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Research Article

Exploring the Tissue Regeneration Impact of Ayurvedic Ksharaplota Bandage in Wound Care - A Comprehensive Review

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ABSTRACT
Ksharaplota bandage is creative idea that formulated from Ksharasutra therapy in fistula in ano from ayurveda shalyatantra practice of Ksharsutra therapy in fistula in ano for treating infected wounds. It is a traditional wound care approach that has gained recognition and acceptance. This therapy involves the application of specially prepared alkaline medicated bandage to promote wound healing and manage various types of chronic wounds. This paper aims to provide a comprehensive overview of the scope of Ksharaplota bandage in wound care on an international scale. It explores the therapeutic mechanism, clinical applications and effectiveness of this therapy, highlighting its potential benefits and limitations. The evidence supporting its use is presented through a review of relevant studies and case reports. The information gathered suggests that Ksharaplota bandage holds promise as a feasible for wound care and deserves further research and integration into standard wound management protocols.

Key words: Ayurveda, Ksharaplota, Wound Care, Tissue Regeneration, Antimicrobial.

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INTRODUCTION

Chronic wounds present a significant healthcare burden worldwide, requiring effective and creative treatment strategies. Ksharaplota therapy, originating from traditional Indian medicine, has emerged as a potential solution for managing chronic wounds. Snuhikshira (Latex of Euphorbia neriifolia Linn.), Apamaragakshara (Ash of Achyranthes aspera L.) & Haridra (Curcuma longa L.) powder are used for the preparation of Ksharasutra. which is very popular throughout the world for the management of Fistula in ano for debridement of unhealthy granulation tissues. On the basis of excellent result shown by Ksharasutra[1], this formulation is selected and applied over the affected infected wound with the help of alkaline medicated gauze piece. Ksharaplota therapy involves the application of medicated bandage impregnated with alkaline substances to promote wound healing. The alkaline nature of the bandage helps create an environment that facilitates wound debridement, reduces microbial load, stimulates tissue regeneration and improves wound healing outcomes. While this therapy has been primarily practiced in India, its efficacy and safety have attracted attention on an international scale[2]. Present review article aims to Exploring the tissue regeneration impact of Ayurvedic Ksharaplota bandage in wound care and present innovators, preparation methods, examining its

therapeutic mechanism, clinical applications, discussion for need and explore of Ksharaplota therapy and conclusion.

Ksharaplota Therapy Contributions / Innovators

Upon conducting a search on Ksharaplota therapy, found references and publications related to Ksharaplota therapy. It appears that Dr. Anantkumar V. Shekokar, Dr Vijay P. Ukhalkar & Dr Kanchan M. Borkar has contributed to research and publications on the therapeutic aspects, management and application of Ksharaplota therapy in wound care. These references indicate author's involvement in exploring the therapeutic aspects, management and application of Ksharaplota therapy. It is essential to review these publications for a comprehensive understanding of their specific contributions to the field[2].

Ksharaplota therapy also known as alkaline medicated Bandage therapy, has been creatively developed and advanced by various researchers and practitioners in the field of traditional medicine. While there may not be a single specific creator credited with the development of Ksharaplota therapy, several individuals have contributed to its understanding, standardization and application. These creators have played a significant role in promoting the use of Ksharaplota therapy for wound care.

Such creator who has made notable contributions to the understanding and application of Ksharaplota therapy. creator has conducted research, authored publications and presented his findings on the therapeutic aspects and management of Ksharaplota therapy which helped shed light on the mode of action, efficacy and potential benefits of this traditional wound care approach[1]. Research has focused on exploring the use of Ksharaplota therapy in managing infected wounds, such as abscesses, carbuncles, boil, sinus, lacerations, diabetic wound, fournier gangrene, venous ulcer, pressure ulcer and other chronic wounds. Present Authors has conducted case studies and published research papers highlighting the positive outcomes achieved with the application of Ksharaplota therapy in wound healing, infection control, efficacy& safety.

Authors has contributed to the growing body of knowledge surrounding Ksharaplota therapy, providing valuable insights into its potential benefits and practical applications. His efforts have helped bridge the gap between traditional and modern wound care approaches, showcasing the relevance and effectiveness of traditional therapies in the management of surgical infected wounds.

It is important to note that Ksharaplota therapy is a collective contribution of various practitioners, researchers, and scholars who have worked towards its development and standardization over time. These individuals have played a crucial role in creating and advancing Ksharaplota therapy, making it more accessible and applicable in the field of wound care.

Preparation of Ksharaplota Bandage:

Ksharaplota bandage is prepared by the coatings of Snuhikshira (Latex of Euphorbia neriifolia Linn.), Apamargakshara (Ash of Achyranthes aspera L.) and Haridra (Curcuma longa L.).

The aseptic condition should be maintained during preparation of Ksharaplota bandage and use of hand gloves also recommended for same purpose. Round gauze piece, 23 cm in diameter is fixed in the doubled layered circular wooden ring. This gauze piece is made so tight that the coating can be done uniformly. Sunhikshira(Latex of Euphorbia neriifolia Linn.) 50 ml was applied on 1 day initially using cotton swab over the gauze covering whole circumference. The wet coated gauze with rings placed inside cabinet that after it dried for a day. Dried gauze again smeared with Snuhikshira (Latex of Euphorbia neriifolia Linn.) 50 ml on the 2nd day and followed by Apamargakshara (Ash of Achyranthes aspera L.) (20 g) with cotton swab and allowed to dry in a cabinet for a day. Dried gauze was smeared with Snuhikshira (Latex of Euphorbia neriifolia Linn.) (50 ml) followed by Haridra (Curcuma longa L.) powder (20g) on the 3rd day and allowed to dry in cabinet for a day. In this way a single coating of each Snuhikshira (Latex of Euphorbia neriifolia Linn.), Apamargakshara (Ash of Achyranthes aspera L.) & Haridra (Curcuma longa L.) powder were applied to the gauze and cut into 6cm. x 6 cm. Ksharaplota pieces and sealed in polythene packs. Ksharaplota should be placed in a cabinet under ultra-violet light for safety storage and sterilization purpose[3]. In preparation of Ksharaplota a skill hand is very important it requires uniform and equal thickness of Ksharaplota for clinical application.

Therapeutic Mechanism of Ksharaplota[4]:

Ksharaplota therapy harnesses the properties of alkaline substances to enhance wound healing. The medicated dressing used in this therapy typically contains alkaline ingredients such as herbal extracts, minerals and alkalis. When applied to the wound, the alkaline substances create an alkaline environment that helps in the following ways,

1. **Wound Debridement**: The alkaline pH assists in the breakdown of necrotic tissue, slough and debris, facilitating wound debridement and promoting the formation of healthy granulation tissue.
2. **Antimicrobial Activity**: The alkaline environment inhibits the growth of microorganisms, including bacteria and fungi, thus reducing the risk of wound infection.
3. **Anti-inflammatory**: The ingredients of Ksharaplota help to reduce pain, swelling and inflammation and promote wound healing.
4. **Moisture mechanism**: The sticky characteristic maintains the moisture of wound and promote early healing process.
5. **Tissue** Regeneration: Alkaline substances & collagens stimulate the production of growth factors and activate cellular mechanisms involved in tissue regeneration, leading to accelerated wound healing.

Contribution of Ksharaplota ingredient towards its mode of action:

Ksharaplota overall possess penetrating, scrapping, draining, debridement, sclerosing, healing, antibacterial and anti-inflammatory effect in the management of wound and cuts.

All three ingredients contribute significantly towards mode of action[4] as follows:

1. Snuhikshira (Latex of Euphorbia neriifolia Linn.) possess properties such as; Lekhana, Vedanasthapana, Rakthashodhak and Vishaghna due to Katu & Tikshna Rasa and Ushna Virya. The latex of plant also found to have rubifacient, irritant and

powerful caustic action when applied to a raw surface; it also offers analgesic, anti-inflammatory, wound healing and antibacterial activity. It is believe that Euphorbia neriifolia enhances wound healing process by promoting tensile strength, epithelization and angiogenesis.

2. ApamargaKshara(Ash of Achyranthes aspera L.) offers Lekhana, Chedana, Bhedana, Ropana, Kushtaghna, Shodhana and Krumighna properties due to Katu & lavana Rasa and Ushna Virya. Katu Rasa contributes towards Shonit Sanghat Bhinnati action of ApamargaKshara(Ash of Achyranthes aspera L.) which breakdown pus pockets and blood clots at the site of Vrana. ApamargaKshara(Ash of Achyranthes aspera L.) also possesses analgesic, anti- inflammatory, hemostasis and antibacterial activity which offers symptomatic relief in Vrana.

3. Tikta & Laghu Guna and Ushanya Virya of Haridra (Curcuma longa L.) provides Varnya, Sandhana, Vedanashamaka, Raktastambhak, Raktashuddhikar and Lekhana properties. It enhances capillaries vasodilation when applied locally thus facilitates wound debridement (Shodhana) and wound healing (Ropana) process. It also possesses anti-inflammatory, analgesic and antibacterial activity.

Clinical Applications of Ksharaplota:

Ksharaplota therapy has shown effectiveness in managing various types of chronic wounds[5], including:

1. **Traumatic Infected wound**: Traumatic Infected wound commonly include increasing pain, swelling, redness and drainage. Ksharaplota therapy has been found debridement properties and promote regeneration of tissue.
2. **Diabetic Foot Ulcers**: Diabetic foot ulcers often pose challenges in wound healing due to underlying systemic factors. Ksharaplota therapy has demonstrated positive outcomes in terms of debridement of necrotic tissue, wound closure, infection control and reduction in healing time.
3. **Venous Leg Ulcers**: Venous leg ulcers are commonly associated with impaired venous circulation and compromised tissue oxygenation. Ksharaplota therapy has been found to improve local vasodilatation & wound healing outcomes, alleviate pain and reduce the recurrence rate of venous leg ulcers.
4. **Pressure Ulcers**: Pressure ulcers, primarily observed in bedridden or immobilized individuals, can be difficult to manage. Ksharaplota therapy has shown promise in promoting wound healing, reducing inflammation and preventing secondary infections.
5. **Gangrene:** Gangrene include discolored skin, severe pain followed by foul discharge. Ksharaplota therapy removed gangrenous tissue and help to restored normal healthy tissue.
6. **Post-Surgical wound:** Mostly it includes Pilonidal sinus, Abscess, Sinus, Fistula in ano, Boil, cellulitis, carbuncle and infected cyst. Ksharaplota therapy has been found Sustained Released (SR) scraping properties and decorate healthy granulation tissue.

Allergic reactions may occur due to alkaline properties so it can not used at delicate and smooth skin near eye, face, genital parts, and breast. Ksharaplota bandage cannot be used in sutured wound[6].

Discussion

Discussion on Need of Ksharaplota therapy :

1. **Traditional Knowledge and Cultural Diversity:** Ksharaplota therapy is rooted in traditional Indian medicine and has been practiced for centuries[7]. It embodies the rich cultural diversity of healing practices worldwide. Recognizing and integrating traditional therapies like Ksharaplota helps preserve and respect cultural traditions and expands the options available for healthcare practitioners and patients.
2. **Effective Management of Chronic Wounds:** Chronic wounds such as diabetic foot ulcers, venous leg ulcers, pressure ulcers, traumatic infected wound and other chronic wound & ulcer present a significant healthcare challenge globally. These wounds often have complex underlying factors and can be challenging to heal using conventional approaches alone. Ksharaplota therapy offers a complementary and alternative treatment option that has shown promising results in promoting wound healing, controlling infection, and reducing healing time.
3. **Cost-Effectiveness:** Chronic wounds and their associated complications place a substantial economic burden on healthcare systems worldwide. Ksharaplota therapy, with its use of alkaline medicated gauze, offers a relatively cost-effective treatment option compared to expensive advanced wound care products and procedures. Integrating Ksharaplota therapy into wound care protocols can help improve outcomes while potentially reducing healthcare costs.
4. **Sustainable and Accessible Treatment:** Ksharaplota therapy utilizes natural ingredients and simple preparations, making it a sustainable and accessible treatment option. The ingredients used in the medicated gauze are often derived from herbs, minerals and alkalis, which can be locally sourced and prepared[8]. This makes Ksharaplota therapy applicable in resource-limited settings and regions where access to advanced wound care products and technologies may be limited.
5. **Evidence-Based Research:** While Ksharaplota therapy has been primarily practiced in India, there is a growing body of evidence supporting its effectiveness. Research studies, case reports, Post-graduate and Ph.D dissertations[10] have shown positive outcomes in various chronic wound types. However, further rigorous research including large-scale clinical trials, is needed to establish its efficacy, compare it with existing wound care approaches and provide more comprehensive guidelines for its application.

Discussion to explore Ksharaplota therapy in wound management:

1. **Familiarize Yourself with Ksharaplota Therapy**: Start by understanding the basic principles and concepts of Ksharaplota therapy. Learn about its historical background, traditional applications and the underlying theory behind its use in wound care. This foundational knowledge will provide a context for your exploration.
2. **Review Existing Literature**: Conduct a thorough review of

existing literature and research studies related to Ksharaplota therapy in wound care. Search reputable academic databases, such as PubMed, Google Scholar or other relevant databases, using keywords like "Ayurvedic," "Ksharaplota," "Wound care," "Tissue Regeneration" and "Antimicrobial" Review research articles, case studies[9] and clinical trials to gather insights into the effectiveness, applications and potential benefits of Ksharaplota therapy. It is always recommended to consult academic sources, research papers and expert opinions for a comprehensive understanding of the creators and their contributions in the field of Ksharaplota therapy.

3. **Analyze Research Methodologies**: Evaluate the research methodologies employed in the studies you review. Assess factors such as sample size, study design, duration and outcome measures. Determine the quality and reliability of the studies to gain confidence in the findings and conclusions. Pay attention to any limitations or potential biases that may impact the interpretation of the results.
4. **Collaborate with Practitioners and Researchers**: Connect with practitioners, clinicians or researchers who have expertise in Ksharaplota therapy. Collaborate with them to gain practical insights, understand their experiences and potentially participate in ongoing research projects related to Ksharaplota therapy in wound care. Networking and exchanging knowledge with professionals in the field can provide valuable information and foster further exploration.
5. **Analyze Vitro & Vivo Study:** Conduction & Exploration of Vitro & Vivo experiments for Ksharaplota therapy in chronic wound care management regarding debridement of unhealthy tissues, tissue repair and wound healing properties, efficacy and safety profile.
6. **Stay Updated on Recent Developments**: Keep yourself updated on recent developments and advancements in Ksharaplota therapy. Subscribe to relevant journals, newsletters, or online platforms that share the latest research findings, case studies, or advancements in wound care practices[11]. Attend conferences, workshops, or webinars to learn about new research studies or emerging trends in the field.

CONCLUSION

Ksharplota is simple and safe parasurgical approach used extensively for the management of infected wound. Ksharaplota therapy or alkaline medicated gauze therapy, shows promise as a viable option for wound management. The therapeutic mechanism of this therapy, involving the application of alkaline substances to promote wound healing, has demonstrated positive outcomes in various chronic wounds such as traumatic infected wound, Fournier gangrene, diabetic foot ulcers, venous leg ulcers, pressure ulcers and post-Surgical wounds. The alkaline environment created by the medicated dressing aids in wound debridement, antimicrobial activity. The Ksharaplota bandage demonstrated significant acceleration in wound healing on clinical study , as evidenced by a considerable reduction in wound area and increased percentage wound closure, showing its possible impact for tissue repair and reduces chances of recurrence.

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