

Efficacy and Cost-Effectiveness of Combined Therapy in Accelerating Healing for Extensive Burns and Chronic Wounds: A Case Series

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Abstract: *The field of medicine continuously evolves as new treatments and therapies emerge, offering innovative solutions to complex health challenges. Ayurvedic Gangaprayag Healing Cream, based on traditional Ayurvedic remedy, has shown promise in the management of burn injuries and chronic wounds. In this article, we discuss four cases where the integration of this cream with conventional medical approaches resulted in successful outcomes, underlining the effectiveness of this holistic treatment method. Additionally, this combined treatment resulted in a remarkably swift recovery within a short span, demonstrating minimal sepsis, absence of post - burn contracture, hypertrophic skin changes, and functional morbidity. Furthermore, the cost - effectiveness of the implemented treatment approach is highlighted.*

Keywords: Pediatric burns, second - degree burns, Ayurvedic therapy, intravenous antibiotics, rapid recovery, cost - effective management

1. Introduction

A million mild to severe burns transpire in India each year which originate from electrical (4%), thermal (86%), or chemical (3%) sources and primarily impact the lower and middle classes. (1) Unnecessary and inappropriate treatment for accidental burns can lead to severe health issues, including immunological and inflammatory reactions, metabolic alterations, and distributive shock. These responses can pose challenges in management and potentially lead to multiple organ failure. It's crucial to recognize that burns impact not only physical well - being but also mental well - being and overall quality of life (2)

Early complications of burns include pneumonia, dermatitis, renal failure, and wound infection, while late complications like contractures and fibrosis may persist even after emergency care is provided. Septicemia and acute respiratory distress syndrome are the most challenging components of burn case management. (1) Moreover, young children, particularly toddlers, present distinctive challenges as a result of their evolving physiological systems and vulnerability to complications.

Increasingly, scientists are using evidence - based medicine and modern scientific methods to demonstrate the efficacy of herbal medicine, a concept explored in Ayurvedic texts for decades, where various treatment modalities include topical applications of herbal medications, ghee, and oil. (3)

Coconut oil, turmeric, and camphor are natural remedies for various ailments. Coconut oil is absorbed quickly by the skin and has antioxidant and antiseptic properties, accelerating metabolism and wound healing. Turmeric has anti - inflammatory, antibiotic, immunomodulatory, and wound healing effects, while camphor enhances microcirculation, promotes healing, and reduces peripheral pain. It also stimulates the cardiovascular, respiratory, and central nervous systems (4), (5)

Here we present a series of cases successfully treated with Gangaprayag Cream (a combined preparation containing

coconut oil, camphor and turmeric with other ingredients) and conventional medicine, resulting in a rapid recovery with minimal complications.

Treatment protocol

An integrated framework of modern medicine and Ayurveda was utilized. The patient and family members were properly informed about the prognosis, possible complications, and associated risks. The patient was treated with standard treatments such as fluid therapy, intravenous antibiotics and anti - inflammatory drugs in combination with the use of our Ayurvedic Gangaprayag cream. The wounds underwent cleansing using a solution of normal saline. After drying with sterile gauze, Gangaprayag cream was applied over the wounds followed by sterile pads as absorbent layer. The dressings were affixed using bandages in a manner that did not impede the circulation.

2. Case Presentations

Case 1

A four - year - old patient presented to our medical facility with an unintentional thermal injury resulting in second degree to third degree burn spanning from the central region of the back surface to the superior aspect of the hip region, upper limbs total involved 40 - 50% tbsa, a very bad prognosis patient.

Treatment Approach:

- 1) **Ayurvedic Gangaprayag Healing Cream** was applied daily for initial three days then every alternate day as part of the dressing regimen.
- 2) **Intravenous Antibiotics:**
 - Inj. Oframax at a dosage of 600 mg twice daily
 - Inj. Mikastar at a dosage of 250mg per 1.5 ml once daily
 - Syrup Meftagesic par DS 3.5 ml in 100ml three times a day

3) Other Drugs

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- Justin suppository ½ push three times a day
- Syrup Orofer XT 5ml once daily

After discharge oral antibiotics and analgesic are continued till the recovery.

Outcome:

The patient demonstrated a notable improvement within a relatively short timeframe of 9 days. The patient experienced intermittent fever over a period of three days, necessitating daily dressing throughout the initial three days. Following

the resolution of the fever after a period of three days, the dressing procedure was then performed on alternate days. Recovery was observed in 9 days in second degree burn wound, in some areas where third degree burn wound were there took 2 months for complete healing.

- Post recovery observed for 6 for the kelloid formation, in 80% of wound there is no kelloid, but in 20% area kelloid formation was observed.

Case Images -



Case 2

Sepsis - associated symptoms were observed in a fifty - year - old female patient, who exhibited a notably elevated white blood cell count of 22, 000 units. In addition, the patient presented with chronic symptoms including fever, pain, and a burning sensation in the lower limb that was infected. During this phase, the concentration of hemoglobin was measured at 6 grams per milliliter, whereas the concentration of serum creatinine was documented as 3.1

Treatment Approach:

The patient received 2 blood transfusions, which resulted in an increase in Hb from 6 to 7.4 g/ml. Six days after admission, the patient was administered intravenous antibiotics and analgesics. Moreover, our Gangaprayag healing cream was applied daily to wounds. Following a WBC count reduction to 16, 000 units after six days, the

patient was discharged and switched to an oral medication regimen.

Outcome:

Eight days later, she returned for a follow - up appointment. Her CBC report at this stage indicated a normal WBC count and all other parameters were also in the normal range. There were no reports of burning sensations, and the extent of the inflammation diminished considerably, limiting the wound's progression and eliminating the necessity for amputation.

We recommended using Gangaprayag healing cream every other day, which resulted in full wound healing after 9 months.

Case Images



Case 3

A patient aged 1 - 2 years suffered an accidental burn from falling into hot water, resulting in 35 - 40% second - degree burns to her back, thighs, genitalia, and lower abdomen.

Treatment Approach:

- 1) **Ayurvedic Gangaprayag Healing Cream** was applied every alternate day as part of the dressing regimen.
- 2) **Intravenous Antibiotics:**
 - a) Inj. Oframax at a dosage of 750mg twice daily
 - b) Inj. Mikastar at a dosage of 250mg per 1ml twice daily
 - c) Inj. Dynapar at a dosage of 1/2 ml in 100ml of normal saline intravenously twice daily for the initial three days
- 3) **Oral Medications (After Initial 3 Days):**
 - a) Clavam, an oral antibiotic
 - b) Syp. Meftagesic DS at a dosage of 3.5 ml three times a day
 - c) Syrup Orofer XT at a dosage of 5 ml once daily.

Outcome:

The patient demonstrated a notable improvement within a relatively short timeframe of 9 days, resulting in a favorable result. The expeditious use of intravenous antibiotics facilitated a swift remission of sepsis. There was a lack of evidence about the occurrence of post - burn contracture, thereby emphasising the effectiveness of the treatment in mitigating long - term problems. The absence of hypertrophic skin alterations indicates that the treatment has been effective in maintaining the integrity of the skin. The patient exhibited no discernible decline in functional abilities, suggesting the implementation of a thorough and effective approach to care. The combined Ayurvedic and conventional treatment approach proved to be economically viable, reducing the overall cost of care.

Case Images -**Case 4**

A female patient, aged 85, who had been diagnosed with diabetes mellitus and had been prescribed insulin for the previous decade, presented to our medical facility with non - healing ulcers on both lower legs that had persisted for a period of 5 years. In the past, despite three instances of wound debridement, the patient did not exhibit any

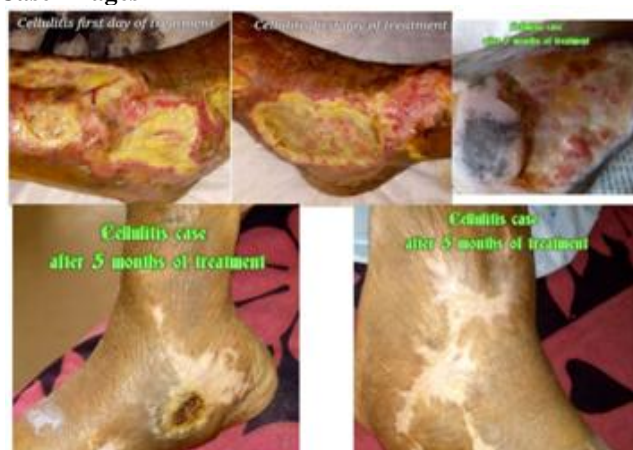
discernible improvement in the healing process. As a result, amputation was advised as the course of action by the consulting surgeon.

Treatment Approach:

- 1) **Ayurvedic Gangaprayag Healing Cream** was applied daily as a part of the dressing regimen.
- 2) **Oral Antibiotics** were given for a 15 days course as follows
 - Tab. Zifi at a dosage of 200 mg twice daily
 - Tab Zerodol SP twice daily
 - Tab Pantop at a dosage of 40 mg once daily

Outcome:

The administration of oral drugs ceased after a duration of 15 days, while the application of dressing with Gangaprayag healing cream was conducted on a daily basis. Subsequently, the wound exhibited an uneventful healing process over a period of 4 - 5 months, thus avoiding the need for amputation.

Case Images -**Case of cellulitis****3. Discussion**

The care of burn injuries is a considerable challenge due to the substantial pain and incapacity experienced by victims, as well as the potential for long - term and profound modifications that need attention in order to enhance overall quality of life. Burn care practitioners are confronted with several issues, including acute and critical care management, as well as long - term care and rehabilitation. (2)

The principal emphasis in burn injury management pertains to the possible progression of late complications, including but not limited to scarring, alterations in pigmentation, contractures, and keloid formation. The incidence of these cosmetic and functional complications is negatively correlated with the efficacy of the initial treatment wherein the patients who receive optimal initial care encounter fewer and less severe complications. (6)

In addition to contemporary medical care, the integrated approach also encompasses Ayurvedic principles such as Plushta and Durdagdha. These ideas emphasise the use of

external therapy techniques, such the application of medicinal ghee, wound fumigation, and oral drugs. (1)

Curcumin, an endogenous bioactive constituent present in turmeric, exhibits the capacity to impede the secretion of proinflammatory mediators, thereby facilitating wound healing and pain reduction. In addition, curcumin is renowned for its favorable safety profile and tolerance. (7)

Coconut oil possesses a significant ability to be efficiently absorbed, which indicates its considerable potential to promote cellular metabolism, facilitate hydration of wounds, and alleviate signs of inflammation. The hydrolysis of coconut oil frequently leads to the production of free fatty acids (FFAs), diglycerides, and monoglycerides. The potential of coconut oil to be integrated into formulations for wound healing is supported by its antibacterial and antifungal properties, which are primarily attributable to the presence of monoglycerides, free fatty acids (FFAs), specifically lauric acid, and monolaurin. (8)

Camphor reduces peripheral pain, promotes healing, and enhances microcirculation. The potential analgesic properties of camphor could be attributed to its ability to inhibit TRPA1, a protein implicated in numerous neuropathic pain disorders. (9)

The Gangaprayag cream employed in this context is a topical Ayurvedic medication composed of these three chief ingredients namely turmeric, coconut oil, and camphor, among others. These constituents enable the cream to exhibit properties such as effective tissue penetration, antimicrobial activity, anti-inflammatory effects, and the ability to create a moist environment conducive to expedited wound healing.

Our case series of extensive burns and chronic wounds management highlight the importance of a comprehensive and multi-dimensional treatment approach. The combination of Ayurvedic therapy and conventional medicine has been shown to accelerate healing and offer substantial cost savings in this scenario. The primary takeaway from these cases is the potential synergy between traditional Ayurvedic practices and contemporary medical care. This holistic approach addresses burns from multiple angles, addressing not only immediate wound healing but also long-term consequences such as scarring, contractures, and complications that can severely impact a patient's quality of life. One key advantage of this combined approach is the expeditious recovery observed in patients. The integration of Ayurvedic principles alongside conventional therapies promotes faster healing, which is crucial in burn management, where the risk of infection and sepsis is high. This reduces the financial burden associated with prolonged hospital stays and extended treatment periods. However, further research is needed to establish the generalizability of this approach across various types of burn injuries, age groups, and patient populations. These studies can validate the approach's safety, efficacy, and long-term outcomes, providing a solid foundation for its broader adoption in burn care.

4. Conclusion

Our four cases demonstrate the positive impact of Ayurvedic Gangaprayag Healing Cream in burn and chronic wound

management, both in pediatric and adult patients. When integrated with conventional medical approaches, this holistic treatment method can expedite healing, reduce complications, and offer cost-effective solutions. While further research is needed to establish its broader efficacy, these cases serve as encouraging examples of how traditional Ayurvedic remedies can complement modern medical practices for improved patient outcomes.

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