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Management of Ear Keloid with Ksharsutra: A Case Study

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Research Article

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Abstract

Keloids (benign growth) are one of the causes of psychosomatic disturbance in patients. It can develop after ear piercing, minor or major wounds, burns, and surgical interventions. The theory behind keloid formation is the imbalance between increased collagen and extracellular matrix synthesis and decreased degradation of these products. Inflammatory mediator transforming growth factor beta has been proposed to influence the dysregulation of collagen remodeling in the scar healing process. The term keloid, meaning 'crab claw,' was first coined by Alibert in 1806. According to Ayurveda, Keloid can be correlated with *Arbuda* or *Vrangranthi*. Clinicians have explored different remedies for keloid prevention and treatment, such as steroids, anti-inflammatories, and chemotherapeutic molecules to suppress keloid recurrence. Various treatment modalities like pressure therapy, cryotherapy and lasers, intralesional steroid therapy, radiation, laser therapy, and surgical excision are generally performed for keloids, but they are not so promising. It was always a challenge for a surgeon. The present paper presents an auricular keloid treated with *Ksharsutra* ligation. Considering the recurrence of keloid, *ksharsutra* ligation is supposed to be the best alternative procedure.

Keywords: Keloid; *Ksharsutra*; *Arbuda*; *Vranagranthi*

Introduction

The term keloid was originally described in the 1800s as "cheloid," which is derived from the Greek root "chele," which means "crab claw" [1]. A benign hyperproliferative growth of dense fibrous tissue that develops from an abnormal healing response to a cutaneous injury is termed Keloid. The term hyperproliferative refers to an abnormally rapid growth or reproduction of cells outside the border of the original wound. This can occur in various contexts, such as in certain types of anaemia, skin disorders, or cancers. These keloids usually appear as shiny, smooth, globular growths on one or both sides of the ear pinna, and are frequently seen in darkly pigmented people on the pinna or lobule. Various treatment modules for the keloid were studied to prove their clinical and scientific efficacy. Several treatment modalities so far described in managing keloids are surgical excision [2], intralesional steroidal injections, compression therapy with silicon sheets, cryotherapy, laser, α-2b interferon, and chemotherapeutic agents like 5-fluorouracil. Surgical excision eliminates the lesion but the main disadvantage is ≥50% recurrence if used alone. The disadvantage with the other procedures is incomplete ablation of the lesion leaving poor aesthetic results. To remove the lesions totally and to prevent recurrence requires "surgical excision in combination with one or more of the other modalities of treatment" [2].

Though these treatments are supposed to be effective are not affordable to every patient instead *Ksharsutra* in Ayurveda is found to be effective in such conditions. *Ksharsutra* is used for excision and healing too. It is one of the simple, cost-effective procedures described by *Acharya Sushruta* for various diseases like *Arsha*, *Bhagandara*, etc. *Ksharsutra* has properties of incision, excision, debridement, and scrapping, along with antiseptic and aerostatic properties.

According to Ayurveda, the keloid of the ear pinna can be co-related to *Arbuda* or *Vranagranthi* [3]. *Arbuda* is the mass or growth that occurs at the pinna or lobule, and *Vranagranthi* is the result of any trauma to the body. According to Ayurvedic principles, these are *mamsa dhatu pradoshaja vyadhi* [4] (disease having abnormal involvement of muscular and fibrous tissue), and the application of *ksharasutra* is the important treatment modality. This *Ksharasutra* ligation action on tissue begins with severe irritation and inflammation of local tissue, initiating cutting action and pressure of ligation, causing a lack of blood supply to the keloid mass and leading to tissue necrosis [5]. So in the present study, sincere effort has been made to assess the efficacy of *ksharsutra* ligation on keloid.

Aim

To study the efficacy of *Ksharsutra* Ligation on Keloid

Objective

- To study the anatomy and pathophysiology of keloid
- To study the mode of action of *Ksharsutra* on keloid

- **Pathophysiology of keloid formation**

The primary goal in the clinical management of skin wounds, whether unintended or iatrogenic, is to support the natural dynamic process of wound healing to re-establish baseline skin integrity, function, and aesthetics. Scar formation occurs over distinct phases, including haemostasis, inflammation, proliferation, and remodelling [6].

1. Haemostasis: After an injury to the skin, exposed elements in various layers of the skin, in addition to vasoactive and inflammatory chemical mediators, contribute to clot formation for haemostasis and attract inflammatory cells to the site for the inflammatory phase [7]. Key chemical mediators include transforming growth factor beta (TGF-β), interleukin-1 (IL-1), interleukin-6 (IL-6), tumor necrosis factor (TNF), and vascular growth factor (VEGF) [7]. In this phase, neutrophils are the first to be seen active at the injury site to rid the area of debris and possibly infectious material [6].
2. The inflammatory phase occurs over, on average, three days [6]. Additionally, different subtypes of leukocytes that secrete growth factors, as well as chemotactic proinflammatory cytokines that recruit cell types needed for the proliferative phase, are also present in this phase [6,7]. Endothelial cells, macrophages, and fibroblasts are present to help create granulation tissue, new vasculature, and the extracellular matrix (ECM) that will replace clots in the wound and help migrating cells adhere and function.2 Within the ECM, Type III collagen is present at this stage of healing. Next, re-epithelization occurs due to the recruitment of keratinocytes [7].
3. The proliferative phase will occur over subsequent weeks [6]. Then, fibroblasts convert into myofibroblasts, which are responsible for wound contracture [8]. The final healing phase is remodelling. During the remodelling phase, the ECM and granulation tissue degrade via proteases while mature Type I collagenous matrix and scar tissue form [8]. Furthermore, vascular cells and the myofibroblasts degrade in an organized fashion [8]. The balance of synthesis and the disintegration of cell types is essential to provide optimal wound healing [6-8].
4. The remodelling phase occurs over months [6]. A deviation in any phase of healing can result in aberrant and sometimes excessive scar formation [6-8].

Materials and Methods

A surgical linen thread size 20 is taken. The thread is coated evenly with *Snuhiksheera* (latex of Euphorbia nerifolia) all around the linen with the help of a clean gauze piece and is hung inside the cabinet for drying. The procedure should be repeated for 11 days. Then the 12th coating of Snuhiksheera is done, and *Apamarga Kshar* is applied over the wet thread immediately and hung in the cabinet for drying. This procedure is done continuously for 7 days. Then 3 coatings with Snuhiksheera and fine powder of *Haridra churna* are done. The *Ksharsutra* is made of 21 coatings [9].

Case Report

A 34-year-old female patient came with the complaint of painless cystic swelling on the right ear helix for 6 months.

History of present illness

As per the history given by the patient, the same cystic swelling occurred 2 years ago due to trauma from an ear piercing, at that time, surgical excision was done, and she got complete relief. After 1.5 years, swelling recurs at the same spot. Then she visited *Kashibha Ayurved* Hospital *Savli* for further management.

History of past illness

No H/O of typhoid, malaria, jaundice, asthma, or any other major illness

Local Examination

- **Inspection**

Right Ear: External Auditory Canal was clear and the Tympanic membrane was intact Painless cystic swelling was noted on the right ear helix

- **Palpation**

1. Pulsation & Tenderness absent
2. Shape-irregular
3. Surface -soft
4. Edges – well defined
5. Mobility – mobile
6. Consistency – uniform all over
7. Fluctuation- absent
8. Temperature-normal
9. Transillumination test- negative

Investigation

All routine investigations, i.e. CBC, ESR, BSL (F, PP), Urine (R, M), BT, CT, and HIV HBsAg, were done and are within the normal limit.

Surgical Intervention

- ***PurvaKarma* (preoperative):** Patient consent was taken and a detailed explanation of the procedure was given.

1. Inj TT-0.5cc IM was given
2. A xylocaine sensitivity test was done
3. All vitals are recorded

- ***Pradhanakarma* (Operative):** Under aseptic conditions, local anesthesia was given with xylocaine 2% around the base of the keloid. A superficial skin incision was made with a 15-no blade around the base of the keloid. A sterile *ksharsutra* was ligated tightly on the incision site. After ligation, a povidone-iodine dressing was applied.
- ***Paschatkarma* (post-operative):** The Antibiotics Tab Moxikind CV 625 mg and Tan Enzoflam were given twice a day for five days.

The *ksharsutra* was kept for three days. On the fourth day, discoloration of the keloid was seen, and its mass was ready to slough out. Cleaning and dressing were done with the application of fresh *Kharsutra*. On the coming follow-up, the keloid fell with the remnant of cell debris and necrosed tissue, which was cleaned with betadine and a gauze piece. A fresh *ksharsutra* was tied, and the dressing was done. On the 12th day, the keloid completely fell off, and cauterization was done, followed by dressing with betadine. The patient was asked to visit when the wound was completely healed.

Mode of action of Ksharsutra on keloid

- ***Shnuhi* (Euphoria Nerifolia):** It is commonly known as Indian Spurge tree. *Rasa*, *Veerya*, and *Vipaka* of *snuhi* are *Katu*, *Ushna* & *Katu* respectively. *Snuhi* is having *Katu*, *Tikshna* and *Guru guna* with *kaphavathara* properties. *Ksheer* or Latex is one of the main ingredients in the preparation of *Ksharsutra*.

It is strongly alkaline, which causes chemical cauterization. Its action on tissue begins with severe irritation and subsequent inflammation of local tissue, causing local tissue necrosis. This debris of necrosed tissue is cleared out, giving way for fresh budding granulation tissue over the wound. Also, one of the studies conducted by Rasik A M et al. proves the wound healing activity of Snuhiksheer [10-12].

- *Haridra* (curcuma longa), or turmeric, is a widely recognized herb in Ayurveda known for its anti-inflammatory, antiseptic, and antioxidant properties. It plays a significant role in wound healing processes due to its ability to fight infections and promote tissue regeneration.
- *Apamargakshar* (Achyranthes Aspara) has a controlled chemical cauterizing action on living tissue, causing its destruction and subsequent regression of raised scar tissue through its *tikshna guna.* The excess collagen fibres within the keloid are burned away, leading to a reduction in size and prominence.

Results

Management of keloid with treatment like intralesional steroidal injections, compression therapy with silicon sheets, cryotherapy, laser, α-2b interferon, chemotherapeutic agents like 5-fluorouracil, and excision are quiet frustrating because of recurrence so here *Ksharsutra* application used in the study found to be effective in terms to prevent the same (Figures 1-6).

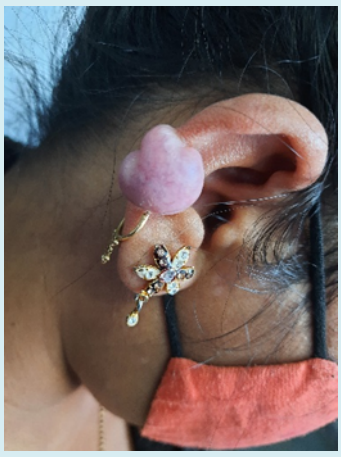

Figure 1: Dome-shaped keloid on the upper ear near a piercing site.

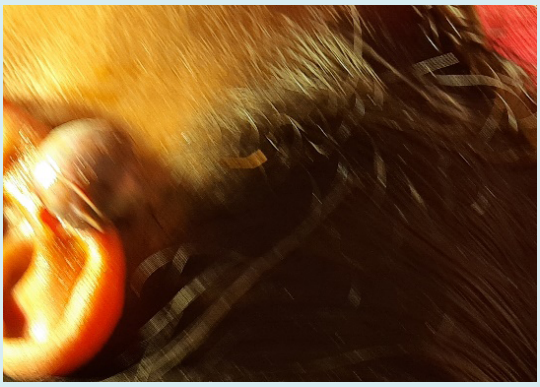

Figure 2: Small, rounded keloid on the lower ear near a piercing site.

Figure 3: Large, dome-shaped keloid on the upper ear with visible surface discoloration and minor crusting.

Figure 4: Pedunculated, reddish granulation-type growth extending from the lower ear near a piercing site.

Figure 5: Raw, circular wound area on the lower ear following removal of a lesion near a piercing site.

Figure 6: Healing post-excision site on the lower ear with mild redness near the previous piercing area.

Discussion

According to the reference of *Shabdakalpadruma*, the word *Kshara* + *sutra* is derived from the root *Kshara* means to melt away or to perish, and the word *Sutra* means thread. *Ksharsutra* is a thread that is made up of caustic material and helps in destroying the devitalized tissue and disintegrating the skin or other tissues. Kshara acts as an incision, puncture, and scarification to relieve the derangements of the *Tridosha* and uniformly affect the diseased. Therefore, it is considered superior to all surgical and parasurgical measures [13].

Kshara is considered superior to all surgical and *Para* surgical measures because they perform the work of incision, puncture, and scarification to relieve derangements of the *tridosha* and uniformly affect the diseased part to which they are applied. As per *Sushruta*, *Kshar* possesses the following

qualities, *Tridoshaghna, Saumyata*, *Dahana*, *Pachana*, *Daran*, *Katuka*, *Ushna*, *Tikshna*, *Vilayana*, *Shodhana*, *Ropana*, *Shoshana*, *Stambhana* , *Lekhana* , *Krimighna* , It normalizes *Aama*, *Kapha*, *visha*, *medodhatu*. In addition to that Acharya Charak attributed two more properties *Laghu* & *Bhedana* [14]. *Vagbattachrya* stated that Kshar acts by extracting all the toxins from the disease site and curing the disease without reoccurrence [15].

Acharya Sushruta has mentioned the use of Kshara to treat many diseases like *Vrana*, *Bhagandara*, *Arsha*, *Ashmari*, etc. This has proven to be the standard treatment. *Kshara* described is useful orally and externally. The *Ksharsutra* procedure is simple, very safe, effective, and with minimal or no complications. It is unhazardous and easily acceptable by the patients. Ksharsutra performs the following actions: scraping, excision, draining, penetrating, debridement, and healing. Ksharsutra has the following properties *Tridoshaghna*, *Pachana*, *Dahana*, *Ushna*, *Darana*, *Tikshna*, *Shodhana*, *Katuka*, *Vilayana*, *Shoshana*, *Ropana*, *Lekhana*, *Stambhana* and *Krimighna*, etc. which makes it unique in its treatment modality.

Auricular Keloid can be compared with *Arbuda* (abnormal growth) or *Vranagranthi* (result of any trauma to the body). These are considered as *Manspradoshaja Vyadhi* and application of *Ksharsutra* is one of the important treatment modalities [16].

Conclusion

The present study proves the efficacy of *ksharsutra* ligation on ear pinna keloid with minimum blood loss, and considering the rate of recurrence, if *Agnikarma* is done after the excision of keloid by kshatsutra will show remarkable results [17]. Though *Ksharsutra* is found to be effective, the sample size should be increased to establish its long-term effectiveness.

Conflict of Interest

The authors declare no conflict of interest.

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