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VIDEOS OF SURGICAL PROCEDURES IN DERMATOLOGY

[Translated article] Surgical Technique: Adjuvant Brachytherapy to Prevent Keloid Recurrence After Surgical Excision



Técnica quirúrgica: braquiterapia adyuvante para prevenir la recidiva tras la escisión quirúrgica de queloides

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Introduction

Keloids are fibroproliferative disorders due to trauma, surgical interventions, or burns in predisposed individuals, although they can also rarely appear spontaneously. Unlike hypertrophic scars, keloids extend beyond the margins of the original wound invading adjacent healthy skin. Keloids can significantly impact quality of life as they often involve pain and itching and can sometimes become truly disfiguring.¹ Given their common recurrence after excision, multiple treatments with varying results have been attempted. In this study, we describe in detail the surgical technique required for the application of high-dose rate brachytherapy (HDR-BT), an effective and safe method often spared for refractory cases.²

Description of the technique

Initially, the target area should be prepared with proper antisepsis and regional anesthesia. Afterwards, the keloid will be excised with precise margins using a cold scalpel. After careful hemostasis, the margins of the defect need to be dissected to create space for the plastic brachytherapy tube and suture the defect with less tension. Next, the plastic tube will be placed along with the wound bed, and the skin will be sutured over it being cautious enough not to perforate it. Intradermal sutures are, therefore, advised to allow better control of the needle depth. The catheter should remain at a depth of about 4 millimeters. Finally, the catheter will be cut to the desired length, and the ends will be sealed with plastic buttons. After catheter placement, adjuvant HDR-BT will be administered.² Typical doses range from 10 to 20 gray (Gy), distributed in 1 to 5 fractions. The radioactive source used is often iridium-192.³ In the case presented here, a total dose of 15 Gy was administered in 3 fractions of 5 Gy each: the first, 90 min after catheter insertion; the second, 6 hours after the first fraction; and the third and final fraction, 24 hours after catheter

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insertion. The administration of the third fraction is shown in the video, being the process identical for all fractions.

Indications and contraindications of the technique

Adjuvant HDR-BT is indicated for keloids refractory to conventional treatments that affect the patient's quality of life significantly, both due to aesthetic changes and paresthesias.² This technique is contraindicated in very extensive keloids since direct closure of the defect is necessary to adequately cover the brachytherapy catheter. It shouldn't be used either in keloids with complex morphology where the proper central line insertion inside the wound would just be impossible.³ Another contraindication would be patients with severe radiation-related fear or anxiety, as this could affect their ability to tolerate treatment. Finally, adjuvant HDR-BT requires taking 1 to 2 days off work, which can be a limitation for many patients.

Complications

Two groups of complications associated with this technique can be identified: those due to the surgical procedure *per se*, and those due to the adjuvant HDR-BT. The former include inflammation, infection, or bleeding of the surgical wound, sensory disturbances in the form of tingling or burning due to the cutting of small cutaneous nerves, allergic reactions to the anesthetic used, and neuropraxia or axonotmesis in case of nerve blocks. The latter include skin atrophy, telangiectasias, delayed wound healing, and skin hyperpigmentation.^{2,3}

Conclusions

Adjuvant HDR-BT after surgical excision of keloids is an easy-to-use and well-tolerated procedure that could be useful in refractory cases. However, it has high direct and indirect costs compared to other therapies.

Conflicts of interest

None declared.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.ad.2023.10.040](https://doi.org/10.1016/j.ad.2023.10.040).

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