

# An Unusual Case of Biological Foreign Body of Quill of a Porcupine Animal in Foot

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## ABSTRACT

Porcupine quill injuries are known for their potential complications due to the sharp and barbed nature of the quills. We present rare and unusual case of a 50-year-old male who presented with persistent pain, swelling, and redness over the right inner border of his foot following an accidental injury involving Indian porcupine quills. After failed multiple attempts of self-removal of superficially embedded quills, imaging studies revealed a retained foreign body. Surgical exploration under local anesthesia revealed a long, sharp porcupine quill penetrating to the subcutaneous plane. The quill was successfully extracted, and meticulous wound care was performed. The patient tolerated the procedure well and was discharged with instructions for postoperative wound management. This case underscores the importance of prompt diagnosis, surgical intervention, and comprehensive wound care in managing injuries caused by porcupine quills to prevent complications and ensure optimal outcomes.

**Keywords:** porcupine, quill, Indian species, animal

## INTRODUCTION

The Indian crested porcupine is a large rodent known for its defensive quills. Their lifespan in the wild is uncertain, but can exceed 27 years in captivity.

The porcupine's body is covered in layers of specialized hair called quills. These quills are made of keratin and are arranged in two layers: longer, thinner quills on top of shorter, thicker ones. They are typically

brown or black with alternating white and black bands.

Each quill is connected to a muscle at its base, allowing the porcupine to raise them when threatened. The longest quills are found on the neck and shoulders, forming a protective "skirt" around the animal (figure 1). These can grow up to 51 cm long, while most measure between 15 to 30 cm



**Figure 1.Indian Porcupine animal with quills**  
Source: Wikipedia with permission

The smaller, more rigid quills are densely packed on the back and rump, used effectively for defense by stabbing at potential threats. The base of the tail contains shorter, white-colored quills, along with longer hollow quills that can be rattled to produce a warning sound when the porcupine feels threatened.

Despite common misconceptions, porcupines, including the Indian crested porcupine, cannot shoot their quills. Instead, they rely on their sharp, barbed quills and defensive behaviors to deter predators(6).

This animal is been listed under The IUCN Red List of Threatened Species. 2016(4,5).

### **CASE PRESENTATION**

A 50-year-old male presented to the surgical outpatient department with complaints of

persistent pain, swelling, and redness over the right inner border of sole of his foot. The symptoms had been ongoing for 2 months following an accidental injury involving Indian porcupine quills. The patient reported stepping on the quills approximately 2 months prior to presentation. He attempted to remove two superficially embedded quills himself but continued to experience discomfort and localized symptoms indicative of a retained foreign body.

On examination, there was tenderness noted over the affected area of the foot with associated firm swelling and overlying erythema. X-ray imaging of the foot revealed a foreign body-like structure([figure 2](#)), prompting further investigation with ultrasound which confirmed the presence of a retained foreign body in the soft tissues.



Figure 2. Xray showing hypodense area (arrow)

Considering the persistent symptoms and imaging findings, the decision was made to proceed with surgical exploration under spinal anesthesia. Intraoperatively, a long, sharp porcupine quill was identified penetrating up to the subcutaneous plane at

the site corresponding to the patient's symptoms. Careful dissection was performed to isolate and extract the quill, ensuring complete removal to minimize the risk of complications such as infection or migration (figure 3 and 4).



Figure 3. Intraoperative foreign body removal



**Figure 4. Porcupine quill**

Following successful extraction of the quill, the wound was irrigated thoroughly with betadine and hydrogen peroxide to cleanse the area of any remaining debris or contaminants. Debridement was conducted as needed, and the wound was carefully closed with sutures after ensuring hemostasis.

The patient tolerated the procedure well without immediate complications and was discharged with instructions for postoperative wound care, including regular dressing changes and a course of prophylactic antibiotics. On follow-up postoperative day 10 sutures removed and patient was satisfied.

## **DISCUSSION**

Injury due to quill of Indian porcupine animal is rather uncommon and still rare in soul. Various sites where this quill injury been reported are tendon sheath of plantar region of foot (2), intracranial (1), esophageal (3) and intracardiac.

The risk of foreign body of quill is that it can penetrate deeper due to sharp end. It can enter vessel and go anywhere in the body. Besides pain and inflammatory reaction which it creates in the patient.

In our case despite of two months the quill did not create fibrosis which mostly due to composition of quill like keratin.

Ultrasound and Xray are two modalities to diagnose if they are in the subcutaneous layer. They are not densely radioopaque but they create hypodense shadow as seen in present case.

## **CONCLUSION**

Foreign body like a quill of porcupine animal in Indian scenario is rare and unusual. The aim should be to locate and remove as soon as possible to prevent further deeper migration into vital structures.

### ***Declaration by Authors***

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