

## Vaginal Vestibulotomy in an Asian Elephant

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### Introduction

Elephants have a long gestation period of around 22 months and produce calves weighing 95–115 kg at birth. The reproductive tract is proportionately larger and longer than other mammals. In elephants the vestibule, which is a tubular structure approximately four feet in length, runs vertically from the vulval orifice situated between the hind legs, to below the rectum, where it makes a 90 degree turn inward to join the vagina proper (Olson 2004). Consequently, unlike in cows or horses, per-vaginal or per-rectal manipulation of an abnormally positioned full-term foetus, and Cesarean section is not possible.

Ultrasound examination is valuable to determine the viability of the foetus in birth complications (Moyal *et al.* 2012), but is generally not available under field conditions. The options in such situations are limited. Induction of labour may lead to serious complications, jamming the foetus in the birth canal, carpal arthrogypsis or breech presentation (Schaftenaar 2013). Fetotomy through the vestibulotomy incision has been reported for a dead foetus (Schaftenaar 2013). Caesarian section is almost impossible because of the anatomy (Yatbantoong *et al.* 2002) and none of the dams or calves on which it was tried survived (Schaftenaar 2013).

Vestibulotomy is an option provided the foetus is present in the vestibule. Vaginal vestibulotomy has been performed in standing and recumbent positions (Schaftenaar 1996).

### Case study

A pregnant Asian elephant (*Elephas maximus*) named “Brahmaputri” aged approximately 45 years, at Kanha Tiger Reserve (Madhya Pradesh) showed signs of straining, restlessness and anorexia. There was continuous dribbling of urine from the vulvar opening and mucoid discharge from the anus for 3 to 4 days.

Per-rectal examination revealed a foetus like body in the cranial part of the vestibule and oxytocin was injected. Subsequently, the water bag ruptured but delivery of the calf did not occur. The animal became dull, went off feed and was restless even after giving five litres of dextrose normal saline and 10% dextrose and 16 g Amoxicilline-sulbactam combination intravenously through an ear vein for five days. After 3 days with no progress, given the serious condition, surgical intervention was decided.

### Surgical management

The animal was sedated with 500 mg of xylazine I/M and placed in right lateral recumbency. The cranial vestibular region was prepared by thorough shaving, scrubbing with savlon and water followed by cleaning with hydrogen peroxide and povidone iodine painting at the site. Starting approximately 15 cm below the anus, an area 30 cm below was infiltrated with 2% Lignocaine HCl.

A skin incision approximately 10 cm in length was made in the infiltrated area. The incision was



**Figure 1.** Exteriorizing the trunk.



**Figure 2.** Traction on paws and trunk.

extended in depth and bleeding vessels ligated. The foetus was felt as a hard mass at a depth of about 20-25 cm and its trunk and left foreleg were exteriorized (Fig. 1) and snares applied on them (Fig. 2). Following lubrication, traction was applied. Several attempts to pull out the foetus failed. The foetus was then pushed back and the right foreleg was felt flexed from the fetlock joint causing dystocia. The leg position was corrected and a third snare was placed on it. Traction was applied with three ropes and a transverse incision about 10 cm made at the centre of the longitudinal incision (Fig. 3). Traction with twenty persons was needed to extract the foetus with an effort over 10 minutes (Fig. 4).

Following delivery of the foetus, about 40 to 50 l of uterine fluid and urine flooded out along with part of the placental membrane. The placenta was removed manually. Povidone iodine with metronidazole liquid was inserted through the cervical opening deep into the uterus.



**Figure 3.** Appearance of fore legs.



**Figure 4.** Delivery of dead fetus with flooded urine and uterine fluid.

The mucosal edges of the vestibule were approximated with Vicryl No. 1 using a simple continuous pattern. A second row of sutures was placed in an interrupted manner on the muscular layer followed by subcutaneous tissue approximation. The transverse incision was also approximated in a similar way. Skin edges of transverse and vertical incisions were closed by Black Braided Silk No. 3 in a cross mattress pattern (Fig. 5). The lower dependent part of the longitudinal incision for about 10 cm was left unsutured to provide an opening for drainage.

During the operation about 10 l of dextrose normal saline and Ringer Lactate with Multi Vitamin Infusion and 20 ml of adrenochrome was given intravenously through an ear vein. Antidote Yohimbine 600 mg was given intramuscularly and the animal was unchained. Movement of the trunk and head was observed after 8 to 10 minutes followed by movement of legs and the animal attended sternal recumbancy in 15 minutes.



**Figure 5.** Closure of skin incision.

The animal recovered and was standing after 20 minutes and accepted jaggery and sugarcane shoots after 10 minutes of standing.

An edematous swelling was observed on the 3<sup>rd</sup> day post-operative, extending up to the umbilicus, which responded well to cold fomentation and 30 ml frussamide. A mass of placental membrane approximately 10-15 kg was expelled out through the vulvar opening on the 7<sup>th</sup> day.

On the 8<sup>th</sup> day, a thin stream of urine was observed passing out through the drainage opening. The animal was restrained and examined. About a 7.5 cm long vestibular incision was found open due to breakage of all the three layers of sutures forming a urethral fistula. The fistulous tract was debrided and approximated with silk and satin tape interrupted sutures.

The vestibular fistula shrank gradually with twice a day dressing and cauterization with 10% silver nitrate solution once a day for seven days and on alternate days for about a month. The complete healing of the fistula took about 3 months. At present (3.5 years postoperative) the elephant is active and has gained weight, and is used for tourist rides at Kanha Tiger Reserve.

## Discussion

Dystocia in elephants is not a common problem. However it has been reported due to herpes virus infection, malpresentation of foetus and in aged animals (Moyal *et al.* 2012; Schaftenaar 2013). Generally physical and medicinal attempts at its resolution remain fruitless. The position of the foetus either remains intrauterine or advances to lodge within the vagina in anterior or breech

presentation. Foetal death occurs and usually progresses to mummification (Hildebrandt *et al.* 2003; Schaftenaar 2013). In the present case the foetus was in anterior presentation with right carpal arthrogyposis, which caused dystocia. As there were no signs of putrefaction, mummification would probably have occurred in the absence of intervention.

Postoperative formation of a urethral fistula observed in the present case has been reported previously also (Schaftenaar 1996; Yatbantoong *et al.* 2002). Placement of a wide catheter into the urethral opening and fixing it in a counter drainage opening on the upper part of the incision may prevent fistula formation.

## References

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