

## CASE REPORT

# Tibial Plateau Fracture after Attack by an Escaped Goat

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Humans come into contact with goats in wild settings. If a goat feels threatened, it may address the perceived threat violently. While out walking, a 55-y-old man was attacked by an escaped domestic goat. Much as goats interact with each other, this goat pushed him over with its horns and then rose up on 2 legs to come back down on him with its head. The man experienced a Schatzker VI bicondylar tibial plateau fracture that required external and then internal fixation. Besides his physical injuries, he experienced acute stress disorder, which is common after traumatic events. Acute stress reactions can progress into chronic posttraumatic stress disorder but also often resolve. Psychological first aid is appropriate after traumatic events, including animal attacks. It is appropriate to screen for posttraumatic stress disorder symptoms after such events and treat or refer if present. After 1 y, the man returned to full function and experienced no posttraumatic stress disorder.

**Keywords:** animal attack, goat attack, tibial plateau fracture, acute stress reaction, posttraumatic stress disorder

## Introduction

Animals have been attacking humans since prehistory. Although many attacks are by predators, any animal that feels threatened can attack in defense. Domesticated animals are not an exception. Attacks by goats are unusual; however, they have been previously observed.<sup>1,2</sup>

Interactions between humans and goats can happen in the wild or domestically. Wild mountain goats (*Oreamnos americanus*) range from Colorado to the Yukon. Domestic goats of the genus *Capra* are present wherever humans have brought them. Human-goat interactions will increase as humans venture into goat territory. Mountain goats typically avoid humans, but anecdotal experience suggests that they seek out humans for the salt in their urine, especially when natural salt sources are not available.<sup>3,4</sup> This has led to aggressive behavior on the part of goats, including 1 fatality after a mountain goat gored a

hiker in the thigh. Keepers of domestic goats will be familiar with goat behavior and management, but anyone in the wilderness can run into mountain goats or escaped domestic goats. Those unfamiliar with goat behavior may face more risk. Here, we describe an attack by an escaped domestic goat that led to a tibial plateau fracture.

## Case Report

A 55-y-old man was walking by a lake when he noticed 2 domestic goats that were loose. He approached them to take photographs. One walked over and grabbed his pants by its teeth. He was turning to leave, when it butted him and knocked him over. As he was attempting to get up, the goat attacked him several more times, not only by butting with its horns while on all 4 legs but also by rising up on 2 hind feet and crashing down on him 5 times. On the final attack, he felt severe pain in his left leg and was not able to get up. Bystanders came to his rescue and physically removed the goat and hog-tied it. They assisted the victim approximately 30 m to his car. There, he was examined by a park ranger, who summoned an ambulance. Both goats were removed by animal control authorities.

Upon examination and imaging, he was diagnosed with a closed Schatzker VI bicondylar tibial plateau

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Submitted for publication April 2022.

Accepted for publication October 2022.

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<https://doi.org/10.1016/j.wem.2022.10.004>



**Figure 1.** Schatzker VI bicondylar tibial plateau fracture with distal extension.

fracture (Figure 1). He had some superficial abrasions but remained distally neurovascularly intact. The morning after admission, he was taken to the operating room. Because of extensive swelling and blistering at the fracture site, a decision was made to treat his injury in a staged manner. He underwent left knee spanning external fixator placement. Postoperatively, the left leg was aggressively elevated and kept nonweight bearing until the soft tissue was deemed amenable to definitive surgery. One week after the index procedure, with soft tissue swelling resolved and the fracture blisters healing, the patient was taken back to the operating room for removal of the external fixator and definitive open reduction internal fixation of the bicondylar tibial plateau fracture with a bone graft (Figure 2). Several days after his second surgery, the patient continued to be neurovascularly intact; his wounds were clean, dry, and intact; swelling was minimal; and compartments were soft. He was discharged to a skilled nursing facility for 5 wk of physical therapy.

Discussion of the encounter was difficult for him. While interviewing him about the incident after his



**Figure 2.** Tibial plateau fracture after internal fixation.

admission, he was brought to tears clarifying details of the attack.<sup>5</sup> Twelve months later, he denied nightmares, triggering, or avoidance of stimuli related to the attack. He was pain free, had nearly full range of motion, and enjoyed walking outside again.

## Discussion

The goat's attacking behavior in the interaction with a human is consistent with what is seen in social interaction between goats.<sup>6</sup> Male goats will shove, butt, and side rake with their horns to assert dominance. Female goats butt, jostle, and push. Unlike sheep, goats are more likely to attack when stressed rather than retreat.<sup>7</sup> Goats may perceive direct eye contact as threatening, and during mating season, a male goat may perceive a human as a reproductive threat that must be addressed.<sup>8</sup> Unlike rams, goats do not charge from a distance; they attack from close range.<sup>8</sup> Attacking behavior includes standing up and then delivering a twisting downward blow capable of doing the damage seen in this patient.<sup>6,7</sup>

Any unknown animal should be approached with caution. If confronted by any domestic or wild goat, avoid direct eye contact, which may be perceived as a threat.<sup>8</sup> Raised hair on the neck and spine suggest that the goat is feeling threatened.<sup>8</sup> Avoid blocking any escape routes for the animal. While making oneself look as large as

possible, back away slowly.<sup>8</sup> Attempting to capture and hog-tie a goat is not recommended unless one is equipped and already an expert. Be aware of the animal's seasonal shifts; this attack happened in mid-December, near the end of the late autumn to early winter rutting season, which likely increased the risk of any interaction with a goat.

In addition to physical injuries, survivors of an animal attack should be evaluated for mental health consequences. The patient's immediate behavior suggested an acute stress disorder from this trauma, in addition to his physical injuries.<sup>5</sup> An acute stress reaction is a normal response to a traumatic event. To meet diagnostic criteria, the patient must experience persistent re-experiencing of the traumatic event, persistent avoidance of stimuli associated with the traumatic event, and persistent increased physical arousal. Specific treatment of an acute stress reaction is neither necessarily needed nor effective. Psychological first aid measures, including ensuring safety, projecting calm, encouraging self-efficacy, establishing connection, and inspiring hope, may be used in the hope of preventing chronic symptoms; however, supportive data are sparse.<sup>9</sup> In this case, even without intervention, it resolved rather than developing into the more chronic posttraumatic stress disorder. Whether in the front country or back country, party members and rescuers should be aware of the mental health implications of physical injury and attempt to ensure safety and maintain connection to reduce stress levels.<sup>9</sup> Definitive medical care should ensure that anyone with trauma is connected with resources to address both physical and traumatic stress injuries.

Author Contributions: Writing (RM, AM); approval of the final manuscript (RM, AM).

Financial/Material Support: None.

Disclosures: None.

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