



Non-Surgical Resolution of Dystocia in a Captive Zebra (*Equus quagga*) Due to Fetal Malposture

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ABSTRACT

Dystocia can pose serious obstetrical problems, especially if it results from fetal malposition, although it is not rare in mares. This report details an uncommon case of dystocia in a four-year-old captive plains zebra (*Equus quagga*) at Lahore Zoo in Pakistan. The mare was diagnosed with anterior longitudinal presentation, dorsopubic position, and posture deficits, including significant lateral deviation of the head and bilateral carpal flexion, after displaying symptoms of prolonged second-stage labor of 10-12 hours. After examination, the fetus was determined to be deceased. Obstetrical correction was accomplished through mutation, repulsion, and forced extraction under general anesthesia administered via remote darting. This manual correction, completed in approximately four hours, and facilitated a successful vaginal delivery, without the need for a fetotomy or cesarean surgery. Post-procedure care included antibiotics, anti-inflammatory drugs, and fluid therapy. The mare recovered without any injuries to the reproductive tract or retained fetal membranes. To our knowledge, this is the first documented case of successful assisted vaginal delivery for dystocia in a zebra in Pakistan, offering valuable clinical insights for managing similar obstetric situations in equids and other wildlife species.

Keywords

Fetal malposition, Dystocia, Mutation, Forced extraction, Zebra

Number of Figures: 1
Number of Tables: 0
Number of References: 17
Number of Pages: 5

Abbreviations

UVAS: University of Veterinary and Animal Sciences
NSAIDs: Nonsteroidal anti-inflammatory drugs

Introduction

Zebras belong to the genus *Equus* and include four species: the plains zebra (*Equus quagga*), Cape mountain zebra (*Equus zebra*), Hartmann's mountain zebra (*Equus hartmannae*), and Grevy's zebra (*Equus grevyi*) [1]. The most geographically widespread specie is the plains zebra, also known as Burchell's or common zebra, ranging from eastern South Africa to southern Ethiopia and South Sudan [1]. Despite their adaptability, human encroachment, habitat degradation, and competition with livestock pose risks to plains zebras, which has resulted in a drop in their population, leading to their classification as near threatened and raising conservation concerns [1].

Mares usually reach puberty between 1 and 3 years of age [2, 3], with first estrus occurring around 2–3 years. The gestation period ranges from 361–396 days [4], and first foaling occurs at 3–4 years of age [3]. Parturition commonly occurs during the early morning hours [5]. Although, dystocia is relatively rare in mares, it represents a true veterinary emergency and needs to be treated promptly due to risks to both the mare and fetus [6]. The most frequent cause of dystocia in mares is malposition from normal alignments, especially postural abnormalities, while anterior presentation, dorsal position, extension of the limbs and head posture are normal [7]. Approximately 99% of parturition occurs in the anterior presentation. Williams [8] and Noakes, Parkinson [9] reported that there is 1.1 % incidence of dystocia in equines. This report describes a case of dystocia in a four-year-old captive plains zebra mare (*Equus quagga*) housed at Lahore Zoo, Punjab, Pakistan. In this case, dystocia resulted from fetal malposition, a common cause in equids, leading to a challenging condition but ultimately successful manual correction was performed.

Case Presentation

The administration of Lahore Zoo requested assistance from the University of Veterinary and Animal Sciences (UVAS), Lahore, Pakistan, to manage a suspected case of dystocia in a captive zebra. A clinical team from UVAS arrived at the zoo (90 Mall Road, Lahore, Punjab, Pakistan; 31.556°N, 74.325°E) in the afternoon. Feeding and drinking of the animal were compromised. The affected animal was a four-year-old plains zebra (*Equus quagga*) mare exhibiting symptoms of prolonged labor. According to zoo staff, the mare's water broke earlier that morning but no progress toward delivery had occurred by afternoon.

This was the mare's first parturition. Upon physical examination, the animal appeared to be standing

but dull, depressed, and exhibited a staggering gait. Vaginal examination indicated completion of the first stage of labor, but the second stage had been prolonged for 10–12 hours without progress. The mare was struggling continuously. Clinical signs included sacrosciatic ligaments relaxation, vulvar edema, and ruptured fetal membranes. During the initial obstetrical assessment, fetal viability, orientation, and condition of the birth canal were evaluated. The fetus was confirmed dead based on the absence of reflexes such as suckling and pedal response. Detailed palpation revealed an anterior longitudinal presentation, dorso-pubic position, and multiple postural defects, including carpal flexion of both forelimbs and severe lateral deviation of the head. The diagnosis of dystocia related to fetal malposition was confirmed by these abnormalities.

Obstetrical procedure and treatment

General anesthesia was administered via remote darting (Figure 1. A) using a Teleinject Vario 4 system. Butorphanol (0.01 mg/kg; total 120 mg) and detomidine (0.1 mg/kg; total 50 mg) were administered for induction. The mare was kept under anesthesia after sedation with intravenous boluses of xylazine (500 mg) and ketamine (1,500 mg) [10]. Dart placement targeted the heavy thigh musculature using an 18-gauge, 1.5-inch specialized needle [11]. Because of the low musculature and risk of injury, darting in the thoracic or abdominal regions was avoided. The darting area was inspected for rough ground, pools of water, debris and fencing. To reduce the risk of capture myopathy, the procedure was performed in a quiet, enclosed stall free of obstacles. After the dart was fired (Figure 1. A), the dart stuck effectively in the animal's muscle. Sedation took effect within 20 to 25 minutes, and the dart successfully discharged and detached appropriately. The mare was examined for external abnormalities such as sarcoids [12], hoof deformities, mucous membrane state, and oral health prior to the obstetrical intervention. Additional ketamine boluses (100–200 mg IV) were administered as needed to prolong the anesthesia [10]. Intravenous glucose-saline (1,500 ml) was provided to address dehydration and support energy requirements.

Obstetrical correction began with mutation to address the fetal postural defects. Both forelimbs were flexed at the carpal joints. To provide additional working space, the fetus was gently repelled into the uterus. Flexion of the left carpus was converted to fetlock flexion. The proximal metacarpus was oriented laterally, and the hoof was manually cupped and rotated medially. An obstetrical chain (Figure 1. C) was used to secure the limb once it had been stretched. The right limb was corrected using the same tech-

nique. Both legs were pushed back into the birth canal. The head showed severe rightward deviation. A soft rope was used to snare the head at the mandible, a gentle repulsion allowed improved access. Controlled upward traction realigned the head, after which both limbs were simultaneously tractioned. After some time, legs and head were correctly positioned on the pelvic floor. Copious amounts of obstetrical lubricant was applied to minimize trauma or reduce the risk of uterine rupture by rotating the fetus around its longitudinal axis into the dorsosacral position. Final traction was applied in a horizontal, downward, and posterior direction toward the hock joints (Figure 1. C). After approximately two hours, the fetus was successfully delivered vaginally. The foal weighed 35 kg and displayed a typical neonatal zebra coat pattern of brown and white (Figure 1. D).

The mare received supportive therapy during recovery, which included a second 1,500 ml glucose-saline infusion and multivitamins (Amivicom, 30 ml). Ceftiofur hydrochloride (1.1–2.2 mg/kg; total 7 ml) was administered to prevent the infection. Systemic non-steroidal anti-inflammatory drugs (NSAIDs) were administered to treat pain (5 ml, 2–4.4 mg/kg).

The mare regained the ability to stand without assistance roughly four hours after treatment began. Post procedure care included continued administration of phenylbutazone (2.2–4.4 mg/kg IV every 12 hours for 48–96 hours, then decreased and continued for 5 days) and ceftiofur (1.1–2.2 mg/kg, for 5 days). An antispasmodic drug (Spasfon) was administered as a preventative measure since lateral recumbency during sedation carries a risk of colic.

Results & Discussion

Dystocia in mare is less common than in other domestic animals, but when it occurs, it is a serious obstetrical emergency that needs to be treated immediately [6, 13]. There is less documentation regarding dystocia in mares [14]. The most common cause of dystocia in equines is postural abnormality, especially lateral deviation of the head. Although other presentation and positional abnormalities can also contribute, they are observed less frequently [9]. Fetotomy is frequently necessary in these situations in order to protect the mare's life and future reproductive poten-

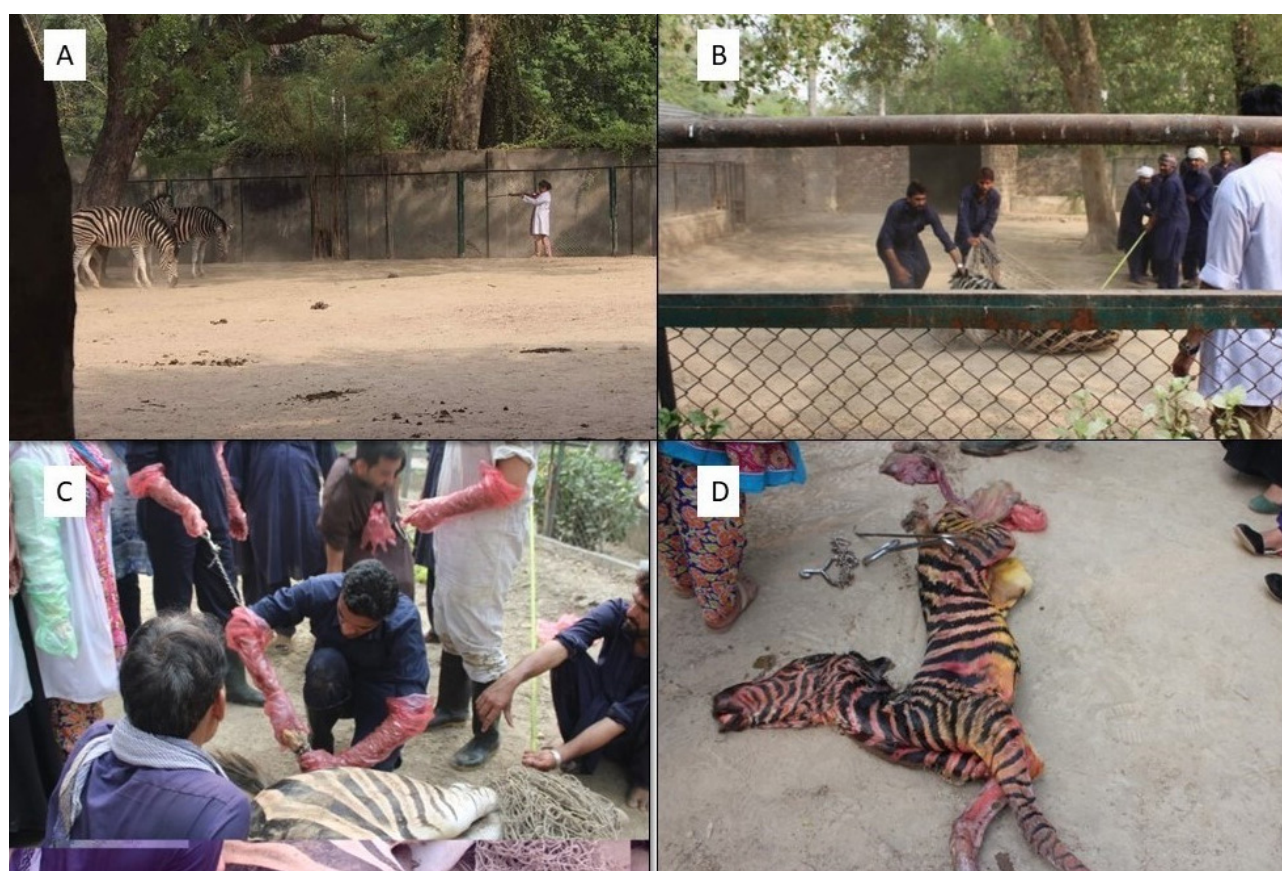


Figure 1.

Stages of Dystocia Management in a Zebra (*Equus quagga*)

(a) Chemical immobilization (darting) using a remote injection system; (b) Physical restraint for clinical examination; (c) Manual forced extraction of the malpositioned fetus; (d) Outcome showing the dead foal post-extraction.

tial [9]. Despite its effectiveness, cesarean section poses additional risks, including decreased post-surgical fertility, uterine laceration, retained fetal membranes, laminitis, metritis, and peritonitis [6, 15]. An assisted vaginal delivery using mutation, repulsion, and controlled extraction may be preferable to cesarean section when fetal viability is lost and surgical facilities are unavailable [6, 16]. Furthermore, the availability of surgical facilities, fetal state, gestational age, and the veterinary team's experience must all be taken into account while making decisions. In equine, assisted vaginal delivery or fetotomy is often favored over cesarean section due to lower risks of mare mortality, retained placenta and reduced fertility [17].

In the present case, multiple fetal abnormalities, including dorsopubic positioning, bilateral carpal flexion, and extreme lateral displacement of the head, resulted in dystocia. Despite the complexity of dystocia caused by these combined abnormalities, resolution was achieved without recourse to cesarean section or fetotomy. Successful manual correction was facilitated by timely intervention, accurate diagnosis, appropriate sedation, and skilled obstetrical manipulation. The use of remote dart administered anesthesia was particularly important given the wildlife context and was well tolerated without significant complications. To the authors' knowledge, represents the first documented case in Pakistan of dystocia in a captive plains zebra successfully managed via assisted vaginal delivery. No post delivery complications such as retained fetal membranes, vaginal lacerations, or laminitis were observed. This case highlights the potential of non-surgical management of complex dystocia in wild equids under field conditions and provides practical guidance for wildlife veterinarians confronted with similar scenarios.

Conclusion

This case demonstrates that even complex dystocia in zebras resulting from fetal malposition can be successfully treated through mutation and controlled extraction without the need for a fetotomy or cesarean section. The positive outcome was largely dependent on early diagnosis, appropriate anesthesia, skilled obstetrical manipulation, and attentive supportive care. Beyond adding to the limited literature on dystocia in wild equids, this report provides useful guidance for veterinarians managing similar cases in wild equines in field conditions, this article contributes to the scant literature on equine dystocia.

Authors' Contributions

The case of this mare was first attended by M.U.M., S. Ali, M.A. and A.S. after thorough obstetrical examination it was decided to perform manual correction and assisted vaginal delivery. Consequently, M.U.M., M.A. and S. Akram conceived the idea of reporting the procedure and findings for this case. M.U.M., S. Akram and M.A. equally contributed on this case report-research; manuscript drafting; M.U.M. and A.S. equally contributed on patient care and monitoring. All authors have checked the final draft.

Acknowledgements

The authors extend their sincere gratitude to the administration of Lahore Zoo for their cooperation, provision of necessary resources and timely communication during this emergency case. The successful completion of the obstetrical intervention and safe handling of the animal were made possible by their proactive help. Without their support and dedication to animal welfare, this case could not have been resolved successfully.

Conflict of interest

The authors declare that there is no conflict of interest.

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How to cite this article

Mehmood MU, Ali Sh, Akram Sh, Ashraf M, Sattar A. Non-Surgical Resolution of Dystocia in a Captive Zebra (*Equus quagga*) Due to Fetal Malposture. *Iran J Vet Sci Technol*. 2026; 18(2): 80-84.

DOI: <https://doi.org/10.22067/ijvst.2026.94756.1591>

URL: https://ijvst.um.ac.ir/article_47905.html