Kanpur Zoological Park is presently having seventeen sambar (Rusa unicolor) deer in its pride collection. The Kanpur zoo has excellent record in Sambar breeding.

Usually during the rutting season male sambars become violent in order to attract females. Males show dominance with frequent infighting. Therefore it is very common amongst sambar to sustain injuries during rutting season.

Miller and Fowler (2015) described that deer often suffer from traumatic injuries. During rut, stags commonly receive puncture wounds to the face, forelimbs and thorax, but hinds may also be injured. Captive deer hurt themselves running into fences when startled or during poorly executed capture procedures.

Deep muscular injury is inflicted when animal dashes against some hard object and or fall. Contusions, lacerations and suppurative wounds are the most common muscular affections in deer and antelopes mainly caused due to intra specific fights have been reported by Arora (2003).

Swarup et. al (2009) compiled data from 35 zoos of the last ten years and described that major cause of death was traumatic injury out of 228 deaths of sambar 61 were due to traumatic injuries. Common clinical conditions included wound and infighting injury.

**Case history**

Kanpur zoo alpha male sambar aged around seven years has an excellent breeding record and himself is a zoo born and has produced many offspring in Kanpur Zoological Park. On one such occasion during rutting season in the month of November 2014 alpha male sustained punctured wound on left side of abdomen very close to the rumen due to infighting.

**Treatment**

The animal was guided inside the kraal adjacent to the enclosure in order to make approach more convenient further it also prevented crow pecking of wound which even makes a small wound extensively enlarged. The animal was tranquilized by using 300 mg xylazine and 200 mg ketamine with the help of a blow pipe. The wound was managed surgically by removing damaged tissue. The cavity was cleaned and filled with streptopenicillin powder and was closed using absorbable continuous sutures. Subsequently the wound was treated with spray of povidone-iodine, anti-microbial ointment and herbal antiseptic lotion. The wound was responding well but
after some days instead of healing the wound began to show frothy secretion along with some exudate. The situation was becoming challenging day by day for the zoo veterinarians as it was not possible to treat the wound without dressing or without removing the pus by squeezing the wound, as use of anaesthetics was not advisable at the time of every dressing.

Therefore an unique method devise by the Kanpur zoo veterinarians (Singh, et.al 2014) was practiced by using a half horse power water lifting pump, thick walled PVC/Rubber tube, tube with nozzle and a large container of around fifty litre capacity. Tube with nozzle was connected at outlet of the water lifting pump and at other end i.e. inlet a thick walled PVC/Rubber tube was connected. The other end of inlet tube was submerged into a large container containing 2%potassium permanganate and 4% povidone-iodine solution. The wound was pressure washed with the solution for two days and then alternatively for few more occasions. In order to prevent flies an herbal antiseptic lotion was also applied on wounds after washing with above mentioned antiseptic solution and was continued for several days even after cessation of washing by potassium permanganate and povidone-iodine solution. The animal was also treated with antibiotics and anti-microbials parenterally as well as orally. Apart from this supportive therapy with tissue modulators were given intermittently. Wounds began to show healing after several washings.

Result and Discussion
Thick skin of sambar allows abscesses to undermine and become more extensive than immediately evident. In our case too initial response was good and at one occasion wound seemed to be appearing healthy but the undermine pyogenic layer was providing favourable condition for bacterial growth especially anaerobic bacteria which was evident by frothy secretions from wounds. Removal of pyogenic layer from lacerated wound remains a challenge for the zoo veterinarians as it’s not possible to sedate animal daily for dressing of wound especially in herbivores. Hence the only option left to remove pyogenic layer was to make some arrangement in such a way that the animal could be approached from a distance. So above described method was used and the pressurised solution which came out of nozzle was able to remove pyogenic layer and debris from wounds and also made a coating of solution which further prevented microbial growth. The nozzle tube can be used from a safe distance. Herbal lotion which was sprayed on the wounds helped in fly prevention and thus aided in healing.

The method devised by Kanpur Zoological Park, Kanpur is very simple and the required materials are easily available in any hardware/machinery shop. Keeping in view the high mortality of deer due to wounds/injuries in the zoos as reported by Swarup et al (2009), the method will certainly prove helpful in treating not only sambars but other mega herbivores also such as rhinoceros, elephant, giraffe and hippopotamus etc.

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References

