CASE STUDY

Ayurvedic Management of Extensive Infected Snakebite Wound Preventing Amputation – A Case Study

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ABSTRACT
Snakebite is very common problem encountered in India. Apart from mortality, the morbidity is also high. Treatment of complicated wounds resulting from cytotoxic snake poison poses multiple challenges. Snake bite wounds are complicated, that take longer time to heal, leaving some disability to the subjects. Here is the case study of snakebite infected wound that was failed to heal by modern therapy. There was one stage when amputation of the limb was seemed very eminent, when Surgery department referred the case to Ayurved department for further management. Ayurved department successfully managed the case in spite of developing complication of Osteomyelitis with sinus formation. This case study highlights the strength of Ayurvedic principles that could be applied for treating such type of wounds. Therefore a multidisciplinary approach is required to treat snakebite cases, the modern therapy is definitely superior in treating the emergency, but Ayurved is better alternative for treating complications of snakebite like extensive infected wound.

KEYWORDS
Snakebite, Infected- wound, Osteomyelitis, Ayurvedic, Management
INTRODUCTION
Snake bite remains an important but neglected public health issue in Tropical & Subtropical countries. Agriculture workers & children are mostly affected by it. It is estimated that nearly two million persons are victims of snakebite in India, resulting in 35,000 to 50,000 deaths every year\(^1\). Those who survive, there is considerable disability amongst them but such data is not available in many countries including India. Cases of severe envenomation are often characterized by subsequent wound infection and skin and soft-tissue necrosis\(^1,2\). Treatment of complicated wounds resulting from cytotoxic snake envenomation poses multiple challenges; therefore a multidisciplinary approach is required. Current treatment strategies need to be examined in order to reduce morbidity. This case study gives insight about the strength of Ayurved that has saved the lower limb from amputation. Thus Ayurved can play a crucial role in the management of snakebite wounds.

CASE STUDY
**Infected Extensive Snake Bite wound:** This 40 year old female was met with unidentified snake bite at two places on Rt. foot while working in farm on 4.2.2015. She was referred from nearest Primary Health Centre to Sassoon hospital, Pune and was admitted in Medical ward of Sassoon General Hospitals, Pune.

*Fig.1 Snakebite wound on admission in Ayurved ward*

Notes on admission/ Patient History: Patient had history of Haematemesis two times, Bilateral ptosis, Breathlessness and Hematuria. She had mixed picture of snake bite- Vasculotoxic + Neuroparalysis, with local cellulitis up to knee joint & swelling of Rt. foot + bleeding+, with Dyspnoea as mild respiratory involvement & coagulopathy. She had developed disseminated intravascular coagulation (DIC). She was adequately treated by medicine department with ASV, Free Frozen Plasma & Cryoprecipitate. That saved her life. She was transferred to surgery department for further management. Debridement of wound was
done under spinal anaesthesia on 8th Feb 2015 and on 12th Feb and that was developed into an extensive ulcerated wound of size 25 cm x 8-9 cm x 1-2 cm on anterior aspect of Rt. foot extending over leg & another smaller wound of size 10 cm x 3 cm x 1 cm on the medial side of middle of Rt. lower limb.

She was managed actively by Ayurvedic therapy; however Pt developed Osteomyelitis with fistula formation during treatment. That is called as Nadi -vran in Ayurved. In modern science, despite the use of surgical debridement and long-term antibiotic therapy, the recurrence rate of Chronic Osteomyelitis in adults is about 30% at 12 months. Recurrence rates in cases involving P. aeruginosa are even higher, nearing 50 percent³. But this challenging case having developed complication of Osteomyelitis was managed successfully by Ayurvedic line of treatment. It took about 7 months to complete healing of the wound. Patient was discharged on 25.9.2015, went walking home with both the legs.

She was with the surgery department till 23.2.2015, but wound remained infected, not responding to treatment. Surgery department informed brother of the patient that above knee amputation might be required to save her life. Before amputation, in view of past experience of successful treatment of many such complicated wounds by Ayurved department, Surgery department transferred the case to Ayurved department for wound management and survival of limb.

Fig. 2 Wound after 6 weeks

Fig. 3 Wound on 3months

Fig. 4 Wound on 7 months
DISCUSSION
Sushrut had mentioned in detail about 80 species of snakes, in 5 groups. He was the first person to differentiate the sex-wise symptoms of snake bite. Symptoms of bite of pregnant snake, just delivered snake, lethality of snake poison as per age of the snake were also mentioned. Modern science is still unaware of this aspect of snake-bite. Sushrut further mentioned that there were 8 species indicating the mixed nature of poisonous snakes. This patient had also experienced symptoms of mixed form of Darveekar (Neurotoxic) and Mandali (Vasculotoxic) snake poisoning. Charaka mentioned that there were 8 forms of Vegas observed after snake bite and breathlessness, Chhardi/ Vomiting experienced by the patients fitted in to fourth Veg.

It is said apart from poisonous snake venom, the buccal flora of snake is also contaminated. When snake ingests a pray, it defecates in the oral cavity of snake and the various bacteria are transferred to the victim when snake bites; this complicates the recovery of patient due to appearance of various symptoms. Therefore snake bite wounds take longer time to heal. It was not that the wound healing took long time due to diabetes; it is clarified here that patient was not diabetic.

Granthkaras have mentioned description of Panchvalkal namely Vata (Ficus bengalensis), Udumbar (Ficus racemosa), Ashwatth (Ficus religiosa), Pluksh (Ficus virance), Pippalbhed /Hibinuxvs (Thepasia populnea). The bark of these valkalas & skin of human being has much similarity as per ‘Samane samane vriddhesham’ principle of Ayurved. Further, these trees are Kshirivriksha, Kashayrasatmak hence it promotes healing; have Deerghjeevi (long life) therefore healing is permanent/ non recurrent. Their properties are Grahi, Sheetal, Vran, Shoth, Visarpnashak and is Vishaghna. Out of these Panchvalkal, first 3 are easily available. The author had successfully used quath made from the bark of Vat (Ficus indicus/bengalensis), Udumbar (Ficus racemosa), Ashwatth (Ficus religiosa) for treating non healing/ trophic ulcers in Leprosy patients. Quath made of 3 Valkalas mentioned +Daruharidra (Berberis aristata) was used initially first 7 days for washing the wound. It was followed by quath made of 3 Valkalas for the rest of the period.

For Vran karma Vran shodhan oil was used which contained Haridra (Curcuma longa), Manjista (Rubia cordifolia), Nimba (Azadirachta indica), Madhuyasti
(Glycyrrhiza glabra, Darvi (Berberis aristata), Trivarta (Merremia turpethum), seed of Tila (Sesamum orientale) & Saindhav (Rock salt). This treatment helped to reduce the inflammation.

On appearance of healthy granulation tissue, the wound was dressed with Jatyadi oil because it had specific action on healing Dushta vran. As per Sharngdhar it has action on healing of wounds caused by weapons, poisonous bites & non healing wounds.

Role of Matrabasti:- Pt. had inflicted with snake bite that created Vataprakop. Basti is half chikitsa & for Vat shaman, tail is the best remedy. Therefore we gave Matrabasti. Further Asthi/ bone is the sthan of Vata. It was likely that the infection went up to the bone as snake poison itself is Vyavyi-vikasi. Narayan tail is Vatashamak, Shothnashak and when administered through Matrabasti helped to reduce Vata & nourished body especially Mauns-dhatu for its healing.

Gandhak-Rasayan is broad spectrum Ayurvedic antibiotic, anti viral, anti microbial, anti inflammatory & is blood purifier. Sookshma triphala is specially used post operatively routinely for abdominal surgeries to prevent infection. Along with Gandhak rasayan it acts as best antibacterial dravya. Gandhak rasayan causes hepatotoxicity, therefore it cannot be used for longer period; hence, we used it for only for 15 days. Sitopaladi+ Avipatikar was used for Deepan, Pachan and Mrudu-virechan. Tiktaghrit has special role in healing of infected wound; further it helps to balance Pitta. Triphala guggul is Jantughna/ anti bacterial, anti inflammatory, Vat shamak, Shothghna having Shool-har (analgesic) properties. Gokshuradi guggulu acted as Nephroprotective and prevented the likely effect of snake poison on kidneys. It reduced the kleda that reduced the slough. It is Vran shodhak/ ropak, Shool-Daha nashak and Aam-pachak. Patient was given Kshirpak made up of Ashwagandha, Shatawari, Haridra and Sunthi that nourished the Maunsdhatu and promoted wound healing.

Eladi tail has properties of Vata-shamak, Kapha shamak and is useful in poisoning. We instilled 1ml of Eladi oil in the sinus thrice weekly that enabled closure of sinus within 16 weeks. Thus Eladi oil was found to be a wonderful remedy in curing Osteomyelitis. We carried out Dhoopan/ Fumigation of wound by Vacha, Nimb-patra (Melia Azadiracta wild), Ral (Yellow Resin) along with Ghrit every day before start of Vran-karma.
Aahar:- Patient was given Laghu, Supachyaaahar. Non veg. food & Divaswap was totally avoided. In addition to the Laghu, Supachyaaahar, baked Chana/ Bengal gram 15 gm daily along with two overnight soaked dried dates in water. She was given one boiled egg daily. It fulfilled her additional protein demand that was very much needed for wound healing.

Combined action of all these drugs along with local treatment and essential Aahar- Vihar facilitated wound healing which prevented the amputation of limb and disability due to Osteomyelitis; that saved the patient from becoming permanently disabled. A detail treatment plan has been tabled in Table No. 1.

Follow up:- It is worth mentioning that till date there is no Keloid or hypertrophic scar developed after healing of such a large infected wound which is commonly seen in modern therapy; further, the scar was also reduced in size as visible in follow up photograph (Fig. No.5). It is noteworthy that there was no recurrence of sinus for till date.

This case study highlights certain advantages of Ayurvedic treatment of infected wounds:-

1. Use of Antibiotics is no longer required.
2. No need to carry out swab culture for bacterial sensitivity, saving the cost of investigations & time.
3. No need to use Iodine or Silver compounds for wound dressing which is commonly used in modern surgical practice.

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<thead>
<tr>
<th>Type of treatment</th>
<th>From to</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Local Local</td>
<td>23.2.2015 to 1.3.2015</td>
<td>Decoction made up of 1 part each of barks of Vat (<em>Ficus indicus</em>), Udumbar (<em>Ficus racemosa</em>), Ashwath (<em>Ficus religiosa</em>) and Daruharidra (<em>Berberis aristata</em>) quath to wash wound.</td>
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<td>2.3.2015 to 24.9.2015</td>
<td>Decoction made up of 1 part each of barks of Vat (<em>Ficus indicus</em>), Udumbar (<em>Ficus racemosa</em>), Ashwath (<em>Ficus religiosa</em>) to wash wound.</td>
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<td>23.2.2015 to 1.3.2015</td>
<td>Applied Vranshodhan oil over wound (Sandu)</td>
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<td></td>
<td>2.3.2015 to 24.9 2015</td>
<td>Applied Jatyadi oil over wound (Baidyanath Ayurved Bhavan, Nagpur)</td>
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<tr>
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<td>5.4..2015 to 14.8.2015</td>
<td>Instilled Eladi oil 1 ml in the Sinus by 2 ml glass syringe nozzle end (without needle) thrice weekly. (AVP)</td>
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<td>Systemic treatment</td>
<td>23.2.2015 to 9.3.2015</td>
<td>Tab Gandhak Rasayan 500 mg BD (Sandu)</td>
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<td></td>
<td>23.2.2015 to 24.9.2015</td>
<td>Gokshuradi guggul 500 mg BD (Ayurved Rasa shala, Pune)</td>
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<td></td>
<td>23.2.2015 to 24.9.2015</td>
<td>Tab Sukshma Triphala 500 mg BD (Rasa shala, Pune)</td>
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</table>
23.2.2015 to 24.9.2015  Triphala guggul 250 mg BD (Sandu)
23.2.2015 to 24.9.2015  Amrutadi guggul 500 mg BD (Rasa shala, Pune)
23.2.2015 to 24.9.2015  Sitopaladi choorna ½ TSF+ Avipatikar choorna½ TSF (Rasa shala, Pune)
23.2.2015 to 24.9.2015  Tiktaghrit ITSF on empty stomach everyday (Arya Vaidya sala)
3.3.2015 to 24.9.2015  Siddha kshirpak made of Ashwagandha 1 gm + Shatavari 1gm +Haridra 500 mg + Sunthi 500 mg daily

Matrabasti  9.3.2015 to 22.8.2015  Narayan oil 40 ml (Sandu) after meal
Dhoopan  23.2.2015 to 24.9.2015  Vacha, Nimb-patra (Melia Azadiracta wild), Ral (Yellow Resin) along with Ghrit everyday before start of Vran-karma

4. No risk of Keloid or hypertrophic scar.
5. Cost effective

This case study highlighted the strength of Ayurvedic treatment principles which enabled survival of the limb. These treatment principles could be applied to heal most of such types of infected wounds.

![Fig.6 Second Wound on admission to Ayurved ward](image1)

![Fig. 7. Same Wound after 15 days](image2)
REFERENCES