



ISSN: 2456-2912

VET 2024; 9(1): 1307-1309

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www.veterinarypaper.com

Received: 13-12-2023

Accepted: 29-01-2024

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Surgical management of traumatic evisceration of abdominal contents in a common cobra

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DOI: <https://doi.org/10.22271/veterinary.2024.v9.i1r.1117>

Abstract

A clinical case of common cobra (*Naja Naja*) was presented with a history of laceration at ventral region and evisceration of abdominal content due to injury during excavation. The snake was anaesthetized with inj. Midazolam HCl @ 1 mg/kg i/m and Ketamine HCl @ 20 mg /kg i/m cranial half of its body. Protruded organs (intestine, mesentery and gall bladder) were lavaged with acriflavine diluted in lukewarm normal saline. Organs were carefully repositioned in abdominal cavity. The musculature was sutured with polyglactin 910 No. 2-0 in simple interrupted pattern. The skin was closed with nylon No. 2-0 in simple interrupted pattern. After treatment snake was handed over to local rescue team. However, snake died after 3 days. Post-mortem examination revealed that there was extensive injury of all major internal organs.

Keywords: Snake, evisceration, midazolam-ketamine

Introduction

Injury in snakes is often inflicted by predators, vehicles or inflicted by people trying to kill them. Evisceration of abdominal content, hemipenes and cloaca results due to such kind of traumatic injury (Jadhav *et al.*, 2007) [12]. During clinical examination leading to painful manipulations, the snake require appropriate immobilization and anaesthesia specially in order to reduce handlers and patient stress and in order to work under safety specially in venomous snakes (Fowler, 1995) [9]. The wound treatment in snakes is based on cleaning the injured tissue using warm saline solution, debridement of devitalized areas and prevention against secondary infections (Mitchell and Diaz-Figueroa, 2004) [14]. Other complementary procedures used to enhance the speed of lesion healing, includes use of antibacterial compounds, antiseptics and occlusive dressings (Clarck, 1980 and Amber *et al.*, 1983) [5, 1]. The present report includes surgical management of evisceration of abdominal content in a snake.

Case presentation

A clinical case of common cobra (*Naja Naja*) weighing 2kg and measuring 165 cm in length was presented with a history of laceration at ventral region during excavation and evisceration of abdominal contents which were soiled and the colour of contents had turned out (Fig 1A and 1B). The snake was alert, moving and in defensive position. The snake was scheduled for emergency surgery and restrained by using inj. Midazolam HCl @ 1 mg/kg i/m and inj. Ketamine HCl @ 20 mg/kg i/m. First aid was provided and bandaging was done to protect the injury sites. Pre-operatively, the snake was subjected to survey radiograph in order to evaluate the extent of injury using Allenger Mars 6 X-ray machine with 47 kvP and 3 mAS in sternal recumbancy on a 12X15" film which was processed manually. On radiograph there were no detectable injuries to the snake. However, the other internal organs could not be assessed (Fig. 1C).

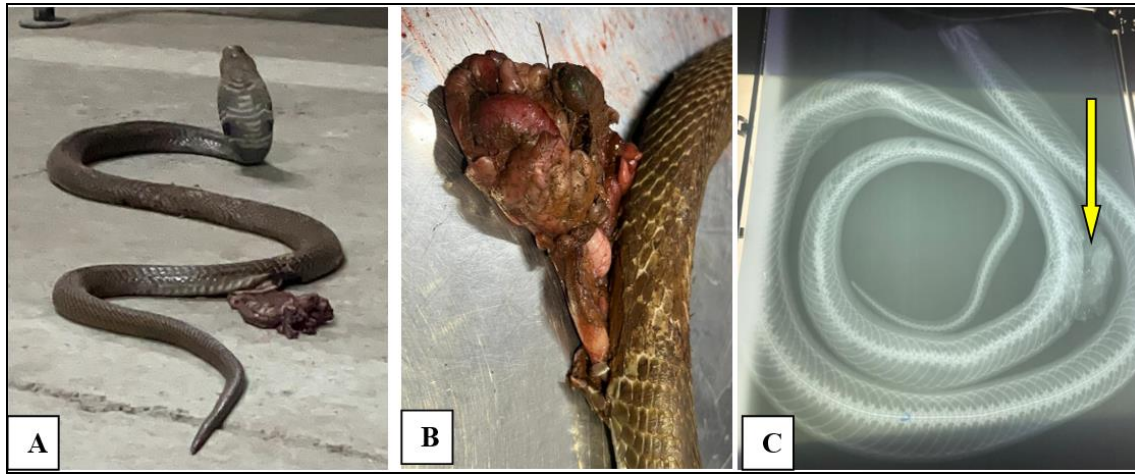


Fig 1: **A:** Snake on presentation. **B:** Lacerated soiled wound and evisceration of abdominal contents. **C:** Pre-operative radiograph showed no injury to bones and eviscerated organ can be appreciated.

Surgical treatment

After induction of anaesthesia the snake was restrained and head of the snake secured in a pipe throughout the period of operation (Fig 2A). The protruded organs (intestine, mesentery and gall bladder) which were soiled and lavaged with acriflavine diluted lukewarm normal saline solution (Fig 2B). The organs carefully repositioned in abdominal cavity (Fig 2C). The musculature was sutured with polyglactin 910

No. 2-0 in simple interrupted pattern (Fig 2D). The skin and scales were closed with nylon No. 2-0 in simple interrupted pattern (Fig 2E). Antiseptic bandaging was done to protect sutures (Fig 2F).

Post-operatively snake was administered with inj. Enrofloxacin @ 5 mg/kg b.wt i/m and Meloxicam @ 0.3 mg/kg b.wt i/m.

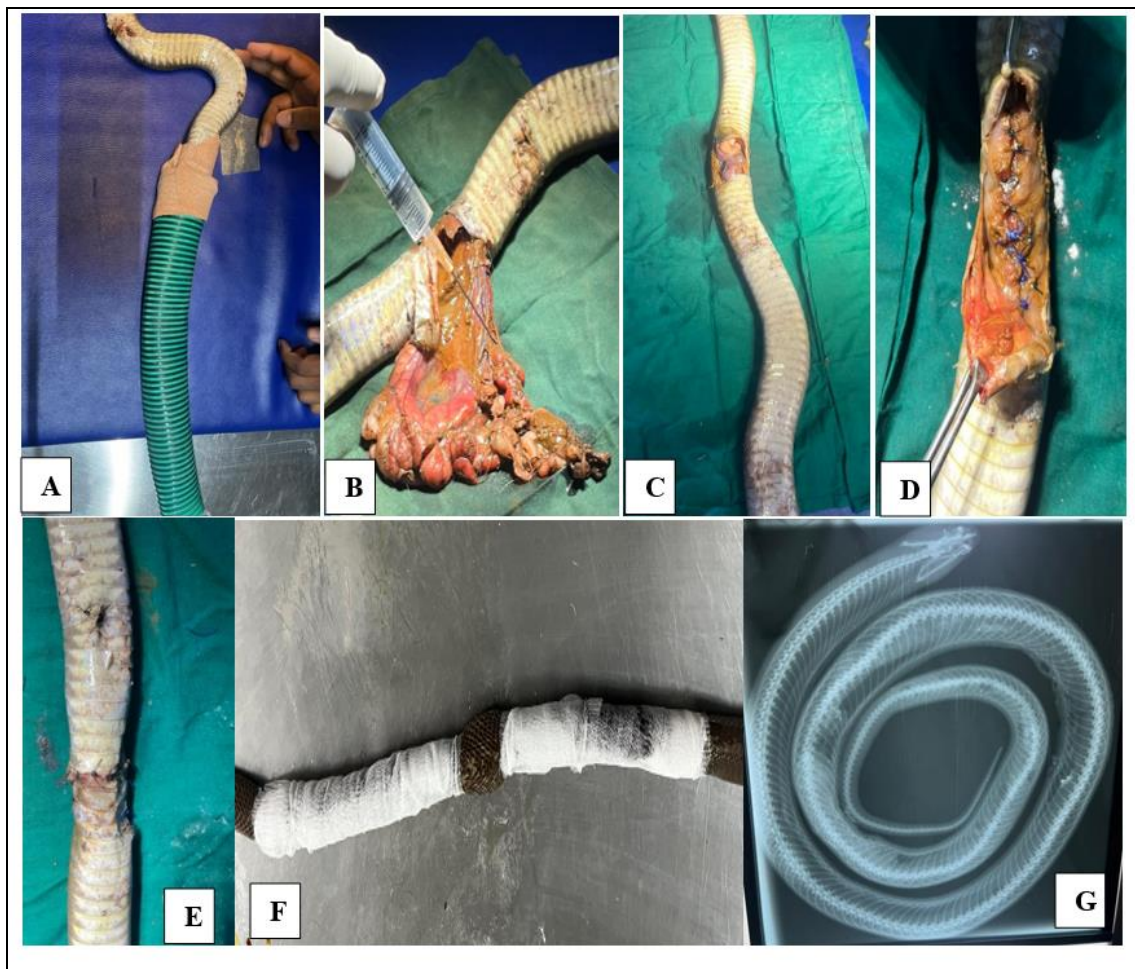


Fig 2: **A:** Restraining of snake in a pipe. **B:** Contaminated organs lavaged acriflavine diluted in normal saline. **C:** Eviscerated organs repositioned in abdominal cavity. **D:** Musculature was sutured with polyglactin 910 no. 2-0 in simple interrupted pattern. **E:** Skin and scales were sutured with nylon no. 2-0 in simple interrupted pattern. **F:** Antiseptic bandaging. **G:** Post-operative radiograph showing repositioning of eviscerated organs.

Discussion

Main causes of physical injuries in snakes were traumatic origin *viz.*, accidents and inflicted by people trying to kill. In the present case traumatic injury caused by caused by JCB machine during excavation. Similar finding were recorded by Raut *et al.* (2008) ^[16], Chaudhary *et al.* (2010) ^[4], Rocha and Mota (2013) ^[6] and Roberta and Antônio (2021) ^[17]. The snake was restrained and anaesthetized using inj. Midazolam @ 1 mg/kg b.wt i/m and Ketamine HCl @ 20 mg/kg b.wt i/m. Thompson *et al.*, (2016) ^[20] reported that use of Midazolam-Ketamine combination was safe for surgical procedures on snakes. Chaudhary *et al.* (2010) ^[4] opined that administration of injections should be done in cranial half of the body in snakes as body is having large dorsal musculature associated with ribs and vertebrae. Suturing of musculature was done using Polyglactin as it was favoured over catgut as reptiles lack proteolytic enzyme which will hamper absorption of catgut and may cause further complication as opined by Bennet, (1989) ^[2]. The skin and scales were closed with nylon no. 2-0 in simple interrupted pattern as suggested by Chaudhary *et al.* (2010) ^[4]. In the present case inj. enrofloxacin was administered in accordance with Young *et al.* (1997) ^[19] as it showed effective antimicrobial property for combating post surgical infection. Divers *et al.* (2010) ^[8] opined that inj. meloxicam appears to be safe and effective drug and had no adverse effects at high doses in snakes. After treatment snake was handed over to local rescue team. However, snake died 3rd after surgery. Post-mortem examination was performed to evaluate the cause of death which revealed that there was extensive internal injury, ruptured intestines and liver (Fig 3) which were not appreciable in survey radiography. Hence, we opined that the survey radiography was not a sufficient diagnostic aid in including the extent of injuries to the internal organs in snakes.

Conclusion

In the present case use of inj. Midazolam and inj. Ketamine anesthesia was found to be satisfactory to carry out major surgery of evisceration of abdominal contents. Along with radiography further diagnostic tools *viz.*, CT will be required to evaluate extend of internal injuries.

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