Katupila (Securinega leucopyrus) A Boon for Bedsore- A Case Report

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Abstract
Pressure ulcer is a sequel of tissue necrosis and ulceration due to prolonged pressure. External pressure of more than 30 mmHg on the skin leads to ischemia (reduced blood flow) causing ischeohypoxia, necrosis and ulceration. It is more common between bony prominence and an external surface. It may be due to impaired blood supply, defective nutrition and neurological deficit. Ayurveda describes this type of non-healing ulcer in terms of Dusta vrana, in that context Acharya Sushruta had also mentioned it as “Dirghakalanubandhi” which suggests that these kind of ulcers take longer time to heal due to underlying reasons. This article is about the single case report of a 51-year-old male patient with a stage 3 decubitus ulcer over the right heel since 2 months. As decubitus ulcers especially of stage 3 is difficult to cure, ayurvedic management with internal medication and external therapy was performed in this reported case. For Internal medication, Tablet septilin (A Patent medicine of Himalaya pharmacy, India) and Punarnavadi kashay (A Patent medicine of Vaidhyaratnam pharmacy, India) was used for enhancement of better wound healing. For external application Paste Katupila and honey was applied for 30 days. According to the assessment, wound showed good response within 10 days and was completely healed in 30 days.

Keywords: Decubitus ulcer, Dusta vrana, Katupilla, Punarnavadi kashay, Tablet Septilin, Varicose Ulcer

1. Introduction
As per the healing stages of Vrana (Dusta vrana, Shudhavrana, Ruhyamanvrana and Rudhavrana)2, Dustavrana is the stage in which normal healing process of the body is impaired due to disturbance in its basic prerequisites. Classical texts also comment on prognosis of different ulcers according to its clinical condition. In that context, Dusta vrana is described as difficult to cure (Kastasadhya). Specifically, it is mentioned that Vrana over bony area is more difficult to treat3.

This case report is of a 51-year-old male patient from Panchna, Gujarat, India reported to Parul Ayurveda Hospital, Vadodara, Gujarat, the case was presented as a complaint of non-healing ulcer of size 3.5×2.5 cm on right heel since 2 months.

2. Present Illness and Past History
As per the history by the patient, he had a fall 1 year prior and had a spinal injury leading to paraplegia (Paralysis of lower limbs). He underwent surgery to treat this condition (details of previous treatment was not available with the patient at the time of admission). Even after surgery there was no marked improvement in the paraplegia of lower limbs. He was bedridden since last 6 months. Because of improper patient care in the bed, he developed pressure ulcer on the right heel, so patient was brought to Parul Institute of Ayurveda for further health care.

There was no history of diabetes mellitus, hypertension or any other systemic disease. There was
no relevant family history. Patient had no history of smoking, tobacco chewing or alcohol consumption.

3. Clinical Findings

General condition: Patient was immobile due to paraplegia; loss of sensation over bilateral lower limbs was noticed. Patient was conscious and well oriented at the time of admission. Bladder was catheterized for incontinence of urine since 6 months with proper bladder care. All vitals were within normal limits during the stay in the hospital. Other systemic examination revealed normalcy.

3.1 Finding of Local Examination of Wound (Figure 1)

1. Size and site: 3.5×2.5 cm at posterior aspect of right heal
2. No Foul odor noticed
3. Discharge: Absent
4. Floor: Slough present
5. Edge: Inflamed raised
6. Margin: Regular
7. No complaint of pain
8. Local temperature: Normal

3.2 Investigations Carried out on 13th June 2019 (Table 1)

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>09.3 gm/dl</td>
</tr>
<tr>
<td>TC</td>
<td>6600 /mm³</td>
</tr>
<tr>
<td>DC</td>
<td>67,21,07,05,00</td>
</tr>
<tr>
<td>RBC</td>
<td>3.72 million/ mm³</td>
</tr>
<tr>
<td>Platelet</td>
<td>2, 94,000/mm³</td>
</tr>
<tr>
<td>FBS</td>
<td>108 mg/dl</td>
</tr>
<tr>
<td>PP2BS</td>
<td>239 mg/dl</td>
</tr>
<tr>
<td>HIV</td>
<td>Negative</td>
</tr>
<tr>
<td>HBSAG</td>
<td>Negative</td>
</tr>
<tr>
<td>Serum creatinine</td>
<td>0.9 mg/dl</td>
</tr>
<tr>
<td>Pus culture and sensitivity</td>
<td>Isolated organism: E. Coli</td>
</tr>
<tr>
<td>X ray of right heal</td>
<td>Was not taken as there was no evidence of sequestered discharge or other bony involvement</td>
</tr>
</tbody>
</table>

Fasting blood sugar and post prandial blood sugar was assessed on 17th June 2019.
For prevention of further worsening of the present bed sore and to avoid formation of new pressure ulcer, an air bed was provided to the patient during the hospital stay.

5. Material and Method

Materials

- **Katupila:**
  It is a folklore medicine found in some regions of Saurashtra and Srilanka. Drug identification and authentication was done by Dravya guna department of Parul institute of Ayurveda, Vadodara, Gujarat.

- **Honey:**
  For proper base for paste formation and to enhance the wound healing activity, honey was procured from Sandu pharmacy.

Methods

- Every day wound was cleaned by distilled water prior to dressing
- Paste formulation made from Katupilla churna and honey were applied at ulcer site. Ulcer was covered with sterile bandaging.

6. Assessment Criteria (Table 2)

- Measurement of wound (Akruti): Wound size was measured by outlining the wound margins over a transparent paper; the same outlined figure was transferred to 1x1 cm graph paper to measure wound size by Picks formula.
- Picks formula: \[ A = \frac{(C+1)}{2P} \], where \( C \) is completely full squares and \( P \) is peripheral squares

### Table 2. Grading for assessment criteria

<table>
<thead>
<tr>
<th>Sr. num.</th>
<th>Criteria</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Akruti (Wound measurement in cm²)</td>
<td>≤ 2 cm²</td>
<td>&gt; 2 cm² but &lt;4 cm²</td>
<td>&gt;4 cm² but &lt;6 cm²</td>
<td>&gt;6 cm²</td>
</tr>
<tr>
<td>02</td>
<td>Jihvatalabhavat (Granulation)</td>
<td>No granulation</td>
<td>Up to 25% covered with granulation tissue</td>
<td>25 to 50% covered with granulation tissue</td>
<td>More than 50% covered with granulation tissue</td>
</tr>
<tr>
<td>03</td>
<td>Puti-puyamamsa (Slough tissue)</td>
<td>No slough</td>
<td>Up to 25% covered with slough</td>
<td>25-50% covered with slough</td>
<td>More than 50% covered with slough</td>
</tr>
</tbody>
</table>

Figure 2. Investigation reports of the patient.
7. Observation

Assessment was done on every 10th day. (10th, 20th, 30th day of first assessment). 1st day wound was almost 80% covered with slough. Desloughing was observed along with pale pink granulation devoid of discharge by 10th day. Ulcer healed completely by 30th day with minimal scar (Table 3, Figures 3, 4).

8. Results

9. Discussion

Case report suggests that Ayurvedic classical management for bed sore which can be compared to Dustavrana as detailed in Ayurvedic texts. Dustavrana is a broad term which covers all types of non-healing or infected ulcers. Considering bed sore, mostly it is caused by impaired nutrition or blood supply which is indicative of “Shosh” or “Dhatu kshay”, so step by step Dhatuvrudhi is needed for this wound healing. There may also be neurological deficit which causes hurdle in wound healing, so we need a drug or a therapy which will do neuroangiogenesis. Kashtsadhyata of Asthigatvran also can be decoded under the contexts of more possibility of bed sore over bony prominence. In the condition of bed sore the main problem is the pressure over bony area, which finally leads to Dhatuksayaavastha. So in the case of bed sore Dhatu purana is as much important as Vranashodhan and ropan, because balancing of Dhatu is of prime importance for the vranaropan. That is the only reason that Acharya has mentioned that Vrana is Sukhsadhya in the Vayastha purusha.

As discussed in the previous section Nidana in this type of Vrana is immobilization and pressure over bony

Table 3. 10-day interval observations of wound

<table>
<thead>
<tr>
<th>Sr. num.</th>
<th>Criteria</th>
<th>0 day</th>
<th>10 day</th>
<th>20 day</th>
<th>30 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Akruti (Wound measurement in cm²)</td>
<td>3(7.5 cm²)</td>
<td>3(6 cm²)</td>
<td>2(3.75 cm²)</td>
<td>(completely epithelized)</td>
</tr>
<tr>
<td>02</td>
<td>Jihvatalabhavat (Granulation)</td>
<td>0(no granulation)</td>
<td>1 (Up to 25% covered with granulation tissue)</td>
<td>3 (More than 50% covered with granulation tissue)</td>
<td>Completely epithelized</td>
</tr>
<tr>
<td>03</td>
<td>Puti-puyamamsa (Slough tissue)</td>
<td>3 ( More than 50% covered with slough)</td>
<td>2 (25-50% covered with slough)</td>
<td>0 ( No slough)</td>
<td>Completely epithelized</td>
</tr>
</tbody>
</table>

Figure 3. Healing of wound from day one to 30th day.
prominence which can be considered as a Stabhdhata, which ultimately leads to Chal and laghugunakshay of Vatadosha, so there will be sang of Vatadoshas due to Vrudhha (Increased) Kaphadosh. As per reference given by Acharya, Vata is the only carrier of body elements i.e. Dosha, Dhatu, Mala\(^5\). so necessary nutritional element can’t reach the Vrana. And also Puranprakriya of body will be disturbed as Vatadoha is important for Purana\(^6\). Even though Prakrutkapha is required for vranaropana, on contrary Dushitkapaha is obstructer to wound healing\(^7\). As there is a normal tendency of the body to heal but in stage 3 pressure ulcer, it will take several months to heal or may not heal at all. Several months of immobility (Stabdhata) will induce Kaphavrudhhi, it will result in more debris formation (Puya)\(^8\). By combined effect of low nutrition to body tissue and formation of excessive debris, the bed sore healing will be delayed.

Shape of the wound is also important to validate the prognosis of wound. Acharya has mentioned that Vruttaaakruti wound can be easily contracted and epithelized comparative to other wound shapes. But prognosis cannot be decided based upon only the Akruti of Vrana. Other factor i.e. Vyadhi (Vrana) Avstha, Rugnaavstha or Rutubala also should be considered for making ideal prognosis. Consideration of Visarga kala, Rugnabala will be increased so it will also enhance Vrana ropana\(^10\).

So, we can say that protocol for the management of bed sore can be Nidanaparivarjan (relief in pressure over ulcer site), Vranashodhana and Vranaropana with Dhatupuran.

According to this management protocol, first is to avoid causative factors (Nidanaparivarjan) for this purpose the air bed was used and position was altered. This resulted in proper channelization of Vata dosha (Vataanuman) and also diluted the excessive Kapha (Kaphavilayan). So finally by doing this, strotas sang will be cleared out. So Uttarottardhatupuran will occur. For Vranashodhana purpose local application of Katupila and honey was carried out. Katupila contains tannins and flavonoids; it increases the availability of nitric oxide in hypoxic tissue and warded off the endothelial dysfunction. This triggers neogenesis (regeneration of biological tissue) and vasculogenesis forming neovascularization and resulting in fresh epithelialization, assisting in wound healing\(^11\). Honey is a hyperosmolar medium, preventing bacterial growth. Because of its high viscosity it forms a physical barrier, and the presence of the enzyme catalase gives honey antioxidant properties\(^12\). We used Punarnavadi Kashay as its name suggests it rejuvenates the tissues to facilitate neoangiogenesis and improves microcirculation because of the proper channelization of Vata dosha (Vatanuloman karma). Tablet Septilin played the role of an antibacterial drug and immunity boosting drug assisting in early pathway to healthy wound.

10. Conclusion

This case of stage 3 bed sore was healed within 30 days, against all odd situations, i.e.

1. Old age
2. Paralyzed limb and delayed or non-healing nature of the stage 3 bed sore, with the use of air bed, change of position, internal and external application of Ayurveda medicine.

Katupila claimed to have Tikta and Kashay rasa is expected to possess Laghuguna which helps in wound healing by Lekhana and Ropana properties\(^13\). Further the regenerative properties of Punarnavadi kashay and Tablet Septilin may have accelerated the wound healing and thereby reduced healing duration.

This single case study is expected to ignite optimism to use Katupila for stage 3 bed sore wound healing as observed.
11. References