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Congenital fetal scoliosis in an ewe: A case report

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Abstract
The cases of congenital anomalies especially related to vertebral column in ruminants are less common. This communication reports a case of congenital abnormality of vertebral column (scoliosis) in a fetus along with improper disposition causing the difficult parturition in an ewe. Fetus was with laterally curved vertebral column which was supposed to be cause of dystocia along with faulty fetal disposition. Dystocia was relieved with successful per-vaginal delivery using obstetrical manipulation.

Keywords: Ewe, congenital abnormality, scoliosis, dystocia

Introduction
There are two factors, which are responsible for dystocia in ewe. Firstly, the maternal factors, which include uterine inertia in polytocous ewes and small diameter of pelvis etc and secondly, the fetal factors, which include oversized fetus, maldispositions and congenital abnormalities etc (Aitken *et al*., 2008) [1]. A number of fetal congenital abnormalities have been reported in both sheep and goats which occurs generally due to genetic defects (spontaneous or inherited) or due to in utero environmental abnormalities of the fetus. These fetal abnormalities may result in difficult birth i.e. dystocia and human intervention may be needed. Dystocia due to fetal anomalies is resolved generally by obstetrical manipulations, fetotomy or cesarean section. This case report is about management of dystocia due to malposlture as well as vertebral column anomaly of fetus in ewe.

Case history and Clinical signs
A 3 year old ewe weighing approx 40kg was presented in recumbant position with the history of full term gestation. Water bag was ruptured and she was continuously straining since last 30 hrs without any progression in parturition. The ewe had tachycardia (HR 92/min) with labored breathing. Abdominal palpation revealed well sized fetus without any movement. On pervaginal examination, it was observed that the cervix was dilated and one of the fetal limbs can be palpated in dried birth canal. Fetal examination revealed that a dead fetus was in anterior longitudinal presentation, dorso-sacral postion with upward deviation of head. This posture was resulted in the engagement of the fetal chest in the pelvic brim of the dam. Based on the per-vaginal examination, the condition was diagnosed as fetal dystocia due to postural defect of head.

Treatment and Discussion
The therapeutic plan for this case was to remove the dead fetus via mutation and forced traction method. 1000 mL of 5% Dextrose fluid was administered intravenously to prevent shock and to correct the dehydration status of the dam. The animal was treated with inj. DNS @ 1 liter i/v followed by inj Ceftriaxone tazobactum @ 1g i/m, inj Chlorpheneramine maleate @ 3ml i/m and inj tranexamic acid @ 5mg/kg bw i/m and Dexamethasone @ 8mg i/m. Caudal epidural anesthesia was given at sacrococcygeal region using 2.5 ml Lignocaine hydrochloride 2%. Liquid paraffin was pumped then into uterus to create sufficient lubrication for easy manipulation of the fetus. Correction of the dystocia was performed by the repulsion and extension of the fetus head. The fetus was then delivered out by using eye hook. An overgrown fetus with abnormality in vertebral column having lateral curving which may also be add on cause for dystocia (Fig 1). The fetus had fully grown body hair with sloughing of some skin tissues. There was brachygnathism (parrot mouth) condition also. Animal was discharged with advice of same treatment for three days along with intrauterine medication

with bolus steclin @ 1 mg intrauterine. Also advice for oral uterine cleanser (Syp. Uterogen 5ml TID PO.)**.** The animal was recovered successfully within 4 days with normal feed and water intake.

Dystocia in farm animals is the one of the major factor that result in to economic loss due to loss of dam and fetuses (Brounts *et al*., 2004) [2]. Fetal maldisposition, as also in this case, is one of the major cause of dystocia both in sheep (Thomas, 1990) [3] and goats (Purohit *et al*., 2004) [4]. Amen and Ali (2010) [5] reported 8.3% prevalence of dystocia due to fetal malposition and 3.0% as a result of fetal monstrosities while in another study, Ali (2011) [6], reported the prevalence of 21.1% dystocia due to fetal maldisposition, 15% due to fetal oversize and 4.4% due to monsterosities. Although reports of vertebral column abnormalities in ewe are meagre, In present clinical case dystocia was due to the upward deviation of head with the abnormality of vertebral column (lateral curving of vertebral column; Scoliosis). In the embryonic period, somites which form from paraxial mesoderm, have a important role in vertebral column formation. Each somite differentiates into two different cell groups of dermomyotome and sclerotome. Sclerotomes develop to vertebrae and the dermomyotome cells form muscles and overlying dermal tissues (Kale *et al*., 2015) [7]. Therefore, any abnormal sclerotome differentiation affects the formation of the vertebral column and results in spinal anomalies (Semba and Ki, 2013) [8]. A case of congenital lumbar vertebrae agenesis in a lamb was reported by Abbasi *et al*. (2017) [9]. Scoliosis and hydrocephalus have been reported in association with congenital toxoplasmosis in ewe by Woods and Anderson (1992) [12]. While there is no direct relation of Toxoplasmosis and skeletal abnormality but infection with *T. gondii* may lead to reduced fetal motility in uterus which lead to abnormal skeletal development, resulting in subsequent skeletal deformities such as scoliosis or kyphosis (Woods and Anderson, 1992) [10]. In sheep, the uterine infection with Akabane virus (Parsonson *et al*., 1977) [11] and BDV (Barlow and Patterson, 1982) [12] may also cause skeletal abnormalities. Ingestion of plants *Conium maculatum* or *Lupinus* sp. also may be the causes of skeletal deformities but in the present case it may not be the reason as these plants are not native of India. Spinal cord anomaly associated with infection by another protozoan, *N. caninum*, has also been reported (Dubey *et al*., 1990) [13]. The actual cause of scoliosis in present case could not be predicted.

In present case the procedure of correction of dystocia include obstetrical mutation along with forced traction with the help of eye hook. Dystocia due to fetal maldispositions is usually corrected manually in sheep (25.2 %) and only a small number (1.1%) require caesarean section (Sobiraj, 1994) [14]. In this case the dam was saved but the fetus was dead and putrefying with sloughing of skin tissues and hairs. Delay in treatment due to late reporting of the case lead to putrefaction of dead fetus and uterine infection to dam as also discussed by Christos *et al*. (2012) [15]. This case report described the successful management of dystocia due to fetal maldisposition and spinal anomaly in an ewe using obstetrical manuover combined with medical approach without surgical intervention.

Conclusively, skeletal abnormalities in fetus as scoliosis may be occurred due to a lot of causes e.g. abnormal embryonic development, infestation with Toxoplasma gondi, *Neospora caninum*, infection with Akabane virus, ingestion of plants *Conium maculatum* or *Lupinus* sp. etc. Such fetuses may cause dystocia at the time of parturition specially when associated with abnormal posture. To manage such cases of dystocia, C. section or fetotomy can be avoided in order to cause less damage to the dam as well as to save the time and money of animal owners.

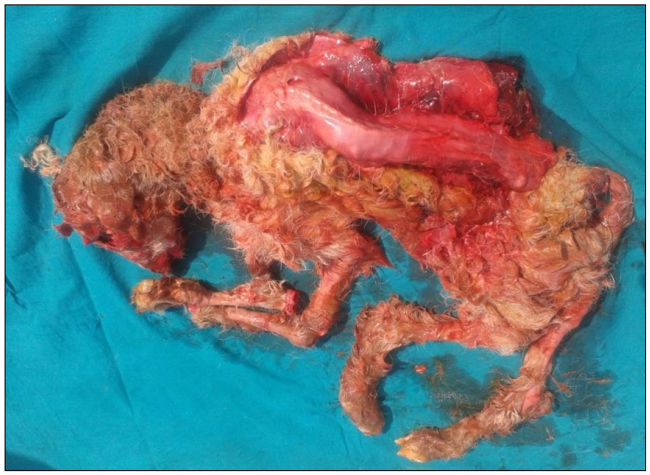

Fig 1: Dead lamb with scoliosis and brachygnathism

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