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Recurrent Auricular Keloid – Treated by Kshar Sutra (Medicated Seton) Therapy: A Case Report

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Abstract

Auricular keloids may develop either on the helix or anterior and posterior lobes up to several years after piercing, and they do not regress spontaneously. Many techniques have been developed to treat these disfiguring lesions with varying successes. Kshar sutra (medicated seton) is a medicated thread that can be readily ligated at the base of the ear keloid. Due to the high recurrence rate observed in auricular keloids following surgical excision, we opted to employ the Kshar sutra technique for excision with minimum cosmetic deformity of the pinna and evaluate the duration required to excise and the recurrence of ear keloid after a follow up of two years. A 28-year-old female with a recurrent keloid on the left ear auricle was excised with kshar sutra (medicated seton) ligation. The wound heals entirely in the post-operative period. The patient followup was conducted after a month, one year and two years. The duration required to excise the keloid was three days. No recurrence of keloid after Kshar sutra (medicated seton) ligation was noted during the followup period of two years. Kshar sutra (medicated seton) ligation for ear keloid excision is a viable, minimally invasive technique to avoid recurrence and minimize cosmetic deformities of the pinna.

Keywords: Auricular keloid, Excision, Kshar sutra (medicated seton), Recurrence.

Introduction

One of the most widely prevalent customs among ladies in the Indian subcontinent is ear piercing. Keloids can develop from nearly any type of wound, be it minor or major, such as cuts, burns, piercings, or surgical incisions, and they do not discriminate by age or gender (1). However, individuals with darker skin tones and those aged between 11 and 30 are more commonly affected (2, 3). Keloid scars gradually form over several months and extend beyond the original boundaries of the wound. It results from an imbalance between an increased synthesis of collagen and extracellular matrix and decreased degradation of this product (4). Keloids can occur anywhere on the body but prefer areas such as the shoulders, chest, and especially the ears (5). Notably, ear keloids, which often occur after ear piercing, have an incidence rate of about 2.5% (6). These keloids may emerge years after the initial piercing from a fully healed scar and do not usually regress spontaneously. They can appear on various ear parts, including the helix and anterior and posterior lobes (7).

Generally, patients are asymptomatic, but some patients may even be symptomatic, causing pruritus, pain (from mild to moderate-severe), and hyperesthesia (8). In addition, there is recurrence after surgical excision of the keloid (45 up to 100%), whereas the formation of a new hypertrophic scar is rare after its excision (10%) (9). Treatment protocol for ear pinna keloid includes a multi-modality approach because single therapy is not practical in preventing a recurrence. These treatments include pressure therapy, surgical excision, silicon-based products, corticosteroids, cryotherapy, radiotherapy, 5-fluorouracil, and imiquimod. The application of low-dose radiation therapy has shown promise in preventing keloid recurrence following surgical excision. However, there are concerns regarding potential long-term side effects and safety considerations associated with this approach. The use of topical agents such as imiquimod and 5-fluorouracil has been explored for keloid management. While the results have been variable, these agents have demonstrated potential in reducing keloid size and alleviating symptoms, particularly when used in conjunction with other

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treatment modalities. Research into the use of biological agents like interferon and verapamil to modulate fibroblast activity and reduce collagen production in keloids is ongoing. While the evidence for their efficacy is currently limited, ongoing studies aim to further elucidate their role in the management of keloid scars (10 - 12).

Kshar sutra therapy is being practiced in India for the management of ear pinna keloid (13). According to Sushrut, kshar sutra is predominantly used in treating fistula-in-ano, also known as *Bhagandara* in Ayurveda. Conventionally, the ultimate goal of fistula treatment involves complete surgical excision of the tract; however, *Bhagandara*, or fistula, is renowned for its tendency to recur. The treatment of *Nadi Vrana* (sinus) typically involves excision. The Nadi Vrana occurs in a *marmasthana* (Vital points of the body), and excision is contraindicated. In such instances, treatment with kshar sutra is recommended. Chakrapanidatta is credited with the first distinct description of the manufacture of kshar sutra. Renowned for his legendary commentaries on Charaka Samhita and Sushruta Samhita, Chakrapanidatta authored an important Samhita known as Chakradatta, which contains the earliest reference to the preparation of kshar sutra. This reference is widely revered and practiced by Ayurvedic practitioners (14).

The search for alternative treatments for recurrent auricular keloids is imperative due to the limitations of existing methods. Surgical excision often results in high recurrence rates, with keloids occasionally regrowing even larger than the original lesion. Corticosteroid injections offer temporary relief with variable efficacy, often necessitating ongoing treatment. Cryotherapy is effective for smaller keloids but has limited success with more extensive or thicker lesions and carries a risk of pigmentation changes. While laser therapy is precise, it can be costly and may not prevent recurrence without additional treatments. All these methods are invasive and result in severe postoperative pain. Auricular keloids can significantly impact a patient's appearance and self-esteem. Effective alternative treatments can improve aesthetic outcomes and boost the patient's confidence. By reducing the pain and discomfort associated with keloid treatments, patient comfort can be enhanced, leading to improved adherence to treatment protocols. Developing cost-effective alternatives can make treatment accessible to a broader patient population, especially in low-resource settings. Diversifying treatment options ensures that patients who do not respond to traditional methods have other viable choices. Providing minimally invasive alternatives may be more acceptable to patients hesitant about surgical procedures.

Materials and Methods

The Procedure of Preparation of Kshar Sutra

The Linen Barbour thread No. 20 undergoes autoclaving and is then mounted in a designed frame equipped with hangers. The materials utilized in preparing Kshar sutra are applied to the thread in 21 coatings. The process of preparing Kshar sutra involves three main steps.

In the initial step, 11 layers of fresh latex of *Snuhi* (latex of *Euphorbia nerifolia*) are applied to the thread. A folded gauze is saturated with fresh *Snuhi* latex, and the thread is successively coated with *Snuhi Kshir* from the top to the bottom of the frame. The frames are then placed in the *Kshar sutra* cabin for drying. A second coating is applied to the thread once the previous coating has dried. This process is repeated eleven times to ensure a uniform coating. After each application, the frames are dried in the cabinet. The temperature inside the Kshar sutra cabinet can be elevated to 40°C by using a blower to pass hot, dry air, facilitating the drying of the thread.

In the second step of the process, the threads undergo a series of 7 coatings using the latex of *Snuhi* and the fine powder of *Apamarga Kshar* (*Achyranthes aspera*). Following the initial 11 coatings, the threads are once more coated with fresh *Snuhi* latex as previously described. The *Apamarga Kshar* powder is applied immediately while the thread is wet, ensuring a uniformly adhered coating. Subsequently, the thread is placed in a Kshar sutra cabinet to dry. This step is repeated seven times, allowing each previous coating to dry completely before the next application.

In the final step of the process, three coatings of *Haridra Churna* (*Curcuma longa* powder) with *Snuhi Kshir* are applied. These coatings follow the same procedure as the previous *Apamarga Kshar* coating, with *Apamarga Kshar* replacing the

Haridra powder. Subsequently, the Kshar sutra is sterilized using Ultraviolet rays within a cabinet. Once the 21 coatings on the thread are complete and the Kshar sutra is dried, it is cut into suitable sizes (10 cm), sealed into glass tubes, and preserved for future use (15).

Case Presentation

A 28-year-old female pierced her left ear on the helix to wear ornaments in January 2012; gradually, a single nodular growth developed on the left ear auricle. She underwent surgical excision in a local hospital under local anesthesia for the left auricular keloid in August 2017, and the histopathological report revealed a thickened dermis with dense collagen bundles, increased fibroblasts, chronic inflammatory cells, and neovascularization, confirming the diagnosis of a keloid. The auricular keloid recurred after one year as bilobed nodular growth gradually grew Figure 1. She consulted in our outpatient department for kshar sutra (medicated seton) therapy in December 2021.

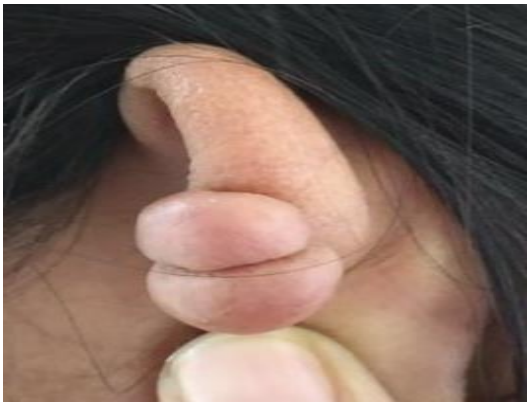

Figure 1: Bilobed Auricular Keloid

She underwent a surgical procedure for kshar sutra ligation on the left auricular keloid on 8 December 2021.

During the patient assessment and screening process, the following observations were made:

Medical History: The patient has no history of diabetes, hypertension, or bleeding disorders.

Local Examination: The keloid measures 2cm in width and 1cm in height. Furthermore, there is a nodular, bilobed growth on the helix in the superior auricle region.

The procedural steps are outlined as follows:

Pre-Procedure Preparation

Informed Consent: Prior to the procedure, the patient was provided with a comprehensive explanation of the procedure, including potential risks, benefits, and alternative treatments. The patient then provided informed consent for the procedure, and a preoperative photograph was taken for documentation.

Anesthesia: Stringent aseptic measures were employed, including the application of 10% betadine and draping. Local anesthesia (lignocaine 2%) was administered by infiltration around the base of the keloid growth.

Application of Kshar Sutra

Thread Application: A superficial skin incision was carefully made at the base of the keloid, followed by the formation of a groove. Subsequently, a 5 cm *Kshar sutra* was tied around the base of the keloid using artery forceps Figure 2 and the dressing was done.

Figure 2: Kshar Sutra Ligated Around Keloid Base

Securing the Thread: The ends of the thread were meticulously secured to ensure optimal placement without compromising the blood supply.

Monitoring: Immediate Observation: The patient was continuously monitored for signs of immediate hypersensitivity reaction or bleeding following the procedure.

Follow-up Visits

On the second day, the *kshar Sutra* was changed under strict aseptic conditions. Upon assessment, it was noted that the keloid growth had reduced by 70% from the auricle, accompanied by concurrent healing. No complications, such as bleeding, infection, or excessive pain, were observed.

On the third day, the keloid growth was entirely excised from the auricle Figure 3.

Upon assessment, it was found that the keloid growth was separated entirely from the auricle, with simultaneous healing observed. No complications, such as bleeding, infection, or excessive pain, were observed during this process.

After a month, the wound exhibited complete healing. Subsequent follow-ups at a monthly, one-year, and two-year post-treatment showed no evidence of keloid recurrence.

Figure 3: Keloid Separated from the Auricle; Granulation Tissue Appeared on the Wound

Post-treatment Precautions

In the realm of pain management, the patient was provided with an oral analgesic for a duration of one week. With regard to infection control, the patient received oral antibiotics for the same duration. In terms of wound care, the patient was educated on the importance of maintaining the treated area clean and dry as a preventive measure against infection. *Yashtimadhu ghrita* is used post-operatively for local application to heal the wound (16). Furthermore, if necessary, the patient was instructed on the proper application and change of dressings.

Results

The immediate impacts of kshar sutra therapy on auricular keloids include tissue necrosis and reduction, where controlled necrosis of the keloid tissue leads to gradual size reduction. Patients may experience pain and discomfort at the application site, which can be managed with analgesics. Additionally, initial inflammation around the treated area is common, and there is a risk of infection, necessitating careful aseptic techniques and the potential use of antibiotics. The therapy is minimally invasive and can often be performed on an outpatient basis, reducing the need for hospitalization.

In the long term, kshar sutra therapy is associated with lower recurrence rates of auricular keloids compared to conventional surgical methods, providing a more permanent solution. The gradual reduction of keloid tissue typically results in better cosmetic outcomes with minimal scarring, enhancing patient satisfaction. Furthermore, the therapy is cost-effective, making it accessible to more patients and reducing the economic burden on healthcare systems. The slow and controlled necrosis process promotes better healing and regeneration of normal tissue, leading to sustained long-term results. However, the prolonged treatment, requiring regular followup visits, necessitates patient compliance and commitment for optimal outcomes. Successful reduction or elimination of keloids can significantly improve the quality of life for patients, reducing physical discomfort and psychological distress associated with keloids.

The patient followup was conducted after a month, one year, and two years. The wound heals entirely in the post-operative period. The duration required to excise the keloid was three days. No recurrence of keloid after kshar sutra (medicated seton) ligation was noted during the followup period of one year and two years.

Discussion

The auricular keloid can correlate with *Vranagranthi,* which results from trauma to the body or its parts (17), or *Arbuda,* a pathological condition characterized by abnormal growths or masses in the body, including the pinna or lobule of the ear. It is categorized as a *mamsa dhatu pradoshaja vyadhi*, signifying the involvement of muscular and fibrous tissues (13). The raised and flat keloid scar on the body can be effectively treated with kshar (chemical cauterization) and kshar tail (Kshar oil) (17, 18). Additionally, the application of the kshar sutra to the nodular keloidal growth, commonly observed on auricular keloids, has shown promising results in clinical practice.

The application of kshar sutra ligation as a treatment for auricular keloids presents several notable advantages; one of the most significant benefits of the kshar sutra ligation technique for auricular keloid treatment is its low recurrence (13). Conventional surgical excision of keloid has a high recurrence rate, often necessitating multiple therapies. Kshar sutra acts after contact with the tissue. Kshara invades the cells of the lesion to remove the keloid growth. Kshara has sclerosing and coagulating protein properties that are used to cease blood oozing during the cutting of keloid. Keloid didn't infect due to the anti-infective properties of kshara. The keloid growth fell out due

to local necrosis caused by the ligation of thread, which strangulates blood vessels and tissue. This contrasts with the conventional surgical methods, which can result in significant bleeding and necessitate cautery or other hemostatic interventions. The controlled application of the kshar sutra minimizes damage to surrounding tissues and blood vessels, leading to a cleaner procedure and quicker recovery (19). Integrating kshara sutra ligation and *Agnikarma* (Thermal cauterization) presents a comprehensive approach to keloid management in Ayurveda. kshara sutra's control cutting and healing properties, combined with the chemical cauterization and tissue renewal effects of its herbal components, offer an effective method for keloid removal. The subsequent application of *Agnikarma* minimizes the chances of relapse, establishing this combination as a superior treatment modality (13).

The utilization of kshar sutra in the treatment of keloids presents several considerations. Firstly, patients may experience discomfort or mild pain due to tissue necrosis during the treatment process, necessitating the potential use of analgesics for pain management. Additionally, there exists a notable risk of infection at the application site of the kshar sutra, thereby requiring strict adherence to aseptic techniques and potential administration of antibiotics. Furthermore, the treatment period for keloids with kshar sutra may extend over several weeks or even months, contingent upon the size and location of the keloid. This protracted treatment duration demands patient compliance and regular followup visits to manage the condition effectively. Lastly, it is important to note that the availability of skilled practitioners proficient in the application of kshar sutra may be limited, thereby restricting patient access to this treatment modality.

The kshar Sutra therapy method encapsulates the fundamental Ayurvedic approach to holistic body treatment. Addressing auricular keloids involves managing the physical symptoms and considering the patient's overall health and balance of *doshas*. This approach integrates effectively with modern medicine, providing an alternative or complementary treatment for patients who may not respond well to conventional methods or seek natural healing. Kshar Sutra presents a cost-effective treatment option that increases accessibility to a broader population, especially in regions with limited healthcare resources. In terms of community health, it offers a low-cost and effective solution for common issues like keloids, thereby improving community health outcomes and patient satisfaction. Using kshar Sutra for keloid management preserves ancient Ayurvedic surgical techniques, highlighting their relevance in contemporary times. Demonstrating the efficacy of traditional methods such as kshar Sutra in present-day clinical settings encourages educational institutions to incorporate such treatments into their curricula, bridging the gap between ancient and modern medical practices.

Ayurvedic treatments often resonate well with patients with cultural ties to traditional Indian medicine, leading to higher acceptance and adherence to treatment plans. Furthermore, using kshar Sutra can enhance the therapeutic relationship between practitioners and patients who prefer natural and holistic approaches. The application of kshar Sutra to auricular keloids has the potential to spur research in Ayurvedic treatments, leading to increased scientific validation and broader acceptance. Success with auricular keloids can also trigger the exploration of kshar Sutra for other fibrotic conditions and skin disorders, thereby broadening its therapeutic potential and contributing to innovation in Ayurvedic practices. Positive outcomes from kshar Sutra therapy can enhance global recognition of Ayurveda and promote cross-cultural medical exchanges. Widespread use of kshar Sutra necessitates the development of standardized safety protocols and training for practitioners to ensure consistent and safe application. Emphasizing the ethical practice of kshar Sutra, including informed patient consent and transparency about potential risks and benefits, can enhance its credibility and acceptance.

Conclusion

The kshar sutra offers a significant advantage by potentially serving as a single, definitive therapy for auricular keloids. Unlike conventional treatments that may require a combination of surgical excision followed by corticosteroid injections or other adjunct therapies to minimize recurrence, this efficiency reduces the need for multiple interventions, making the treatment more convenient for the patient and cost-effective. Auricle keloids can cause significant disfigurement, and conventional excision often

exacerbates this by removing healthy tissue along with the keloid. The kshar sutra technique offers a more conservative approach to preserving the surrounding healthy auricular tissue. This precision helps maintain the natural shape and appearance of the ear, which is particularly important given the aesthetic implications of auricular surgery. The kshar sutra ligation therapy can be efficiently managed in an outpatient setting, providing convenient and cost-effective treatment options for patients. The procedure is minimal invasiveness, coupled with low requirements for postoperative care, and allows patients to return home on the same day. The kshar sutra ligation method for treating auricular keloids represents a promising alternative to surgical excision. Its benefits of no recurrence, single therapy necessity, minimal bleeding, preservation of auricular tissue, and suitability for outpatient management position it as an innovative and effective solution for this challenging issue. Further studies and clinical trials will be instrumental in fully establishing its efficacy and optimizing the technique for widespread use.

Abbreviations

Nil.

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Author Contributions

All the authors are equally contributed.

Conflict of Interest

The authors have stated that there are no conflicts of interest in connection with this article.

Ethics Approval

Patient consent- The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity.

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References

1. Piccolo D, Crisman G, Bovani B, Gennai A, Melfa F, Clementoni MT, Conforti C. Combined laser treatment for ear keloids: Case series: Comparison between two mini-invasive protocols: Comparison between two mini-invasive protocols. J Cosmet Dermatol. 2022 Jan;21(1):296-306. doi: https://doi.org/10.1111/jocd.14590.
2. Gauglitz GG, Korting HC, Pavicic T, Ruzicka T, Jeschke MG. Hypertrophic scarring and keloids: pathomechanisms and current and emerging treatment strategies. Mol Med. 2011;17(1-2):113-25.
3. Chaitanya V, Kavitha Y, Basavaraju KP, Joish UK. A retrospective study of demographic profile of keloid over the pinna in central Karnataka. International Journal of Otorhinolaryngology and Head and Neck Surgery May 2018; 4(3):726-729. Doi: https://doi.org/10.18203/issn.2454-5929.ijohns20181860.
4. Betarbet U, Blalock TW. Keloids: A Review of Etiology, Prevention, and Treatment. J Clin Aesthet Dermatol. 2020 Feb;13(2):33-43.
5. Chike-Obi CJ, Cole PD, Brissett AE. Keloids: pathogenesis, clinical features, and management. Semin Plast Surg. 2009 Aug;23(3):178-84. doi: https://doi.org/10.1055/s-0029-1224797.
6. Simplot TC, Hoffman HT: Comparison between cartilage and soft tissue ear piercing complications. Am J Otolaryngol. 1998;19: 305-10.
7. Hunasgi S, Koneru A, Vanishree M, Shamala R. Keloid: A case report and review of pathophysiology and differences between keloid and hypertrophic scars. J Oral Maxillofac Pathol. 2013 Jan;17(1):116-20. doi: https://doi.org/10.4103/0973-029X.110701.
8. Bayat A, McGrouther DA, Ferguson MW. Skin scarring. BMJ. 2003 Jan 11;326(7380):88-92. Doi: https://doi.org/10.1136/bmj.326.7380.88.
9. Wang MM, Cai XN, Ji YC. Comprehensive treatment of ear keloid: A case report. Medicine (Baltimore).2023Apr7;102(14):e33444. doi:https://doi.org/10.1097/MD.0000000000033444.
10. Ogawa R, Tosa M, Dohi T, Akaishi S, Kuribayashi S. Surgical excision and postoperative radiotherapy for keloids. Scars Burn Heal. 2019 Dec 10;5:2059513119891113. doi: https://doi.org/10.1177/2059513119891113.
11. Betarbet U, Blalock TW. Keloids: A Review of Etiology, Prevention, and Treatment. J Clin Aesthet Dermatol. 2020 Feb;13(2):33-43.
12. Davison SP, Dayan JH, Clemens MW, Sonni S, Wang A, Crane A. Efficacy of intralesional 5-fluorouracil and triamcinolone in the treatment of keloids. Aesthet Surg J. 2009 Jan-Feb;29(1):40-46. doi: https://doi.org/10.1016/j.asj.2008.11.006.
13. Salunke A, Nakanekar A, Lahankar M, Kolpe H, Borkundwar S. A clinical study for the management of ear pinna keloid by ksharsutra and agnikarma. Int J Res Ayurveda Pharm. 2014;5(3):261-5. Doi: https://doi.org/10.7897/2277-4343.05353.
14. Dixit P, Sonambekar V, Pathak S, Mane M. A Literature review on various methods of Ksharsutra preparation. National Journal of Research in Ayurved

Science. 2020 June;8(3):1-9. doi: https://doi.org/10.52482/ayurlog.v8i03.588.
15. Ahmed J, Barman PK, Medhi C. Preparation of Ksharasutra: A Comprehensive Study on Selection, Preparation and Processing. Journal of Ayurveda and Integrated Medical Sciences. 2023 Oct 11;8(8):151-154. Doi: http://dx.doi.org/10.21760/jaims.8.8.22.
16. Amarprakash D, Rathod A, Sanket D. A clinical study to evaluate the antiseptic and bactericidal effect of yashtimadhu ghrita in non-infected surgical wounds. International Journal of Applied Ayurved Research. 2019 March;2(3):248-252.
17. Dolly, Vishal V, Sheetal V. Intramarginal Excision of Keloid with Application of Kshara Taila. Ayushdhara, 2024;11(1):32-35. https://doi.org/10.47070/ayushdhara.v11i1.1468.
18. Shripathi, H, Raghava H, Ramya S. The Role of Ayurveda Kshara Karma in the Management of Keloid: A Case Study. Journal of Natural Remedies. 2023 July;23(3):1075-1080. https://doi.org/10.18311/jnr/2023/28923.
19. Gupta ML, Gupta SK, Bhuyan C. Comparative clinical evaluation of Kshara Sutra ligation and hemorrhoidectomy in Arsha (hemorrhoids). Ayu. 2011 Apr;32(2):225-229. doi: https://doi.org/10.4103/0974-8520.92591.