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Case report

Supernumerary tusks in a captive African elephant

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Species: African elephant
Accommodation: Zoo
Age: adult
Gender: male

A wild-born African elephant (*Loxodonta africana*) arrived at a zoological facility at age 3 with normal tusk development. At the age of five, the animal sustained a fracture of the left tusk, resulting in exposure of the dental pulp over an estimated length of 10 cm (Figure 1). The fracture was oblique in orientation, with the fracture plane extending into the dental alveolus. A partial pulpectomy was performed under general anesthesia, during which the pulp canal was sealed by a human dental practitioner. Additionally, a metal ring was affixed to the distal end of the tusk to stabilize the existing cracks and prevent further propagation. Unfortunately, detailed records of the procedure and the subsequent postoperative management are unavailable.

Figure 1: fractured tusk of a 5 yr-old African elephant. Approximately 10 cm of pulp tissue is exposed.

In the following years, rather than regenerating a single tusk, three abnormally shaped, supernumerary tusk-like structures (tushes) emerged from the original alveolar socket. There is no documented evidence regarding the loss or removal of the remaining portion of the original tusk; however, it is presumed that the tusk either detached spontaneously or was extracted. These aberrant structures required routine trimming to mitigate the risk of mechanical fractures. Notably, no pulp exposure or bleeding was observed during these interventions.
Examination of the removed parts of these tushes revealed that each of them contained a pulp cavity (see Figures 4 and 5), indicating their potential for active dentine and ivory formation.

This case suggests that the initial attempt to cap the pulp cavity was unsuccessful, likely leading to pulpitis and subsequent pulp necrosis or loss. It is hypothesized that residual mesenchymal tissue within the alveolus retained odontogenic potential, resulting in the development of multiple, independently growing tusk structures.

The elephant died at age 31 from an unrelated illness. Unfortunately, due to the nature of the fatal pathogen, no detailed examination of the affected tusk could be performed.

Although supernumerary tusks have been documented in fossil records of *Mammuthus primigenius* (Mol, 2017), their occurrence in modern African elephants remains rare and largely anecdotal. This case provides a unique insight into post-traumatic tusk regeneration and odontogenesis in elephants.

Figure 2. The 3 deformed tushes of the African elephant at the age of 25.

Figure 3. The abnormal tushes of the African elephant at the time of death.

Figure 4. Tip of one of the tushes that was removed, showing the remnant of a central pulp cavity.

Figure 5. Cross section of a removed part of the tush that was largest in diameter, showing the remnant of a central pulp cavity.

Figure 6. Distal part of an incompletely extracted tush.

Reference

Mol, D. 2017. Een boventallige slagtand van een wolharige mammoet, *Mammuthus primigenius* (Blumenbach, 1799), uit het IJsseldal tussen Giesbeek en Lathum (A supernumerary tusk of a wooly mammoth (*Mammuthus primigenius* (Blumenbach, 1799) found in the IJssel Valley between Giesbeek adn Lathum). Cranium, December 2017, pg 8-11.