

## KELOID

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What is a keloid?

A keloid is an exaggerated reaction of skin to injury, and manifests as a firm growth on skin. It forms as a result of an abnormal wound healing process, where there is overgrowth of dense fibrous tissue. This usually develops after the injury has healed, but can also develop spontaneously in a genetically predisposed person. It extends beyond the borders of the original wound. It does not normally regress spontaneously, and it will usually recur after excision. This contrasts with hypertrophic scars, which stay within the borders of the original wound. Hypertrophic scar may resolve spontaneously over a period of time either with treatment or spontaneously.

What are the causes for keloid?

Precise cause for keloid formation is unknown, but both local & constitutional factors play a role. Interestingly, keloids are seen only in humans and occur in 5 to 15% of wounds. The traumatic or surgical wound may undergo keloid formation if there is disturbance in the wound healing process. Hormonal influence seems to have a role since the keloids are formed more after puberty and during pregnancy. The common risk factors for the formation of keloids are Burns, scalds, infection, prolonged wound healing, Foreign materials like suture, hair etc. Keloids are 15 times more common in certain races like Afro Caribbean and Asian. Familial predisposition occurs in 5 to 15% of population. Usually, there is prior history of Trauma, irritation and delayed wound healing and positive familial history.

What are the common sites for keloids?

The common sites for the keloid formation are Ear lobe, chest, shoulder, neck, upper trunk, chin, and lower legs, in that order

IN what age group is keloids seen commonly?

Keloid formation is more common in the age group of 10 to 30 years and is rare during infancy and old age, which is why keloids are more common if ear piercing is done after puberty.

How do keloids appear?

Clinically keloids appear as raised, thick, firm, pink or red plaques or nodules, which may slowly become brownish or black. They usually manifest within 3 to 4 weeks of provocative stimuli and characteristically they continue to grow for months and years. Keloids may be dumbbell shaped, irregular or bizarre shaped and have characteristic claws like projection extending outwards, resembling crab claws.

Keloids and hypertrophic scars can be disfiguring and may cause significant anatomical morbidity and restriction of movement of various joints due to contracture, particularly in post burn patients

What are the treatment options for keloids?

No single therapeutic modality is completely and totally effective in the treatment of keloids.

Prevention should be the most important strategy, by evaluating and preventing all the risk factors, avoiding all non essential surgeries in a Keloid prone patient, particularly over the sites of predilection. If surgery is mandatory, all attempts should be made to minimize tension and infection, and wound healing should be hastened. Post operatively, massage, pressure stockings, compression, Intralesional steroids, 5-Flururacil & Imiquimod can be used depending on the suitability for the individual patient to prevent formation of keloid and hypertrophic scar.

There are various pharmacological and non pharmacological modalities for the treatment of keloids but they are without scientific evidence of significant therapeutic benefit.

Intralesional steroid injections are the commonest mode of treatment. It is effective, but recurrences are common.

### CRYOTHERAPY

Liquid nitrogen is also commonly employed. Liquid nitrogen softens and flattens the keloids. Early keloids respond better because of good vascularity. Pain, blistering, hyper and depigmentation are the common side effects. Cryotherapy alone may lead to 50 to 75% resolution of keloid, but large and bulky keloids may require intralesional cryotherapy

The best treatment for the management of KELOID would be Cryo + ILS, or Cryo + ILS + 5-Fluorouracil injection.

Silicon gels and plasters: These may have some therapeutic benefit especially in the early stages and are more useful for prevention. Silicone gel sheets applied over the lesion due to its malleability and consistency snugly fit onto the lesion and if pressure or compression is applied over that again helps in collagen remodeling by increasing the lesional temperature.

### Surgery as a therapeutic modality:-

Surgery is not a preferred therapeutic modality in all cases of keloid, especially over the sites like chest and shoulders where the skin tension is high and the possibility of recurrences are very high. However, surgery may be required in a patient with extensive keloids at the sites like joints where it is restricting the movements of the joints for the functional purposes and to treat contractures,

Surgical excision may be ideal for keloids which are large and linear where major portion of the keloid is surgically excised within the border of the lesion without incising the normal skin and closing the wound with care that is called Intra keloidal excision, where major portion of the keloid is removed surgically and the remaining portion is treated with other therapeutic modalities like

Cryotherapy and Intralesional steroids. Ear lobe keloids are the ideal site for surgical intra keloidal excision followed by other therapeutic modalities, surgery is preferred therapeutic modality for the earlobe keloids because the recurrence are lesser post surgically compared to other sites.

Recurrence rates with surgery alone are very high, up to 50 to 100%

If the keloids are large, surgical excision is followed by either Primary closure or complex closures like Z- plasty, W – plasty. If the lesion is very large the defect after excision may be closed with Split thickness Skin Grafting, Full Thickness Skin Grafting, Flaps like extended advancement flaps, rotation flaps.

Surgical excision should always to be followed by post operative preventive measures like cryotherapy, ILS, massage and pressure application to prevent the recurrences. If the surgery is combined with Intra lesional steroids the recurrence rate is reduced to less than 50%, if the post surgical therapy is combined with ILS + 5-FU + compression the recurrence rate is reduced to less than 10%.

### Role of LASERS in the management of Keloids

Laser has become a fancy word and the general public thinks that LASER is a magic wand for the medical or surgical problems, but truly it is not so. LASERS have a limited role in the management of keloids. Following are the LASERS which have some limited role

CO<sub>2</sub> LASER (10,600 nm) is an ablative LASER, may be useful for debulking of large keloids and has a limited role

Argon LASER (488 nm) is effective in early keloids only

Nd:YAG LASER (1065 nm) may work by selectively inhibiting collagen in hypertrophic scars, but is useful in the early stage for prevention.

Pulsed Dye LASER (585 nm)

PDL is vascular specific and is the only proven LASER to regress the keloid and Hypertrophic scars. Striking improvement in erythema, pliability, bulk and dysaesthesia may be seen with minimal side effects and treatment discomforts

Significant improvement has been noticed in a couple of PDL treatment sessions

Better results obtained if combined with ILS + 5-FU

Radiation therapy is one of the modalities described in the literature as one of the therapeutic options for large and extensive keloids where nothing else is suitable, but radiation therapy is usually not done unless the keloids are very extensive and troubling to the patient and where no other therapeutic modality suits the patient, because of the side effects and adverse effects associated with radiation therapy.

### SUMMARY:-

- Clinical diagnosis of keloids is easy and straight forward
- Therapeutic modalities for keloids vary with age, site, size, contracture, genetic predisposition
- If the keloids are small and soft Intralesional steroid is the treatment of choice.
- If the keloids are large and hard Liquid Nitrogen cryo therapy with Intralesional Steroid (ILS) is the preferred treatment option. But the best option would be Liquid Nitrogen + ILS + 5-FU
- Intra Keloidal excision should be performed wherever it is suitable, like earlobe keloids and other sites if the keloids are suitable for surgical excision and debulking.

- ✦ Surgical excision may be followed by Primary closure, complex closure like Z or W plasty or grafting
- ✦ MOST IMPORTANT ASPECT OF THE MANAGEMENT OF KELOIDS IS Post surgical preventive therapy. The ideal post surgical prevention is Pressure therapy combined with cryotherapy, Intra lesion steroid and 5-Fluorouracil injections.