KELOID EXCISION WITH SUPERFICIAL RADIATION THERAPY (SRT)
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INTRODUCTION

Derived from the greek word “chelo,” meaning crab’s claw, to describe the lateral growth of scar onto unaffected skin, keloids are among one of the challenging conditions to treat that face dermatologists. Keloids have been documented in all racial groups, but most commonly seen in individuals of Black, Asian, Latino ancestry. Darker skinned individuals have been reported to develop keloids as high as 20 times more likely than lighter-skinned individuals (1). Keloids can occur at any age, but most commonly occur in the 2nd through 3rd decades of life (2).

Keloids are benign dermal fibro-proliferative tumors with no malignant potential. Histologically, keloid tissue shows disorganized type I and III collagen bundles that extend beyond the margins of the original wound and spread by invasion of the neighboring skin rather than expansion. Although the exact etiology for keloids is unknown, the persistence or failure to downregulate wound healing signals is the current pathological theory. Gene profiling of keloid fibroblasts has shown altered expression in multiple fibrosing-associated pathways including IGFBinding and IGF-binding-related proteins, decreased expression of a subset of Wnt pathway inhibitors and multiple IL-1 inducible genes(3). Certain growth factors such as the TGF-beta family and their downstream target (SMAD signal transduction pathway) have been identified in normal wound healing with dysregulation leading to keloid formation (4-7).

OBJECTIVE

The surgical removal of keloids is usually not difficult on its own. However, preventing recurrence can be unique clinical challenge. Intraläsional corticosteroids, cryotherapy, intraläsional S-fluorouracil (S-FU), intraläsional bleomycin, topical imiquimod, pulse dye laser, fractionated CO2 laser and radiotherapy amongst others are several treatment options used on keloids. Surgical revision alone will not put the healing process back into a balance and other forms of treatment are needed to correct this matter. Past methods using surgical revision alone lead to failure due to the continuation of collagen production with recurrence rates ranging from 45-100% (8). Surgery combined with radiotherapy results in recurrence rates between 0-20% (9). Herein, we present our experience and success using surgery followed by superficial radiation therapy (SRT) for the treatment of keloids.

MATERIALS AND METHODS

Excisions were performed removing all collagen bundles and closed under no tension. Twenty-four hours post-surgery, SRT consisting of 3 fractions of 600cGy at energies of either 70kV or 100kV with 5mm margins around the entirety of the closures were performed (BED 30 Protocol)(10).

RESULTS

A total of 17 patients with 24 keloids were treated between June 2015 to February 2017. Keloids from 5 areas of the body were treated in the study, which included head/neck, scalp, ears, back and chest (Figure 1). No recurrences have been reported at present time. The main side effect has been hyperpigmentation.

CONCLUSION

Keloids represent a challenging condition to treat. The efficacy of many treatment modalities (i.e. intraläsional corticosteroids, S-FU, etc.) by their attenuation of the inflammatory response is a reasonable approach. However, achieving short-term and long-term efficacy by complete removal of keloids and factors that mitigate its future growth are paramount (11). Complete surgical removal of keloids with SRT has promising results and should be considered a powerful tool in treating keloids.

Fig 1. Clinical images of a keloid involving the left ear before and after surgical excision with superficial radiation therapy (SRT). A, Left ear keloid. B, Posterior ear after surgical excision and SRT. C, Anterior ear after surgical excision and SRT.

REFERENCES