Results of Keloid Treatment with Excision followed by Brachytherapy

E. Bijlard, MD; G. M. Verduijn MD; J. X. Harmeling; M. A. M. Mureau, MD, PhD

Disclosure/Financial Support: None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.

PURPOSE: Keloids are benign tumors of excessive scar tissue that can be painful, itching and cosmetically disturbing. Due to therapy resistance and recurrence treatment is challenging for patient and physician. Excision followed by brachytherapy has been successfully used to treat keloids, and is currently considered most effective in keloid treatment. Using brachytherapy, the dose of ionizing radiation should be as low as achievable while remaining effective, due to disadvantage side effects of radiation. This optimal fractionation scheme has not yet been determined.[1] More information on results of specific schemes is needed.

MATERIALS AND METHODS: We retrospectively analyzed keloids treated with excision followed by 2 fractions of 9 Gy brachytherapy on the day of surgery from 2010 till June 2014 in the Erasmus University Medical Center Rotterdam, The Netherlands. Socio-demographics, keloid characteristics, complications, recurrences and additional treatments were collected; when data were missing chart review was supplemented by phone interviews.

RESULTS: We treated 87 keloids in 43 patients, 45% male, 9% fair skinned, 65% dark skinned, of whom 17% had one keloid, while 28% had over ten keloids. Keloids were caused by trauma (30%) and acne (29%). The ear (25%) was most affected, followed by the pre-sternal area (20%). Many caused pain (66%) and itch (79%). Complications after excision with brachytherapy were (partial) wound dehiscence (29%), infections (10%), chronic wounds (21%), grade 1 radiation dermatitis (25%) and severe pigmentation changes (26%). We found 3 full recurrences (3%), and 16 partial recurrences (18%) that rarely caused pain and caused fewer itches 27 (SD 15, range 1-58) months after surgery. Additional treatment with silicone sheets or corticosteroids was used in 25%; only two keloids were operated again after treatment.

CONCLUSIONS: We showed that excision followed by brachytherapy is effective as keloid treatment resulting in only 3% full and 18% partial recurrences, with significant reduction in pain and itch complaints. However, radiation had disadvantageous effects on wound healing causing high risk on hampered wound healing. Similar effectiveness was described for milder fractionation schemes, but complications were reported less frequently.[2-4] In conclusion, although excision followed by 2 fractions of 9 Gy brachytherapy is effective for keloid treatment, a milder scheme might be preferred to reduce wound complications.

REFERENCES:

1. Van Leeuwen MC, Stokmans SC, Bulstra AE, Meijer OW, Heymans MW, Ket JC, et al. Surgical Excision with Adjuvant Irradiation for Treatment of Keloid Scars: A Systematic Review. Plast Reconstr Surg Glob Open. 2015;3(7):e440.
2. Van Leeuwen MC, Stokmans SC, Bulstra AE, Meijer OW, van Leeuwen PA, Niessen FB. High-dose-rate brachytherapy for the treatment of recalcitrant keloids: a unique, effective treatment protocol. Plast Reconstr Surg. 2014 Sep;134(3):527-34.
3. Guix B, Henríquez I, Andrés A, Finestres F, Tello JI, Martínez A. Treatment of keloids by high-dose-rate brachytherapy: A seven-year study. Int J Radiat Oncol Biol Phys. 2001 May 1;50(1):167-72.
4. Veen RE, Kal HB. Postoperative high-dose-rate brachytherapy in the prevention of keloids. Int J Radiat Oncol Biol Phys. 2007 Nov 15;69(4):1205-8.