KRF KELOID RESEARCH FOUNDATION

2011-2018

KRF Clinical Practice Guidelines in Keloid Disorder (KRF Guidelines®)

Ear Keloids

Version 1.2018 — November 19, 2018

Author: Michael H. Tirgan, MD

KeloidResearchFoundation.org

Michael H. Tirgan, MD (Chair)
Keloid Research Foundation
New York, USA

We, the undersigned, fully endorse and support the recommendations and content of this Guideline and have adapted this into our own medical practices.

Raul Caceres, MD
Plastic Surgery
New York, USA

Patricia Danielsen, MD, PhD
Department of Dermatology
University Hospital of Copenhagen
Copenhagen
Denmark

Reza Ghohestani, MD, PhD
Texas Institute of Dermatology
San Antonio, Texas
USA

Prof. Dr. Jürg Hafner
Division of In-Hospital Dermatology &
Surgical Dermatology
Department of Dermatology
University Hospital of Zurich
Zurich, CH-8091
Switzerland

Tamara Maravic-Gidakovic, MD
Dermatology and Venereology
Dermanova
Belgrade
Serbia

Tae Hwan Park, MD, PhD
Department of Plastic and
Reconstructive Surgery
CHA University College of Medicine
59 Yatap-ro, Bundang-gu, Seongnam,
Gyeonggi 13496,
Korea

SUMMARY

Diagnosis

Diagnosis of ear keloids is based on clinical history as well as clinical appearance of the skin lesion. A biopsy is almost never indicated to establish the diagnosis.

Grouping Of Ear Keloids

For purposes of this Guideline, ear keloid lesions are divided into 4 different categories according to their size.

1. *Papular* ear keloids: the size of the keloid papules is a few millimeters to one centimeter.
2. *Nodular/tumoral* ear keloids: lesions measuring one centimeter in diameter or more.
3. *Semi-massive* ear keloids: the size of the keloid mass is at least 50% of the size of the corresponding ear, but smaller than massive ear keloids.
4. *Massive* ear keloids: the size of the keloid mass is greater than the size of the corresponding ear.

Treatment

Contact cryotherapy (See KRF Guideline - Cryo) is the preferred and primary method of destruction of all protruding ear keloid lesions.

Rationale for the use of cryotherapy:

a. Cryotherapy is an effective method of treatment for nodular and bulky ear keloids.
b. As opposed to surgery, cryotherapy does not cause worsening of keloids at all [1].
c. As opposed to surgery, cryotherapy does not cause loss of ear tissue [1].
d. As opposed to surgery, adjuvant radiation therapy is unnecessary after cryotherapy [1,3,4].

Cryotherapy should be repeated once every 4-8 weeks, depending on the size of the treated lesions. Once all visible keloid lesions are brought under control, patients should be followed clinically for early detection of recurrent disease. All patients shall be instructed to examine their ears on a regular basis and return for treatment at the earliest sign of a potential recurrence.

Intra-lesional triamcinolone (See KRF Guideline - ILT) is the preferred primary method of treatment for:

a. very small early-stage keloid lesions, those that appear as papules and measure no more than a few millimeters,
b. non-protruding remnant of the keloid tissue after cryotherapy,
c. inflammatory earlobe keloids.

Gentle pressure treatment using magnetic disks. (See KRF Guideline – MD)

Post Cryotherapy Adjuvant Treatment

Once all visible and palpable keloid tissues are removed with cryotherapy, no further adjuvant treatment is needed. All patients shall be followed clinically for at least two years. Patients shall be instructed to self-examine their ears and return at earliest signs of a potential recurrence.

Treatments to avoid

Surgery shall NOT be used in treatment of small, large and semi-massive ear keloids. Surgery may be cautiously considered to partially debulk massive ear keloids. Such debulking shall leave a safe margin of keloid tissue, about one centimeter around the encased ear tissue. No portion of the ear tissue shall be removed during debulking surgery. Once debulked, the remnant of the keloid tissue shall be treated with cryotherapy.

Radiation therapy shall NOT be used in this setting.

Lasers shall NOT be used in this setting.

Spray cryotherapy and *intra-lesional cryotherapy* methods are not recommended.

OVERVIEW EAR KELOIDS

This KRF Guideline was developed with the aim to provide:

1. General discussion of ear keloids
2. Natural history of ear keloids
3. Classification system for ear keloids
4. Recommendations for treatment and follow-up

The ear is a common location for development of keloids. Piercing of the ear is by far the most common triggering factor for development of ear keloids. Other forms of injury to the ears such as surgery or unfortunate incidences of burns in patients who are genetically predisposed to keloid disorder may also lead to formation of ear keloids.

Keloid removal surgery is the main risk factor for development of recurrent ear keloids and is the only risk factor for development of semi-massive and massive ear keloids [1].

Early-stage Ear Keloids

Ear keloids at their earliest stages appear in two distinct manners:

1. *Protruding papule* on the surface of ear. This is by far the most frequently observed form of ear keloid at the site of a previous piercing.

Treatment

Ear keloids that are diagnosed at this early-stage as protruding papule(s) (Figure 1) shall be first treated with ILT (See KRF Guidelines - ILT). Care must be given to accurately inject a low-dose and low-volume of triamcinolone inside the core of the lesion.

For lesions that respond to the first injection of ILT, the same treatment shall be repeated once every 3-4 weeks until maximum response is achieved. If the lesion does not respond to the first injection of ILT, a second injection of ILT shall be attempted along with addition of magnetic disks (see KRF Guideline - MD).

Figure 1. *Early-stage ear keloids appearing as protruding papules.*

For lesions that do not respond to two ILT injections, or those that grow in size after the first ILT injection, the treatment with ILT shall be abandoned. ILT is a known risk factor for worsening of keloid lesions [2] and may be the contributing factor to the growth of keloid lesions that are injected with ILT. All such lesions shall be treated with contact cryotherapy followed by the use of magnetic disks.

Intra-lesional chemotherapy (see KRF Guidelines - ILC) shall be considered for lesions that progress despite ILT, magnetic disks or cryotherapy. Early consultation with one of the experts listed in this publication is strongly advised when ILC is considered as an option.

Patients whose lesions respond completely to treatment with either ILT or magnetic disks shall be advised to monitor their ears very carefully and return to their treating physician at the first sign of recurrence.

Inflammatory early-stage ear keloids

In rare occasions, the early-stage keloid process may present as a soft inflammatory lesion within the body of the earlobe (Figure 2). The author has encountered a few such cases.

Table 1. *Summary of treatment recommendations for early-stage ear keloids*

Clinical scenario	Recommended treatment
Papular or inflammatory lesions	Treat with ILT
Responding to ILT	Continue ILT to maximum response then monitor
Not responding to ILT	Add magnetic disks to maximum response
Not responding to magnetic disks	Treat with cryotherapy
Not responding to all of the above	Consider ILC. Early consultation with one of the experts listed in this publication.

Abbreviations: *ILT Intra-lesional triamcinolone. ILC Intralesional Chemotherapy*

Figure 2. *Early-stage ear keloids appearing as an inflammatory mass in the earlobe.*

Treatment

In the author's experience, all these keloids respond to ILT and shall only be treated with ILT.

Nodular/Tumoral Ear Keloids

If left untreated, almost all early-stage ear keloids will progress to form nodules or become tumoral (Figures 3-5). Cryotherapy is the treatment of choice for all these keloids as they all respond to cryotherapy. Nodular or tumoral ear keloids and shall NOT be excised surgically. It is the surgical excision of these small keloids that exposes the patients to an unnecessary risk for developing recurrent keloids that might grow to become even larger than the original keloid [1].

Figure 3. *Nodular ear keloid shown before (left) and after (right) treatment with cryotherapy. Surgery shall be avoided in all these instances.*

Figure 4. *Tumoral ear keloid shown before (left) and after (right) treatment with cryotherapy. Surgery shall be avoided in all these instances.*

Semi-massive Ear Keloids

Semi-massive ear keloids are exclusively seen in patients who have had prior keloid removal surgery (Figure 6). Cryotherapy is the treatment of choice for all these keloids as they all respond to cryotherapy. Semi-massive ear keloids shall NOT be excised surgically. In a previously reported series of 283 consecutive patients with ear keloids, the author reported 18 patients with semi-massive ear keloids, all of whom (100%) had undergone prior ear keloid removal surgery [1]. There is no doubt that it is the surgical excision of ear keloids that exposes the patients to the unnecessary risk of developing semi-massive keloids.

Figure 5. *Complex tumoral ear keloid shown before (left) and after (right) treatment with cryotherapy. Surgery shall be avoided in all these instances.*

Figure 6. *Semi-massive complex tumoral ear keloids shown before (left) and after (right) treatment with cryotherapy. Surgery shall be avoided in all these patients.*

Massive Ear Keloids

Massive ear keloids are exclusively seen in patients who have had multiple prior keloid removal surgeries, often in conjunction with radiation therapy (Figure 7). Repeated surgical excision of a previously treated keloid is the sole risk factor for development of massive ear keloids [1].

Cryotherapy is the treatment of choice for all these keloids. Patients with massive ear keloids often refuse undergoing another surgery as they have become aware of the biology of their disease. Most these patients have already sustained significant loss of their ear tissue from prior surgical attempts. In some cases, the recurrent keloid process even invades into the retro-auricular, occipital (Figure 9) or facial skin (Figure 10), necessitating repeated courses of cryotherapy, ILT and ILC.

Figure 7. *Massive complex tumoral ear keloid(s) shown before (left) and after (right) repeated treatments with cryotherapy. Surgery shall be avoided in all these patients.*

Figure 8. *Massive tumoral ear keloid shown before (left) and after (right) repeated treatments with cryotherapy. Surgery shall be avoided in all these patients. All these patients will require ongoing treatment to bring the keloid process under control. The loss of earlobe tissue was caused by prior surgeries and is now visible after cryotherapy (right).*

Partial Debulking Surgery Prior To Cryotherapy

Partial debulking surgery may cautiously be considered for patients who present with massive ear keloids that arise either from earlobe or when the keloid has a narrow base. The purpose of debulking surgery in this setting is to simply reduce the mass of keloid that will need to be removed with cryotherapy. Partial debulking surgery should be done in a manner that will not result in any loss of the ear tissue that is encased by the keloid. The surgeon shall leave a safe margin of the keloid tissue, at least one centimeter, around the encased ear tissue. Upon recovery from surgery, the remaining keloid tissue will then be treated with cryotherapy, allowing extraction of the normal ear tissue from the keloid mass.

Figure 9. *Massive complex tumoral ear keloid shown before (left) and six years after (right) initiation of treatments with cryotherapy. This patient had undergone four attempts at surgical removal of his left ear keloid.*

Figure 10. *Four cases of recurrent ear keloid with invasion of facial or occipital skin.*

Although the author has considered partial debulking for patients with massive keloids in other regions of the skin, he has not committed any patients with massive ear keloids to this procedure.

Figure 11. *Massive complex tumoral ear keloids. Debulking surgery may be considered for such patients, followed by cryotherapy.*

Carefully planned debulking shall leave a safe margin of keloid tissue, about one centimeter around the encased ear tissue. No portion of the ear tissue shall be removed during debulking surgery. Once debulked, and upon recovery from surgery, the remnant of the keloid tissue shall be treated with cryotherapy.

Adjuvant Treatment

After successful removal of an ear keloid with cryotherapy, the base and primary location of the keloid has to be assesed to determine presence or absence of any residual keloid tissue. When all of the keloid tissues is successfully removed, there is no need for any adjuvant treatment (Figure 12).

Figure 12. *Tumoral ear keloid before and after successful treatment with cryotherapy. No adjuvant treatment was used. This patient has remained recurrence free five year after cryotherapy. Note minimal loss of pigment at the site of treatment.*

The base of the treated keloid shall be carefully examined after all protruding keloid tissues is removed with cryotherapy. Adjuvant treatment should be considered for patients who have residual keloid tissue within the body of their ears/earlobes. Magnetic disks (Fig. 13) shall be used as the primary method of adjuvant treatment for all such patients (see KRF Guideline-MD) and should be continued for 3-4 months.

ILT should be added when the residual keloid tissue exhibits early signs of progression and regrowtth despite the use of magnetic disks.

Treatment of Recurrence

Patients who complete their course of treatment shall be advised to monitor their ears frequently and to return for treatment at the earliest signs of recurrence. A recurrent ear keloid after cryotherapy should be treated aggressively with ILT, repeat cryotherapy and, if needed with ILC. The choice of treatment with ILC should be considered for all patients exhibiting early signs of recurrence. Early consultation with one of the experts listed in this KRF Guideline is strongly recommended when ILC is considered.

Figure 13. *Magnetic disks applied to the upper part of the ear.*

Table 2. *Summary of treatment recommendations for nodular and tumoral ear keloids*

Clinical Scenario	Recommended Treatment
Nodular/tumoral ear keloid	Treat with cryotherapy until total ablation
Total keloid ablation – no residual keloid	No adjuvant treatment. Monitor
Subtotal keloid ablation with residual keloid	Add magnetic disks to maximum response
Not responding to magnetic disks	Add ILT to magnetic disks
Not responding to all of the above	Consider ILC. Early consultation with one of the experts listed in this publication.
Progression to nodular keloid	Re-treat with cryotherapy

Abbreviations: *ILT Intra-lesional triamcinolone. ILC Intralesional Chemotherapy*

References

1. Massive ear keloids: Natural history, evaluation of risk factors and recommendation for preventive measures – A retrospective case series, F1000 Research, October 13, 2016

2. Intra-lesional Steroid Injections: Can they be harmful to some patients? Results of an online survey. International Journal of Keloid research. 2017 vol. 1 no. 1, July 1, 21-28

3. Miyahara H1, Sato T, Yoshino K. Radiation-induced cancers of the head and neck region. Acta Otolaryngol Suppl. 1998;533:60-4

4. Ron E. Cancer risks from medical radiation. Health Phys. 2003 Jul;85(1):47-59.