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Dystocia Caused by Thoraco-Omphalopagus Twins in Red Sokoto Doe

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ABSTRACT

A pair of conjoined twins (thoraco-omphalopagus) in red Sokoto goat was delivered through manual traction, after a prolong period of labor that lasted for over 18 hours, after antepartum diagnosis, some bloody discharges were seen coming out of the vulva. Upon clinical examination all vital parameters were within normal range, the animal was weak and in pain. Obstetrical examination revealed non-progressive straining, the cervix was dilated with fetus part palpable at the cervical entrance. In an effort to deliver the fetus, another fetus was noticed attached to the first fetus, which happened to be conjoined twins, and they were delivered successfully using manual traction. The conjoined fetuses were physically examined. the conjoined fetuses, weighing 2kg, were both male and fused from the thorax to the abdominal cavity, with separate heads, limbs, and genital organs. X-ray disclosed the point of fusion where the two fused at the thoracic region medially, from the first to last costal bone, each fetus was having independent forelimb. In addition, post-mortem examination revealed fusion at the costal cartilage, shared diaphragm, independent well-developed (hearts, lungs, and genital organs), but shared abdominal cavity with independent organs, except for the liver. In conclusion, timely use of advanced diagnostic tools (X-ray or ultra sound) in the diagnosis of congenital abnormalities like conjoined twins is of great essence in managing the condition and for the survival of the dam and the fetuses, its better to proceed with elective cesarean section when the conjoined fetuses are at term, rather than manipulative delivery.

Keywords: Conjoined twins; Dystocia; Goat; Thoraco-omphalopagus

INTRODUCTION

Conjoined twins, also referred to as Siamese twins (Schiewe *et al.*, 2015), is an embryological malformation or congenital abnormality in animals due to incomplete separation of the two portions of the embryo (Schneovogt *et al.*, 2014; Kulawik *et al.*, 2017). Interestingly, female conjoined twins tend to have better survival rates than males, as most live births are female, with a ratio of 3:1 (Sharma 2010). Conjoined twins are typically classified by the point at which their bodies are joined (Sharma 2010). The most common types of conjoined twins are: Thoracopagus two bodies fused from the upper chest to the lower chest. Thoraco-omphalopagus, two bodies fused from the upper chest to the lower belly. Omphalopagus, two bodies fused at the lower abdomen, heteropagus or parasitic twin, twins that are asymmetrically conjoined, resulting in one twin that is small, less formed, and dependent on the larger twin's organs for survival, craniopagus, fused skulls, but separate bodies. these twins' heads may be conjoined at the back, front, or side

of the head, but not on the face or at the base of the skull (Bondeson 1992; Heydarinejad *et al.*, 2020; Balamirugan and Mohanapriya, 2020). Conjoined twins are sequel to toxic substance exposure (pollutants), malnutrition, genetic disorders, infections, and other diseases (Welch *et al.*, 2011). Cases of congenital abnormalities have been reported in cattle, pigs, sheep, and goats. The occurrence of conjoined twins is sporadic and very rare in goats with incidence of 1:2,800-250,000 of every birth (Schneovogt *et al.*, 2014). In domestic animals, such aberrations are infrequent and remain under-reported (Samuel *et al.*, 2014). The present article describes a case of symmetrical thoraco-omphalopagus conjoined male twins in a Red Sokoto goat.

CASE PRESENTATION

On 6th May, 2025. A 3-years-old Red Sokoto doe weighing 30 kg from Birnin Yauri, Yauri local government of Kebbi state, Nigeria, was presented to the

Zonal Veterinary Clinic Yauri, with a complaint that the doe was straining for over 18 hours, and some bloody discharges were seen coming out of the vulva region. Upon clinical examination all vital parameters were within normal range, the animal was weak and in pain. Obstetrical examination revealed non-progressive straining, stretching of the hind limbs due to exhaustive straining, the cervix was dilated with fetus part palpable at the cervical entrance. In an effort to deliver the fetus, another fetus was noticed attached to the first fetus, which happened to be conjoined twins, and they were delivered successfully using manual traction (Figure 1A). The conjoined fetuses were physically examined. the conjoined fetuses, weighing 2kg, were both male and

fused from the thorax to the abdominal cavity, with separate heads, limbs, and genital organs.

X-ray revealed the point of fusion where the two fused at the thoracic region medially, from the first to last costal bone, each fetus was having independent forelimb (Figure 1B). Post-mortem examination revealed fusion at the costal cartilage, shared diaphragm, independent well-developed (hearts, lungs, and genital organs), but shared abdominal cavity with independent organs, except for the liver. The shared liver had an abnormal dark color and shape (approximately 12cm) but normal consistency (Figure 1 C). Normal histology of the liver, with central vein, hepatic sinusoids, and hepatocytes is shown in Figure 1D.

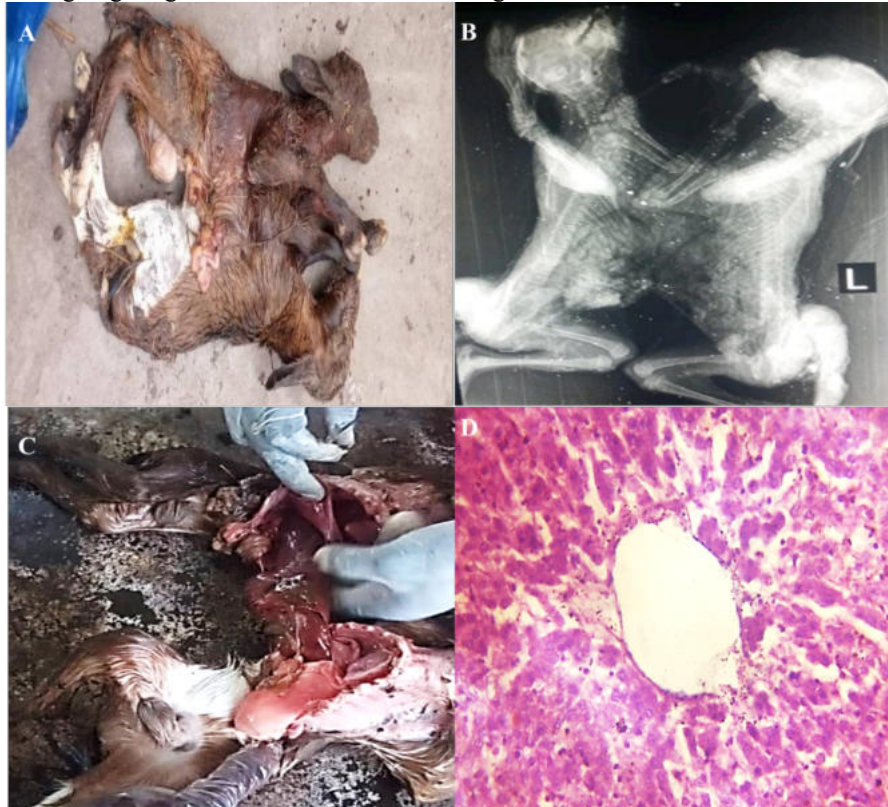


Figure 1: Dead Conjoined Kids After Delivery (A), Radiographic Image of the Conjoined Kids (B), Post-mortem Images of the Conjoined Kids, white Arrow Showing the Separate Testes, while the Blue Arrow Indicates the Shared Liver (C), Normal Histology of the Liver, Blue Arrow Showing Central Vein, Black Arrow Showing Hepatic Sinusoids, and Yellow Arrow displaying the Hepatocytes (D); H&E X400

DISCUSSION

Identification of the conjoined twins is often made based on the morphological appearance of the duplication anomaly (Sharma 2010; Metneki and Varjassy, 2022). Classifications can be based on the site of the union, embryological development, anatomy, and proportional level of the twins (Chen, 2012). In the current case a male conjoined twins fused from the thorax to the abdominal cavity (thoraco-omphalopagus), with separate heads, limbs, and genital organs, independent well-developed (hearts, lungs, guts, and genital organs) but shared shared diaphragm and some part of abdominal cavity, this findings differed significantly with the report of Binanti and Riccaboni (2012) and Schneevoigt *et al.* (2014), who reported a case of female symmetrical thoraco-omphalopagus conjoined twins with a single heart, liver, and gall bladder, while in the current report, all organs were duplicated except the liver.

In Nigeria, the predominant free-range management system favors exposure of pregnant animals to toxic plants, drinking water, and forages contaminated by various chemicals (e.g. pesticides, herbicides, and inorganic fertilizers) being applied without caution (Ahmad *et al.*, 2020). In addition, lack of dietary supplements and frequent use of hormone treatment are in part linked to the higher incidence of congenital abnormalities in animals (Schneevoigt *et al.*, 2014; Kulawik *et al.*, 2017). Although, many researchers believed the genetic mutation was among the probable cause of a fetal malformation as described by Binanti and Riccaboni (2012). Bukar *et al.*, (2001) state that it's difficult to diagnose fetal monsters early without the aid of advanced diagnostic equipment techniques (X-ray or Ultra sound) but it should be always suspected when managing intractable cases of dystocia. The adoption of vaginal delivery in managing the current case has ward off the burden of emergency or elective cesarean section, which will have

been a better option especially if the conjoined fetuses are diagnosed early. Because manual traction may damage or risk the lives of the dam and the fetuses. Therefore, in the interest of the best chance for fetal survival, it's better to proceed with elective cesarean section when the conjoined fetuses are at term, if they are not at term, but premature labor has begun and has not stopped then abdominal delivery should be considered, because dystocia can still occur and require intrauterine surgical separation. Such procedure will greatly compromise any chance the conjoined fetuses may have and may do harm to the dam (Almeida, 2021). Cesarean section gives the best chance for survival of one (1) or both fetuses, if they are surgically separable, and it will also protect the dam from significant damage to the birth canal (Mota-Rojas *et al.*, 2020). If the fetuses are considered to have a poor chance of survival, and small enough to pass through the birth canal without damaging the dam, then vaginal delivery may be a better choice for route of delivery, even in the event of fetal death with term size fetus (Schrunk, 2022). Cesarean section is associated with less morbidity than with a failed vaginal delivery requiring an emergency cesarean section (Harma *et al.*, 2005). Thus; timely reporting of such cases for epidemiological survey on animal malformations, enable early detection of causes and contributing factors, which in turn enhances case management.

Conclusion

The timely use of advanced diagnostic tools (X-ray or ultrasound) in the diagnosis of congenital abnormalities like conjoined twins is of great essence in managing the condition and for the survival of the dam and the fetuses, it's better to proceed with elective cesarean section when the conjoined fetuses are at term, rather than manipulative delivery.

Recommendation

Livestock farmers should improve nutrition, prenatal management and adopt modern diagnostic tools especially, during late gestation to avert the occurrence of dystocia due to congenital abnormalities.

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Conflict of Interest

The authors have no conflict of interest to declare.

Authors Contribution

ZAU handled the case on the clinic floor, carried out the post-mortem examination, and submitted some organs for histology. BUM, ARI, and SOA prepared the first draft of the manuscript, while AAA and WMA proofread the final draft.

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