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Research Article

Self-inflicted Occipital Puncture Wound from Aberrant Horn Growth in a West African Dwarf Buck: A Case Report

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ABSTRACT
This report describes a rare case of self-inflicted occipital puncture injury in an 11-month-old West African Dwarf (WAD) buck caused by aberrant horn curling. The animal presented with a circular penetrating wound in the occipital region, resulting from the distal tip of a severely curved horn. Despite the depth and location of the lesion, no systemic or neurological deficits were detected. The case was managed by horn tipping, wound debridement, and antimicrobial therapy, leading to complete recovery within three weeks. Self-inflicted cranial trauma due to abnormal horn morphology is scarcely documented in veterinary literature, with most horn-related injuries usually attributed to intraspecies aggression or environmental hazards. This case underscores the clinical significance of horn conformational abnormalities as potential causes of severe trauma, even in otherwise healthy small ruminants. The successful management highlights the importance of early recognition and timely surgical intervention in preventing life-threatening complications. From a preventive standpoint, routine monitoring and periodic horn trimming should be considered essential herd health measures, particularly in breeds prone to horn conformational abnormalities. This case contributes to the limited documentation of self-inflicted traumatic injuries in goats and emphasizes the need for proactive management to safeguard animal welfare.

Keywords: Horn impaction; Horn tipping management; Self-inflicted injury; Traumatic occipital wound; West African Dwarf buck

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INTRODUCTION

Goat production is a vital component of the livestock sector in sub-Saharan Africa, contributing meat, milk, skin, and socio-economic value, particularly for rural households. The West African Dwarf (WAD) goat is especially important due to its adaptability, disease resistance, and prolificacy under traditional low-input systems (Dossa *et al*., 2007; Mohammed, 2017). Predominantly found

across the humid zones of West and Central Africa, WAD goats provide meat, income, cultural value, and serve as emergency assets (FAO, 2012). Goat meat is also gaining global popularity as a sustainable protein source, being lower in cholesterol, saturated fats, and calories compared to other red meats (Mazhangara., 2019; Saturno *et al*., 2020; Pinheiro *et al.,* 2023). These factors have renewed interest in optimizing small ruminant health, welfare, and productivity.

Among the unique anatomical features of goats are their horns, which serve social and protective roles but may cause problems when overgrown or abnormally curled. In bucks, unchecked horn growth can lead to self-inflicted trauma, particularly puncture injuries (Fajemisin *et al*., 2018). Such injuries are clinically significant because puncture wounds deep and narrow in nature—may appear minor yet readily trap pathogens, predisposing to cellulitis, abscesses, tetanus, or septicemia (Radostits *et al*., 2007; Smith & Sherman, 2009; Jha *et al*., 2014). The risk is even greater when lesions occur near vital sites such as the occipital region, with its proximity to the foramen magnum and neurovascular structures.

Although traumatic puncture wounds are common in veterinary practice, self-inflicted cranial injuries from horn impaction are rarely documented. These cases underscore the importance of horn management practices including tipping, dehorning, or corrective trimming to prevent recurrence and ensure animal welfare (O'Callaghan *et al*., 2003).

This case report therefore describes a rare self-inflicted occipital puncture wound in a young WAD buck caused by aberrant horn growth, and emphasizes the clinical implications of such injuries alongside the importance of timely intervention in small ruminant production systems.

Case Presentation

An 11-month-old intact male West African Dwarf (WAD) buck weighing approximately 30 kg was presented to the University of Maiduguri Veterinary Teaching Hospital (UMVTH) on March 16, 2024. The primary complaint was a traumatic injury to the head region, reportedly observed by the owner following increasing signs of discomfort, reduced activity, and intermittent head tilting. The animal was part of a small backyard flock comprising ten goats, all of which were housed under semi-intensive management. The client reported no recent history of trauma or fighting among the animals, but stated that the buck had unusually curled horns that appeared to be growing toward the skull.

The animal had no prior record of similar clinical incidents, and no predisposing environmental or behavioral risk factors were immediately apparent. The goat had a normal appetite prior to the incident, and no signs of systemic illness were noted by the client. However, due to the unusual positioning of the horns and their proximity to the cranial region, mechanical injury was suspected.

Case Description

On physical examination, the buck was bright, alert, and responsive, though occasionally displayed signs of discomfort when touched near the head. Vital parameters recorded at presentation were within normal physiological limits for caprine species: rectal temperature was 38.0 °C (normal: 38–40 °C), pulse rate was 72 beats per minute (normal: 70–90 bpm), and respiratory rate was 26 cycles per minute (normal: 20–30 cpm). Mucous membranes were pink with a capillary refill time of <2 seconds, indicating adequate peripheral perfusion.

Close inspection revealed a conspicuously deep puncture wound located in the right occipital region, approximately 8 cm posterior to the base of the right horn. The wound was circular, with a diameter of approximately 2 cm, and penetrated the subcutaneous tissue, suggesting significant depth. On palpation, mild swelling and localized pain were elicited. No signs of purulent discharge, crepitation, or neurological deficits were observed.

The most striking anatomical abnormality was the presence of severely curled horns on both sides of the head, with the tip of the right horn oriented medially and caudally toward the occipital region of the skull (Plate 1). This horn configuration resulted in the distal tip of the horn embedding into the soft tissue over the occipital bone, thereby causing a penetrating wound (Plates 2 and 4). The embedded portion of the horn measured approximately 3 cm in length (Plate 6), further confirming the traumatic origin of the lesion.

A clinical diagnosis of traumatic occipital puncture wound secondary to horn impaction was made based on the anatomical orientation of the curled horn and the corresponding location and nature of the wound. The case was considered rare, as self-inflicted cranial injuries from aberrant horn growth in small ruminants are infrequent and underreported in veterinary literature.

Clinical Management

Diagnostic Plan and Laboratory Evaluation

The initial diagnostic approach involved a comprehensive physical and clinical assessment to rule out systemic involvement. Blood samples were collected aseptically from the jugular vein and submitted to the clinical pathology laboratory for a complete haemogram. The hematological profile revealed no significant abnormalities, suggesting that the patient was systemically stable and not septicemic at the time of presentation.

Furthermore, fecal samples were evaluated in the helminthology and protozoology laboratories, and no ova or parasitic protozoa were detected, ruling out concurrent parasitic infections.

Surgical and Medical Interventions

The primary therapeutic objective was to eliminate the source of trauma and manage the wound to prevent secondary infection and promote tissue repair. The surgical intervention involved horn tipping, a procedure performed under appropriate physical restraint without the need for general anesthesia, as the horn was not innervated at the tip.

A sterile saw wire was used to carefully excise the tip of the right horn to eliminate further contact with the occipital area (Plate 3). Once the horn tip was removed, the puncture wound was fully exposed and assessed for depth, contamination, and tissue viability (Plate 5). The embedded horn segment was removed, and the wound cavity was thoroughly debrided and irrigated with sterile isotonic saline solution.

Post-operatively, the patient received systemic antibiotic and anti-inflammatory therapy. Oxytetracycline 20% was administered intramuscularly at a dosage of 20 mg/kg body weight (600 mg total) to control bacterial infection. Diclofenac sodium was given at 4 mg/kg body weight (120 mg) intramuscularly for analgesia and inflammation control. A broad-spectrum topical antimicrobial ointment (Charmil® gel) was applied daily to the wound site throughout the healing period.

The patient was monitored on an outpatient basis, and the wound healing progressed uneventfully. By the end of the second week, significant granulation tissue formation and wound contraction were observed, with complete epithelialization occurring within 3 weeks post-management (Plate 7).

Prognosis and Client Communication

The prognosis was considered very good given the timely intervention, absence of systemic infection, and rapid wound healing. The client was advised to monitor the patient closely for signs of recurrence or abnormal horn regrowth. Routine inspection of horn growth was recommended, and horn tipping was advised to be carried out periodically, especially in goats with naturally curled or deformed horns. The client was also counseled on the importance of early veterinary intervention in any future incidents.

Plate 1. **Severely curled horns (Arrow)**

Plate 2. **Puncture wound at the occipital region 8 cm behind the right horn (Arrow)**

Plate 3. **Horn tipping using saw wire (Arrow)**

Plate 4. Deep puncture wound inflicted by the curled horn (Arrow)

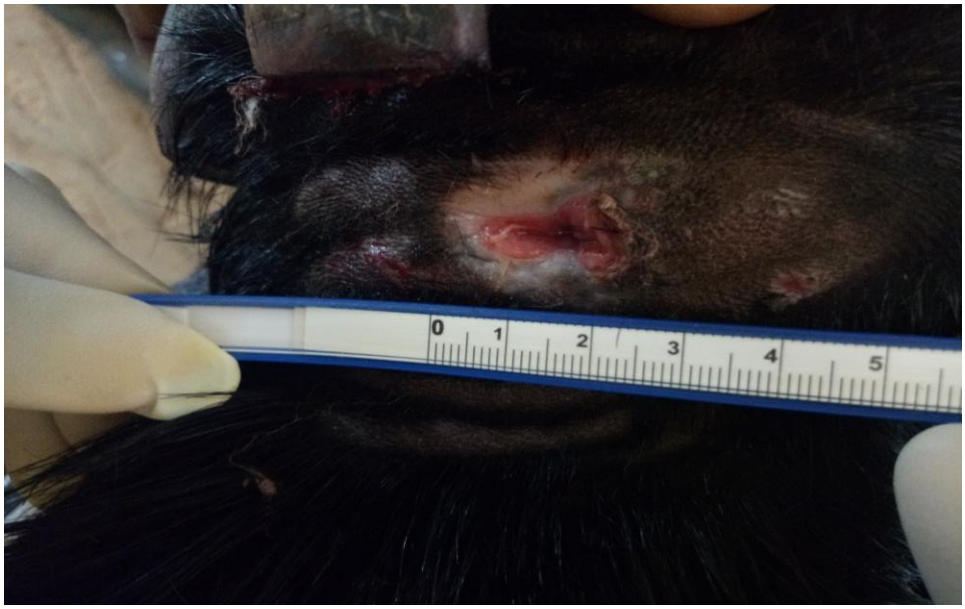

Plate 5. **Deep puncture wound measured 2 cm in diameter**

Plate 6. **Horn tip that was embedded in the soft tissue measured 3 cm**

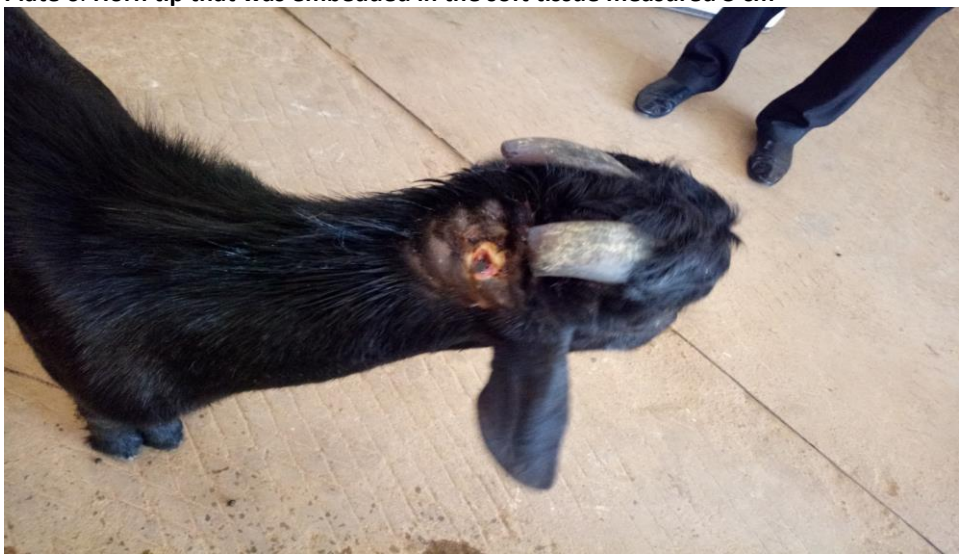

Plate 7. **Patient post-management**

DISCUSSION

Traumatic injuries in goats are common and usually result from environmental hazards or herd aggression. However, self-inflicted cranial trauma from aberrantly curled horns, as seen in this case, is extremely rare and poorly documented. This report highlights an unusual occipital puncture wound caused by horn impaction in a West African Dwarf (WAD) buck, emphasizing the clinical implications of abnormal horn morphology and the need for early corrective intervention.

Goat horns, permanent bony outgrowths of the frontal bone covered by keratin sheaths, grow continuously and follow breed-specific patterns. Aberrant growth due to genetics or nutritional factors can predispose to inward curvature and self-injury (Kumar *et al*., 2017; Flis & Molik, 2024; Dige *et al*., 2022). In this case, the medially and caudally curved horn produced a penetrating occipital wound, a complication rarely reported. Similar reports often describe pressure necrosis, corneal damage, or facial abrasions rather than deep cranial trauma (El-Tookhy & Tharwat, 2013; Mohammadi *et al*., 2024).

The absence of systemic illness, normal hematological findings, and lack of neurological deficits indicated a localized injury without septicemia or intracranial involvement. Despite the proximity of the wound to vital neuroanatomical structures, the occipital bone remained intact, reducing the risk of osteomyelitis or brain abscess (Khan *et al*., 2018).

Surgical horn tipping was the primary intervention, supported by wound debridement, lavage, topical and systemic antimicrobials, and anti-inflammatory therapy. Horn tipping is widely used to prevent or manage such injuries (Marquette et al., 2023). Oxytetracycline provided broad antimicrobial coverage (Mukuna *et al*., 2023; Tarhane *et al*., 2024), while topical Charmil® gel promoted wound healing (Munir *et al*., 2021). Rapid granulation and complete healing within three weeks demonstrated the effectiveness of this multimodal management.

Preventively, routine horn surveillance, trimming, or tipping should be incorporated into herd health protocols, especially in breeds with abnormal growth patterns. In severe or recurrent cases, early-life disbudding or dehorning remains the most effective preventive measure, reducing long-term risks of horn-related trauma (Stafford & Mellor, 2005; Ajuda *et al*., 2020).

CONCLUSION

This case represents a rare instance of a self-inflicted occipital puncture wound in a West African Dwarf buck caused by aberrant horn curling. Early recognition, prompt surgical horn tipping, and appropriate wound management ensured a successful outcome with complete recovery. The case underscores the clinical importance of horn conformational abnormalities in small ruminants and highlights the need for routine horn monitoring, timely intervention, and preventive management strategies to avoid potentially severe self-inflicted injuries.

To prevent traumatic injuries caused by abnormal horn growth in small ruminants, particularly in breeds like the West African Dwarf (WAD) goat, routine assessment of horn morphology should be integrated into standard husbandry practices. Early identification of inward or misdirected horn curvature is crucial for timely intervention. Prophylactic horn trimming or tipping should be employed in animals exhibiting abnormal horn patterns to mitigate the risk of self-inflicted injuries, especially in confined or minimally enriched environments. Livestock owners must be educated on the health implications of horn overgrowth and trained to recognize early signs of discomfort or behavioral changes linked to horn-induced trauma. Timely veterinary consultation in such cases is essential to prevent complications. From a clinical standpoint, veterinarians should consider self-inflicted horn trauma in the differential diagnosis of cranial wounds or unexplained neurological symptoms in horned goats, particularly when no external source of injury is apparent. Breed-specific management strategies should be developed, including routine horn examinations, early corrective measures, and selective breeding to minimize the occurrence of harmful horn conformations. Furthermore, the documentation and reporting of similar rare cases by veterinary professionals are vital for building a robust clinical database. Such surveillance efforts will enhance understanding of the epidemiology and clinical management of horn-related injuries in goats and support evidence-based interventions.

Conflict of Interest:

The authors declare that there were no conflicts of interest

Author Contributions:

Conceptualization: A.M.B., A.M.A., and M.S.S.; Methodology and Clinical Management: A.M.B.; Case Validation and Interpretation: A.M.B. and A.M.A.; Formal Analysis: A.M.B. and A.M.A.; Investigation and Case Follow-up: A.M.A. and M.S.S.; Resources and Clinical Support: A.M.B., M.S.S., and A.M.A.; Data Collection and Documentation: A.M.B. and A.M.A.; Original Draft Preparation: A.M.B.; Review and Editing: A.M.B., M.S.S., A.M.A., B.Y.K., and S.D. All authors have

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