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### SURGICAL MANAGEMENT AND TREATMENT OF PAPILOMATOUS GROWTH ON THE TRUNK OF A YOUNG CAPTIVE AFRICAN ELEPHANT (*LOXODONTA AFRICANA*) IN DUBAI SAFARI PARK

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#### ABSTRACT

The Papilloma virus, a member of the *Papillomaviridae* family, is responsible for the benign wart-like cutaneous lesions known as Papillomas1. It has been observed on the skin over the shoulder, hip, leg, and trunk in addition to the nasal or oral mucosa, most frequently at the oral mucocutaneous junctions, and it is contagious between elephants. One captive African elephant in the Dubai Safari Park displayed a few tennis ball-sized cutaneous Papillomatous growths on the trunk that required surgical excision and management. The report discusses surgical growth control, autohemotherapy for elephants, and the effectiveness of autogenous vaccines.

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#### INTRODUCTION

Papillomas are benign wart-like cutaneous tumors, caused mostly by the Papilloma virus of the Papovaviridae family (Stevens *et al.*, 2013). It may occur on the skin, the oral and nasal mucosa, and at the oral mucocutaneous junction (Perera *et al.*, 2011). Papillomatosis is transmissible between elephants and has been observed on the skin over the shoulder, hip, limb, and trunk, as well as the nasal or oral mucosa, commonly at the oral muco-cutaneous junctions (Richman *et al.*, 2000). Papilloma warts, caused by the Herpes virus, are rarely found in elephants. Papilloma warts most often arise in calves, especially those who have not consumed their mother's milk consistently from birth, which leads to levels of antibodies that are insufficient to fight the virus. Warts are often found on the trunk, from the tip to the base. These warts develop quickly, growing in size and number in 2-4 weeks, and often fall off and disappear on their own. Generally, no interventions are required unless they affect the normal

functioning of the body. If the elephant shows irritation or if the warts interfere with feeding, a veterinarian may need to consult and remove the warts. It is important not to use a knife or scissors to cut off warts, as this can cause bleeding and potentially lead to death, especially if the trunk is injured (Jacobson *et al.*, 1986).

Dubai Safari Park added four African elephant calves to its collection. A few months after the acquisition, one of the three females developed cutaneous growths similar to the typical papilloma on a few areas, both laterally and medially on the trunk. At first, no corrective measures were taken as the growths did not hamper the normal activities of the calf or show any sign of discomfort or irritability. However, after two months, the growth on the left lateral trunk base started growing many folds, and within two weeks, it reached the size of a tennis ball. The plan was to surgically remove the growth on the trunk base and close the wound to check for hemorrhage and contamination; collect the excised growth for histopathology; produce an autogenous vaccine; and

expose the viral antigen to the leukocytes.

Although papillomatous growths have been observed in different anatomical sites, including the trunk, there is a discernible knowledge gap in the scientific literature concerning the surgical treatment and management of these growths, especially when they encroach upon the elephant's normal functioning. The extant body of literature predominantly advocates for a passive approach, presuming that the growth will resolve themselves without any intervention (Abegglen *et al.*, 2022; Sripiboon *et al.*, 2017). In contrast, the circumstance involving the African elephant foal in Dubai Safari Park illustrates a situation in which the trunk has developed an enormous papillomatous growth, necessitating surgical intervention. This underscores a knowledge deficit regarding the most effective surgical approaches, possible complications, and results pertaining to the excision of substantial papillomatous growths in African elephants that are held captive.

This paper aimed to report the surgical management and treatment of a papillomatous growth on the trunk of a young captive African elephant (*Loxodonta africana*) at Dubai Safari Park.

## METHODOLOGY

### Surgical Excision

Disinfection of the site was done by cleaning the area with normal saline solution, then scrubbing with chlorhexidine hand sanitizer and finally scrubbing with mild povidone iodine solution (Altun *et al.*, 2018). The growth was excised out at the base of its neck, keeping some portion of the skin enough for closure of the wound. Root tissues of the growth were removed from the neck until fresh healthy tissue was exposed. Hemorrhage was controlled by small artery forceps and later by compression with skin sutures (Littlejohn *et al.*, 2015).

### Auto-Hemotherapy

Auto-hemotherapy was performed by drawing 20 ml of the autologous whole blood collected from the right ear vein and was injected to the gluteal muscle at two sites to induce the immune system.

### Autogenous Vaccination

For histology, bacteriology, and the possible production of autogenous vaccines, the excised lesion was collected in normal saline solution and sent to the veterinary laboratory. The tissue harvested during the surgery could

produce up to 25 ml of vaccine. An initial effective intramuscular dose of 10 ml was administered 15 days after the surgery; followed by a booster dose after 30 days. The surgical wound was treated with mild povidone iodine solution daily to remove any dirt and avoid contamination. Betadine ointment was applied topically daily to contain infection/contamination.

## RESULTS

The animal was monitored for a month for newer growth, but no new growth was noticed in any part of the body. There is no recurrence of any other such lesion on the elephant's trunk or its companions in the facility after two years of observation. Histopathology revealed a marked epidermal hyperplasia with focal hyperkeratosis and marked extension of rete pegs; focal superficial suppurative to ulcerative inflammation; massive dermal proliferation of dense spindle cells in cords and sheets. Papillomas are benign wart-like cutaneous tumors caused by the Papilloma virus of the Papovaviridae family. They may occur on the skin, oral and nasal mucosa, and at the oral mucocutaneous junction. In present studies, the Papillomatous growths were initially identified as skin outgrowths that proliferated rapidly over the course of a week. Perera *et al.* (2011) also reported that papillomatous growths which are also known as papillomas, are benign (non-cancerous) tumors that arise from epithelial surfaces and usually grow in an outward direction. Histopathological lesions were characterized with marked epidermal hyperplasia with focal keratosis and marked extension of rete pegs; along with focal superficial suppurative to ulcerative inflammation; massive dermal proliferation of dense spindle cells in cords and sheets. These findings are in line with the already reported results by Sironi *et al.* (1990). The lesion was matching the equine sarcoid, typically caused by papillomavirus/polyomavirus.

## CONCLUSION

Papillomatous warts in young African elephant could be successfully treated with surgical excision, administration of autogenous vaccines and autohemotherapy. Regular monitoring of new growth can control the lesions from getting worse and spreading to other animals.

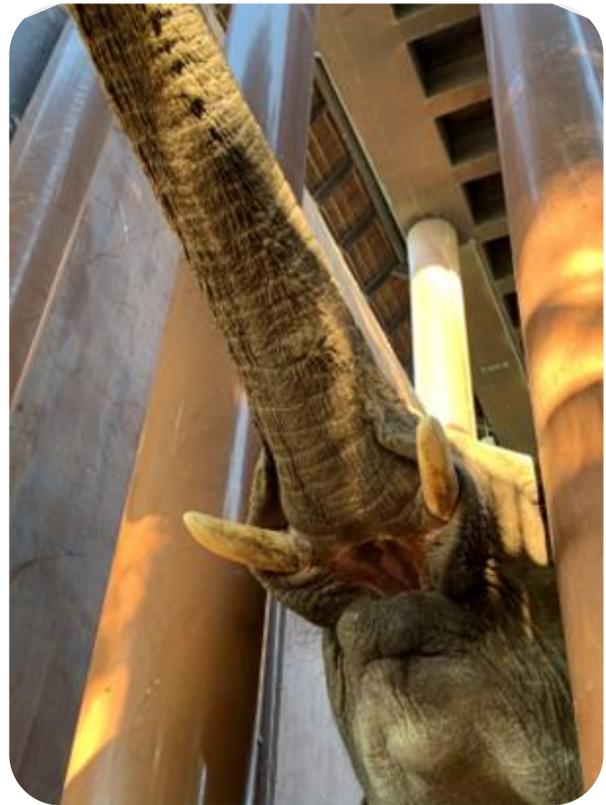
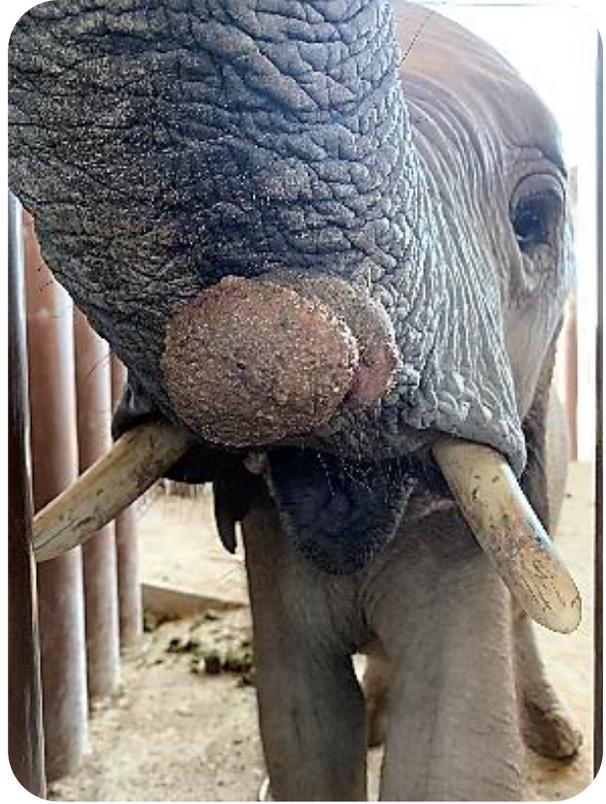


Figure 1, 2, 3. Size and shape of the Papillomatous growth before the surgical intervention, Figure 4. one year after the surgery.

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