two spleen, two hearts, two pairs of lungs, two trachea and two pairs of kidney. Separate stomach and intestine were difficult to identify whereas, only one oesophagus was present (Figure 2). Cleft palate condition was seen (Figure 3). All four testes were retained in inguinal canal. There was clear distinction of two spinal cords and on dissecting the large single cranial cavity two distinct cerebrums were identified.

DISCUSSION

Fetal monsters result in dystocia and have been delivered manually, by fetotomy or by cesarean section depending upon the time since dystocia onset, space in the birth canal and relative size of the fetus (Purohit *et al.*, 2012). In the present case the conjoined syncephalus twin was delivered manually as also mentioned in a previous report in buffalo (Rao and Sreemannarayan, 1989). Buffaloes generally have fewer problems in the



Figure 1. Syncephalus conjoined monster delivered manually.

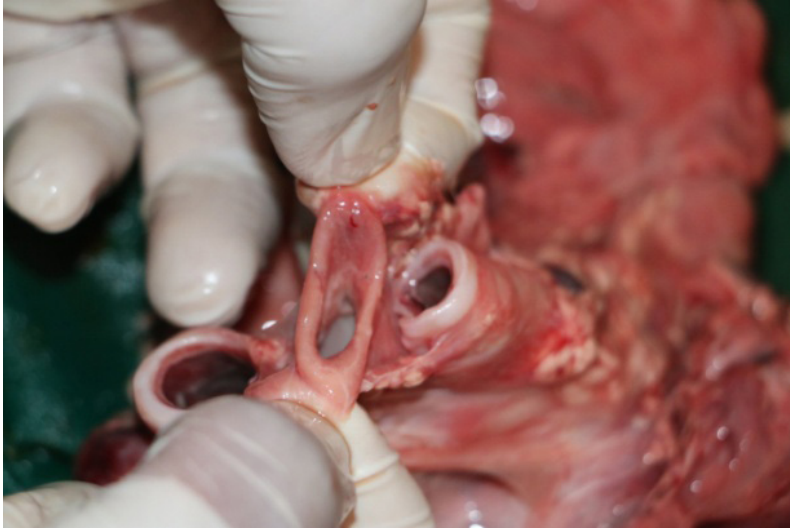


Figure 2. Two separate trachea and one oesophagus.



Figure 3. Cleft Palate in the syncephalus conjoined twin.

dilation of the birth canal and the birth canal is much widely dilated compared to cattle (Purohit *et al.*, 2011) which favors manual delivery when cases are presented within a short time of onset of delivery.

In the present case, a single head and neck was shared by both the twins with a common thoracic cavity however the abdominal cavities were distinctly separated along with separate hind limbs, reproductive organs and tails. In a previous report (Rao and Sreemannarayana, 1989) the syncephalus fetus had two separate trunks and all other findings were similar to the present report including the presence of a cleft palate. Duplication/fusion in conjoined twin fetuses involves more than one system (Gyang *et al.*, 1984; Ibrahim *et al.*, 1987; Ate and Allam, 2002). However, the most frequently accounted is the skeletal system (Morrow, 1986) as reported in the present case. In conjoined twins gastrointestinal tract has more shared portion than the other systems (Spencer, 2000) and the same observation was made in the present case. In this case both the twins were male and cryptorchid as also reported previously (Guttmacher, 1967; Vijoen, 1983).

Monstrosities are either associated with congenital defect or infectious disease (Arthur *et al.*, 2001). Roger (1998) reported that long term drug therapy with antihelminthics (especially parabendazole) induces teratogenic effect in skeletal formation in sheep. Arthur *et al.* (1996) also reported that certain plants (*Varatrum*, *Californicum*, *Lupins* spp. and *Nicotinna tobacum*) have teratogenic effects in farm animals. Out of these, at least one *viz.* *Nicotinna tobacum* was reported from the surrounding area of the reported case. Number of factors being influenced by genetic and environmental conditions may cause development of conjoined twins. It is said that

these factors are responsible for the failure of twins to separate after Day 13 of fertilization (Srivastava *et al.*, 2008). The important known causes include prenatal infection with a virus, poisons ingested by dam, vitamin deficiency (vitamin A and folic acid), genetic factors or a combination of these factors (Sharma *et al.*, 2010).

REFERENCES

- Arthur, G.H. 1956. Conjoined and identical twins. *Vet. Rec.*, **68**: 389.
- Arthur, G.H., D.E. Noakes, T.J. Parkinson and G.C.W. England. 2001. *Veterinary Reproduction and Obstetrics*, 8th ed. WB Saunders Company, London, UK.
- Arthur, G.H., D.E. Noakes, H. Pearson and T.J. Parkison. 1996. *Veterinary Reproduction and Obstetrics*, 7th ed. London, UK. p. 110-192
- Ate, I.U. and L. Allam. 2002. Multiple congenital skeletal malformations in a lamb associated with dystocia in a Yankassa ewe. *Nigerian Veterinary Journal*, **23**(1): 61-63. DOI: 10.4314/nvj.v23i1.3443
- Batra, K., A. Tewari and R.K. Chandolia. 2015. Incidence of fetal monstrosities in India: A review. *Theriogenology Insight*, **5**(3): 219-229. DOI: 10.5958/2277-3371.2015.00024.8
- Chandolia, R.K., G. Singh and G.N. Purohit. 2016. Fetal dystocia and fetal malformations in buffaloes. In Purohit, G.N. (edn.) *Bubaline Theriogenology*, International Veterinary Information Service, Ithaca, New York, USA.
- Chandolia, R.K., G. Singh, A.K. Pandey and S. Chander. 2009. Dystocia due to syncephalus tetrabrachius tetrapus

- sternopagus dicaudatus monster in an ewe: A case report. *Haryana Veterinarian*, **48**: 114. Available on: <https://www.luvas.edu.in/haryana-veterinarian/download/havert2009/hv2009-32.pdf>
- Guttmacher, A.F. and B.L. Nichols. 1967. Teratology of conjoined twins. *Birth Defects Original Article Series*, **3**(1): 3-9
- Gyang, E.G., C.O. Njoku, L.B. Tekdek and S.A. Ojo. 1984. Congenital malformations of ruminants around Zarai. In *Proceedings of National Conference on Diseases of Ruminants*, Vom, Nigeria.
- Ibrahim, N.D.G., E.O. Gyang and C.O. Njoku. 1987. Multiple congenital malformation associate with incomplete twinning in Yankassa ewes. *Zariya Veterinarian*, **2**(2): 81-82
- Morrow, D.A. 1986. Congenital defects affecting bovine reproduction, In *Current Therapy in Theriogenology*, 2nd ed. W.B. Saunders Co., Philadelphia, USA.
- Purohit, G.N., Y. Barolia, C. Shekher and P. Kumar. 2011. Maternal dystocia in cows and buffaloes: A review. *Open Journal of Animal Sciences*, **1**(2): 41-53. DOI: 10.4236/ojas.2011.12006
- Purohit, G.N., P. Kumar, K. Solanki, C. Shekher and S.P. Yadav. 2012. Perspectives of fetal dystocia in cattle and buffalo. *Veterinary Science Development*, **2**(1): 31-42.
- Rao, A.V.N. and O. Sreemannarayana. 1989. Incidence of conjoined twinning in the Indian water buffalo. *Buffalo Bull.*, **8**(2): 40-42. Available on: <http://ibic.lib.ku.ac.th/e-Bulletin/IBBU198900007.pdf>
- Roger, K.P. 1998. *Anthelmintics in The Merck Veterinary Manual*, 8th ed. In Ailello, S.E. and A. Mays (eds.) Merck and Co., INC. White House Station, New Jersey, USA.
- Sharma, A., S. Sharma and N.K. Vasishta. 2010. A diprosopus buffalo neonate: A case report. *Buffalo Bull.*, **29**(1): 62-64.
- Spencer, R. 1992. Conjoined twins: Theoretical embryologic basis. *Teratology*, **45**(6): 591-602. DOI: 10.1002/tera.1420450604
- Spencer, R. 2000. Theoretical and analytical embryology of conjoined twins: Part I: embryogenesis. **13**(1): 36-53. DOI: 10.1002/(SICI)1098-2353(2000)13:1<36::AID-CA5>3.0.CO;2-3
- Srivastava, S., A. Kumar, S.K. Maurya, A. Singh and V.K. Singh. 2008. A dicephalus monster in Murrah buffalo. *Buffalo Bull.*, **27**(3): 231-232. Available on: <http://ibic.lib.ku.ac.th/e-Bulletin/IBBU200800021.pdf>
- Viljoen, D.L., M.M. Nelson and P. Beighton. 1983. The epidemiology of conjoined twinning in Southern Africa. *Clin. Genet.*, **24**(1): 15-21. DOI: 10.1111/j.1399-0004.1983.tb00062.x