

IMPORTATION OF SOUTHERN WHITE RHINOCEROS FROM SINGAPORE

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In April of 2017 the Virginia Zoo collaborated with the Singapore Zoo on an importation of 0.2 white rhinos. These females will be an important addition to the diverse collection of animals housed at the Virginia Zoo. The Virginia Zoo has previously housed white rhinos but these young females will be in a newly renovated enclosure in the hopes to have a breeding group in the coming years.

TEAM NEPALORADO - A RHINO COMMUNITY


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Rhinos are some of the most endangered large mammals left on our planet, and the population of the greater one-horned rhino and black rhino together is not even ten thousand individuals. We have both of these species at our zoo in Denver and being a zookeeper working on the pachyderm team, I wanted to make a difference in both of their conservation efforts. I wanted to start a movement with our local people, to educate them, and most importantly, get them involved on a global scale. I started to take small groups over to Nepal to help with their conservation efforts back in 2010. Annually we travel over with our Team Nepalorado, which is a fusion of cultures in the name of conservation. This has led to the creation of a non-profit and the subsequent addition of work in Tanzania too. In addition, I write children's books and now teach in the local area on my days off. I have been to Nepal eight times. Chitwan National Park used to have 10-12 poaching incidents a year, and now they celebrate years without a single rhino lost. Our community is vibrant, passionate, and making a huge difference in so many ways.

RHINOPLASTY: MONITORING OF A TUMOR GROWTH THROUGH VOLUNTARY RADIOGRAPH BEHAVIOR

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Lissa, a Southern white rhinoceros living at Lion Country Safari in Loxahatchee, FL, is trained to allow staff members to take radiographs so her health can be monitored. Lissa originally presented with a small abscess at the base of her primary horn and after treatments were unsuccessful, the decision was made to immobilize her and investigate the abscess. Radiographs taken during the immobilization showed a mass occupying a large portion of Lissa's primary horn. The mass was determined cancerous and the primary horn, along with the tumor, had to be removed and Lissa was treated for cancer. During treatment, it became apparent that the area had to be monitored with the use of radiographs because of the possibility of tumor regrowth and the possibility it could spread to Lissa's skull and cause complications. The possibility for bone infection, osteomyelitis, was also a concern increasing the desire of our vet staff to take regular radiographs of Lissa's skull. In order to reduce the number of immobilizations necessary, staff agreed that the best way would be to train Lissa to voluntarily stand while radiographs were being taken. Through positive reinforcement Lissa was first target trained to touch a stick with the end of her lips. After some modifications to the chute she was trained to stick her head out the front of the chute and a hold behavior was trained. Next, the task of desensitizing Lissa to the radiograph equipment needed to be accomplished. Not wanting to put the expensive radiograph equipment in close proximity to a moving rhino head, mock equipment was created. After training Lissa to hold her head still while the mock equipment was used to fake taking radiographs, the real equipment was introduced. Once the behavior was established we could take radiograph whenever necessary and monitor the tumor's growth and provide better health care for a rhinoceros recovering from cancer. My talk will detail the steps used in training a voluntary radiograph behavior in a southern white rhinoceros. This was a unique medical case; we could not find any other white rhinoceros having been treated for a mass in a horn. We found two greater one horn rhinos with masses in the horn and a white rhino with a sarcoma in the leg. I will also briefly include the steps used for treatment both before and after the removal of the tumor.



Rhinoplasty: Removal of the primary horn and tumor growth in a Southern White Rhinoceros

DAVID BACKUS, KEEPER IV, LION COUNTRY SAFARI
LOXAHATCHEE, FLORIDA

Lissa

33 Year-Old Female
Southern White Rhinoceros

October 2013

- Presented with a small abscess on the left base of her primary horn.
- Treated with general antibiotic and daily flushing.
- No improvement and new abscess on front of horn. Also primary horn showed unusual growth/ wear.



5 December 2013

- Blood work did not reveal anything out of the ordinary and our vets also suspected other issues were present and wanted to investigate the primary horn.
- Radiographs taken during the immobilization showed a mass in the primary horn.
- Using a Sawzall, the first cut was made just above where the mass stopped on the radiograph.
- A second cut was made slightly lower than the first which revealed grey discharge and additional soft necrotic tissue in the center of the primary horn.



Learned from the first immobilization:

- Keep the procedure under three hours.
- Roll Lissa at the one hour mark.
- After first effects were observed, we started putting ropes around Lissa to guide where she would go down.
- Empire Strikes Back move

Not learned from the first immobilization:

- What the growth in her horn was



17 December 2013

- A grinding tool was used to make an inch wide cut from the top of the newly exposed growth to the base of the horn.
- Allowed good access to a large section of the growth for better sample sizing
- Growth did come from the base of the horn and was growing up through the middle.
- Histologic diagnosis was fibromyxosarcoma.



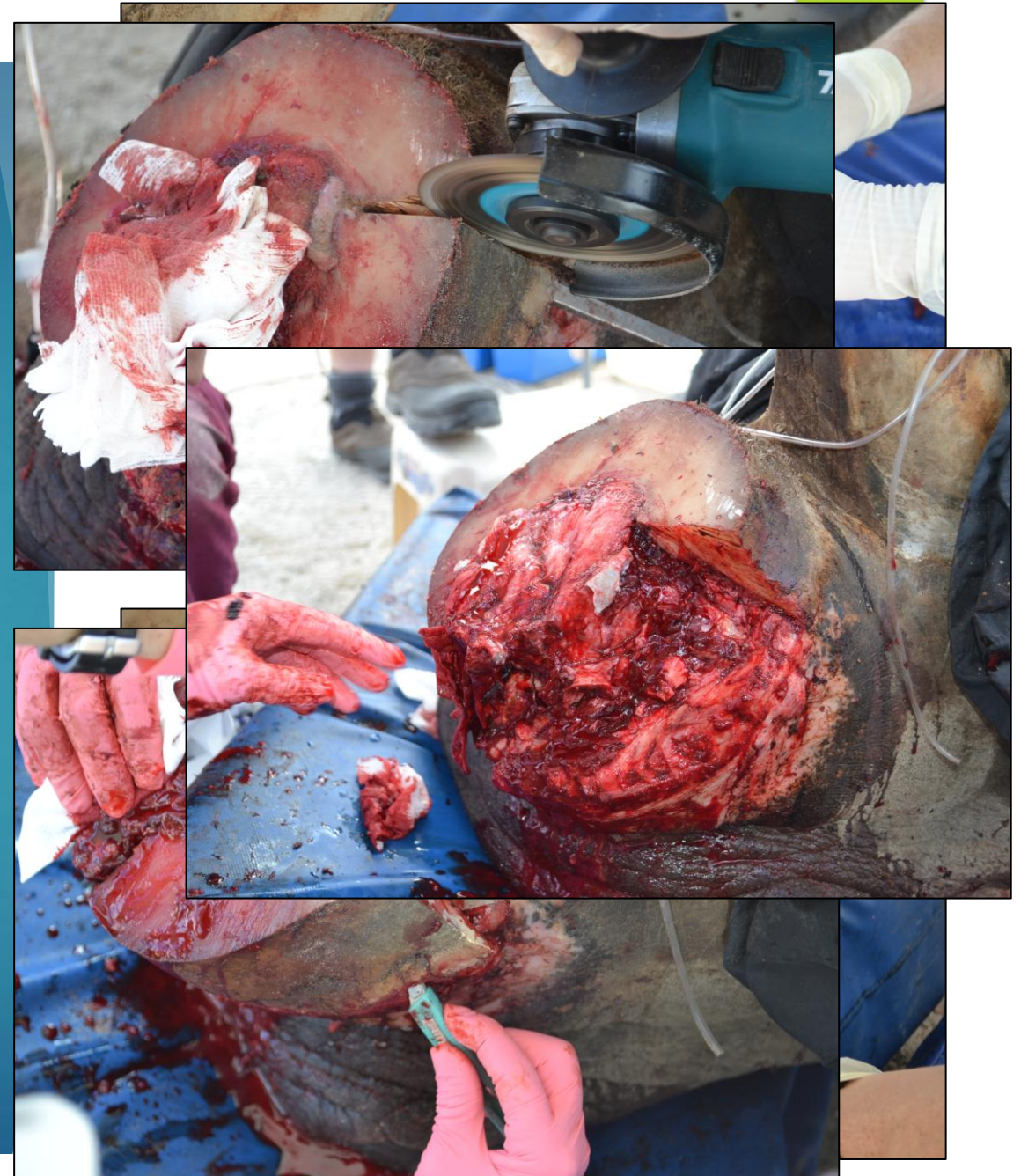
2 January 2014

- Cut half way between the top and the base of the horn, we then used chisels and separated the tumor from the horn wall and separated the horn from the base.
- Exposed a large section of the tumor and also showed the tumor to be very vascular.



2 January 2014

- Removed the newly exposed section of tumor with surgical tools.
- Took a part of the left side of the horn to the base, using a chisel under the horn to prevent an accidental cut of the skin at the base. We used a grinding wheel for better control and more precise cuts.
- Exposed a large section of tumor growth.
- Began treating the new open wound topically and orally with medication.



25 February 2014

- Consulted with a human pathologist who would lend his expertise to the remainder of “Lissa’s” immobilizations.
- Human orthopedic surgeon from local hospital that had some helpful tools, including cauterizing laser and oscillating saw.
- The new saw, cauterizing laser and shearers made the work quicker than before.
- End of the immobilization, a large majority of the tumor and most of the primary horn was removed and chemotherapy was started.



Between Immobilizations

- Treated with oral and topical medications.
- Keep the horn clean to promote healthy growth.
- Voluntarily entered a chute for daily, sometimes several daily, treatments of her primary horn



15 April 2014

- Final stages of the horn removal would be the most invasive and delicate since the area was closest to the skull and attached to the skin around the primary horn.
- Nerve blocker was injected around the base of the primary horn.
- Using the cauterizing laser, bone saw, and a chisel, sections of the horn were removed from the skin.
- After removing the left side of the remainder of the horn, time was getting short and it was decided it would be safer to tackle the right side on a future date
- Second round of chemotherapy.



13 May 2014

- Mirror image of the April surgery.
- Right side of the remainder of the horn was removed with cauterizing laser, bone saw, and chisel
- A third round of chemotherapy was injected after the horn was removed.



26 June 2014

- The month between surgeries gave time for the trauma of removing the primary horn to heal, allowing for clean access to the skin the tumor was growing from.
- The sole purpose of this immobilization was to do the final round of chemotherapy on the remainder of Lissa's tumor.
- Nerve blockers were placed behind both eyes, further back than in previous procedures.
- Nerve blocker was also placed around the primary horn because the chemotherapy was to be injected deeper than in previous immobilizations



26 June 2014

- Chemotherapy was injected in several places throughout her primary horn.
- Relatively quick immobilization at under two hours.
- Took some quick radiographs, covered wound with clear bandage and reversed anesthesia.



Monitoring and after care

- Over the next several months Lissa was treated with oral and topical medications two to three times a day.
- She was kept off exhibit with her daughter for company.
- As the chemotherapy took effect the tumor and surrounding tissue was killed and turned black.



Monitoring and after care

- Radiographs were taken during immobilizations as time allowed, to monitor possible internal growth of tumor.
- Animal needs to be still to get quality radiographs. At the time, the only chance we had to get radiographs was during immobilizations.



Monitoring and after care

- To prevent the need for immobilizations we trained Lissa for voluntary radiographs.
- Radiographs every six to eight weeks.



Monitoring and after care

- Radiographs showed no further growth of the tumor
- Immobilization in February 2016 for dental work. Biopsies taken showed no tumor growth.
- After two years and seven immobilizations Lissa was declared in remission.
- Lissa back with the crash and doing well.



Thanks

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Lion Country Safari Rhino Team
Lissa Rhino

Questions

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