

Chronic oral fistula and bladder stones management in a sulcata tortoise (*Centrochelys sulcata*)

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ABSTRACT: This case study aimed to illustrate the clinical management and therapeutic strategies required for a 4-year-old male Sulcata tortoise named Swift, who presented with significant health issues, including an oral fistula and bladder stones, often indicative of broader husbandry problems. Swift weighed 13 kg and exhibited symptoms such as extensive white lesions across his mouth, an uneven mouth surface, and a foul odour, along with severe lethargy, refusal to eat or drink, and a drooping head. Physical examination revealed dehydration characterised by sunken eyes and reduced skin turgor. Radiographic findings indicated a mass with increased opacity in the mid-body cavity, suggesting the presence of a bladder stone. The treatment involved anaesthesia with ketamine and midazolam, followed by isoflurane gas for maintenance. Surgical interventions included cleaning the oral cavity, inserting a feeding tube, and removing the bladder stone via a transplastron-celiotomy approach. Postoperative care consisted of intracoelomic administration of antibiotics, vitamins, analgesics, and fluid therapy.

Keywords:

bladder stone, cystotomy, turtle, periodontitis, sulcata

■ INTRODUCTION

Sulcata tortoises, popular exotic pets globally, particularly in Indonesia, thrive in Africa's dry climates but often face health issues due to improper care. Urolithiasis is a prevalent concern, affecting 41.6% of Sulcatas in a study from Japan (Takami et al. 2021), with dietary calcium excess and dehydration typically necessitating surgical intervention for bladder stones (Sari & Apritya 2020). Oral fistulas, though rarer, stem from trauma or infection, with successful treatments noted in recent cases (Sosa-Higareda 2024). These tortoises also struggle with respiratory and metabolic bone diseases due to inadequate UV exposure or nutritional imbalances (Mukherjee & Mukherjee 2023). In Indonesia, case reports on these conditions are very limited; this paper tracks one of the few documented instances detailing the surgical removal of bladder stones in a Sulcata tortoise by Raharjo et al. (2022). This study aims to outline necessary surgical and medical strategies to improve health outcomes amid conservation challenges like overgrazing, wildfires, and the pet trade (Petrozzi et al. 2017).

■ CASE

Case History: A 4-year-old male Sulcata tortoise, Swift, weighing 13 kg, presented with comprehensive white lesions

on his mouth, irregular surface, and a noticeable foul smell. The patient was physically weak, reluctant to eat or drink, and exhibited minimal activity with a drooping head. **Clinical Findings:** Swift had recently undergone surgery for a tumour in his mouth that resulted in an oral fistula. He had not consumed food for 7 days. Physical examination revealed dehydration, evidenced by sunken eyes, reduced skin, and scale turgor. A pain response was noted upon palpation of the mouth area. **Diagnostic Tests:** X-ray examination revealed a mass indicative of increased opacity in the mid-body cavity, likely associated with a urinary tract bladder stone approximately 9 cm in size. **Diagnosis:** Swift was defined as a chronic oral fistula accompanied by a bladder stone. **Prognosis:** The prognosis of Swift's chronic periodontitis and bladder stones is considered dubious. **Treatment:** Initial treatment included an intracoelomic infusion of Ringer's lactate (22.5 ml) and 0.9% NaCl (22.5 ml) to combat dehydration. Surgical intervention was planned for cleaning and curettage of the mouth and placement of a feeding tube

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through the oesophagus to the stomach to address nutritional issues due to the oral fistula. Oral myiasis was treated with curettage. Bladder stone surgery was scheduled pending improvement in Swift's overall clinical signs.

■ RESULTS AND DISCUSSION

Prior to surgery, Swift was anaesthetized with ketamine (30 mg/kg) and midazolam (2 mg/kg), maintained with isoflurane gas. The area affected by the chronic oral fistula was cleaned, and a feeding tube was inserted. Bladder stone removal was planned for seven days later but is pending improvement.

Post-surgery, Swift was administered enrofloxacin (Interflox-100®) at 7.5 mg/kg intramuscularly and orally at 5 mg/kg with vitamin B complex (Becomp®) tablets for seven days. Meloxicam (Melovem) was given at 0.1 – 0.2 mg/kg for three days for pain management.

A cystotomy was performed via a transplastron-coeliotomy approach, where the plastron was cut, irrigated with 0.9% NaCl to minimize dust and prevent heat-induced necrosis (Mader et al. 2006), and the removed section was submerged in 0.9% NaCl. The bladder stone was removed, and the site was sutured with 4/0 vycril thread using simple and Lambert continuous techniques. The plastron was reattached with epoxy adhesive to ensure immobilization and facilitate recovery (Sari & Apritya 2020), followed by an elastic bandage.

Comprehensive postoperative care included antibiotics, analgesics, fluid therapy, and environmental control to mitigate infection risks from surgery and anaesthesia (McArthur et al. 2004, Mader et al. 2006). Tortoises like Swift are prone to bladder stones due to their metabolism of nitrogen waste into uric acid (Rendle 2021), with symptoms including weakness, inactivity, and anorexia, necessitating surgical intervention when radiology shows large stones (Raharjo et al. 2022, Che'Amat et al. 2012).

■ CONCLUSION

This case study illustrates the effective management of bladder stones in Sulcata tortoises, emphasising precise anaesthesia, meticulous surgery, and comprehensive postoperative care. These integrated approaches are crucial for successful outcomes in exotic veterinary medicine.

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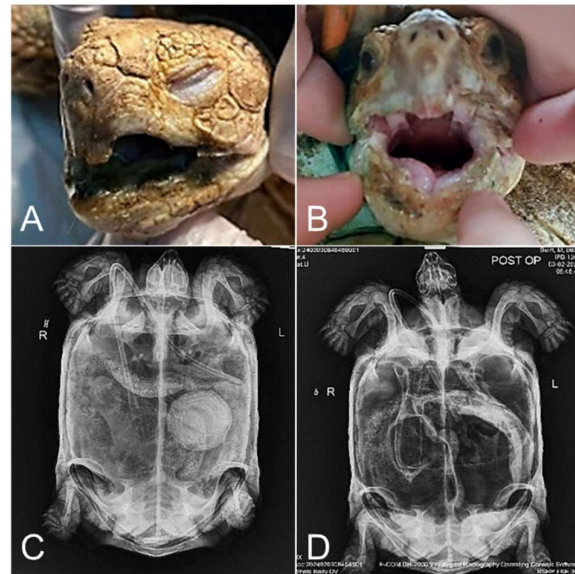


Figure 1. Imaging and Surgical Interventions in a Sulcata Tortoise. (A) Oral Fistula: A close-up image showing the oral fistula in the Sulcata tortoise. (B) Pre-operative X-ray: An X-ray image displaying a bladder stone in the urinary bladder. (C) Post-cleaning and Tube Insertion: A visual after cleaning the oral cavity and inserting a feeding tube through the esophagus. (D) Post-operative X-ray: An X-ray image taken after the surgical removal of the bladder stone, showing the cleared urinary bladder.

■ REFERENCES

- Che'Amat A, Gabriel B, Chee NW. 2012. Cystic calculi removal in African spurred Tortoise (*Geochelone sulcata*) using transplastron coeliotomy. *Veterinary World*. 5(8):489-492.
- Mader DR, Rudloff E. Emergency and critical care. In: Mader DR, editor. *Reptile Medicine and Surgery*, 2 nd edition. St. Louis, Missouri: Saunders Elsevier; 2006. pp. 533-548.
- Mader RD. 2006. *Reptile Medicine and Surgery*. 4th ed. Philadelphia (PA): Saunders Elsevier.
- McArthur S, Roger Wilkinson R, Meyer J. 2004. *Medicine and Surgery of Tortoises and Turtles* 1st ed. Oxford (UK): Blackwell Publishing.
- Mukherjee S, Mukherjee A. 2023. Care of sulcata tortoises (*Centrochelys sulcata*) in captivity in india. *Journal of Science, Humanities and Arts - JOSHA*, 10(3):1-10.
- Petrozzi F, Eniang EA, Akani GC, Amadi N, Hema EM, Diagne T, Segniagbeto GH, Chirio L, Amori G, Luiselli L. 2018. Exploring the main threats to the threatened African spurred tortoise *Centrochelys sulcata* in the West African Sahel. *Oryx*. 52(3):544-551.
- Raharjo S, Widyarani S, Indarjulianto S. 2022. Surgical removal of bladder stone in a sulcata tortoise (*Centrochelys sulcata*): A case study. *IOP Conference Series: Earth and Environmental Science*. 976(1): 012010
- Rendle M. 2021. Sulcata Tortoises Health Problems: Common Health Problems [internet]. [2024 May 2]. Available at: <https://www.myfamilyvets.co.uk/tortoise-health-problems>.
- Sari DA, Apritya D. 2020. Urinary Bladder Stone Removal Surgery in Sulcata tortoise (*Geochelone sulcata*) with Lateral Plastron Osteotomy Technique. *World's Veterinary Journal*. 10(4):634-637.
- Sosa-Higareda M, Sanchez-Migallon Guzman D, Elliott S, Phillips K, Brust KD, Beaufrière H. 2024. Diagnosis and Treatment of an Oronasocutaneous Fistula in a Sulcata Tortoise (*Centrochelys sulcata*). *Journal of Herpetological Medicine and Surgery*. 34(3):160-167.
- Takami Y, Koieyama H, Sasaki N, Iwai T, Takaki Y, Watanabe T, Miwa Y. 2021. Survey of tortoises with urolithiasis in Japan. *Journal of Veterinary Medical Science*. 83(3):435-440.