

Combination Therapy for a Severe Axillary Keloid with Abscesses: A Case Report

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Keloids are laterally growing fibroproliferative skin disorders. Severe keloids spread widely, sometimes over joints, thus significantly limiting motor function. They are associated with recurrent, very painful draining infections. Here, we report a case of a giant keloid that was successfully treated by combination therapy comprising surgery (partial resection followed by local flap transposition) and subsequent radiotherapy and steroid-plaster therapy. The keloid was first noticed when the patient was 7 years old at the site of a Bacille Calmette-Guérin vaccination she had received on her left shoulder in infancy. The keloid grew rapidly and widely after adulthood. A malignant tumor was suspected at another hospital, but a biopsy at age 45 years indicated the lesion was a keloid. Later, the keloid grew from the shoulder onto the chest and back and over the anterior axilla. At age 62 years, the patient was referred to our hospital. Under general anesthesia, the keloid was partially resected and the wound was covered with a local flap. Postoperative radiotherapy was performed 1 week later. The residual keloid was treated for 18 months with steroid tape. At 18 months after surgery, no recurrence of the keloid was observed. The patient had no pain or movement restriction. She was extremely satisfied with the results and considered the treatment to have improved her quality of life. While a standard strategy for severe keloid remains to be established, combination therapy comprising surgery, postoperative radiotherapy, and steroid-plaster therapy that aims to reduce inflammation and skin tension may be an option.

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Key words: axillary keloid, tension-reduction sutures, transposition flap, postoperative radiotherapy

Introduction

Keloids are fibroproliferative skin lesions that spread laterally¹. Severe keloids exhibit extensive spread, sometimes over joints, which can significantly limit motor activity. Severe keloids are associated with recurrent, very painful draining infections. To restore function and eliminate infections in severe keloids, surgery should be considered. Complete resection is usually not possible but partial resection is sometimes an option. Reconstruction with a local flap may be needed to cover the defect: this approach yields low tension on the wound and thus avoids provoking keloid recurrence. For the same reason,

the fascial-suturing method should be used for closure^{2,3}.

We describe a case of a giant keloid that spread from the left shoulder to the chest, shoulder, and upper arm over the anterior axillary line. It was treated by combination therapy comprising partial resection and a transposition local flap followed by postoperative radiotherapy and steroid-plaster therapy. This approach yielded excellent functional and aesthetic results. The concepts underlying this combination therapy will be discussed.

Case Presentation

The patient was a 62-year-old woman with a keloid that

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Fig. 1 Photographs of a severe keloid of a 62-year-old patient. The keloid originated at an inoculation site on the left shoulder and spread over the upper anterior chest, the back of the shoulder, and down the upper left arm over the anterior axillary line. This growth led to impaired shoulder abduction.

started growing at age 7 years. The origin was the site of a Bacillus Calmette-Guerin inoculation she received on her left shoulder in infancy. After adulthood, the keloid started growing rapidly and spread to surrounding skin. At age 45 years, another hospital suspected a malignant tumor. However, pathological analysis of a biopsy specimen indicated that the lesion was a keloid. Over the next 17 years, the keloid continued to grow, spreading from the left shoulder to the upper chest, the back of the shoulder, and down the upper arm, such that it covered the anterior axillary line. At age 62 years, the patient was referred to our hospital. At that point, the keloid resembled a pancake that draped over the left shoulder and had a protrusion running along the top of the shoulder toward the neck (Fig. 1). The patient had restricted left shoulder abduction and two very painful draining infections on the anterior left axilla and back of the left shoulder. We planned to partially resect the keloid, to release the shoulder joint contracture and remove the infected tissue. Reconstruction with a local flap was planned for the resulting large defect.

After the patient was placed under general anesthesia, the keloid was partially resected. Because the red ridge at the margin of keloids is the most inflamed area and the entire margin was particularly red and thick in our patient, we removed this peripheral tissue. The remnant keloid at the center had a light color, indicating little inflammation. Since the infected regions were within the resected tissue, the surgery also eliminated the infections (Fig. 2A). Resection exposed the anterior axillary line, thus normalizing the shoulder joint range of motion. A 12 × 3.5-cm skin-pedicled transposition flap was de-

signed on the posterior of the upper arm, which bears the lowest skin tension in this region of the body (Fig. 2A). The flap was transposed to fill the defect that ran from the upper arm to the anterior axilla (Fig. 2B). The wounds were closed with fascial suturing.

One week later, postoperative radiotherapy (18 Gy in three fractions over 3 days) was applied to a field including the wound and its 1 cm-wide margins. In addition, continuous steroid-tape therapy was applied to the residual keloid for 18 months. At the latest follow-up visit, 18 months after surgery, the residual keloid had flattened, and no keloid recurrence at the scars was observed. The patient had no pain and had full shoulder movement. She was extremely satisfied with the pain, cosmetic, and functional outcomes (Fig. 3).

Discussion

Severe keloids that are too large for complete resection are difficult to treat. However, keloids that impair patient motion or cause recurrent infection demand medical intervention. The Japanese guidelines for keloid treatment state that combining surgery, postoperative radiation, and steroid-tape therapy can be effective for severe keloids¹. The details of this strategy depend on the site and size of the keloid, the cause of motion impairment, and the site of infections.

In our patient, keloid growth over the anterior axilla impaired left shoulder movement. Moreover, the left anterior axilla and back of the left shoulder had very painful, infected inclusion cysts, which led to our decision to partially resect the keloid, particularly the severely inflamed red margin, which also contained infected tissue.

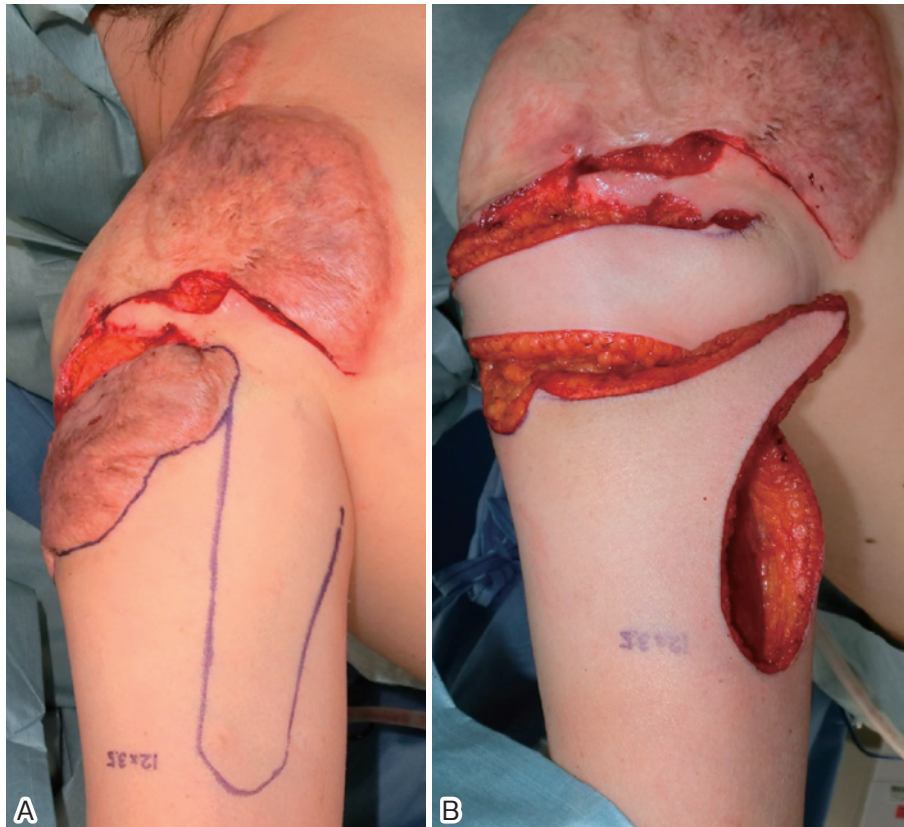


Fig. 2 Intraoperative photographs of the keloid during partial resection and after flap transposition. (A) The red inflamed margin of the keloid on the left upper arm and anterior chest was resected. Resection revealed a finger of normal skin under the keloid, which was preserved. A 12 × 3.5-cm skin-pedicled transposition flap that had a perforator was designed on the left upper arm. (B) The flap was elevated and transposed to the anterior axillary line before being sutured to the normal skin finger and the inactive keloid remnants by means of fascial suturing.

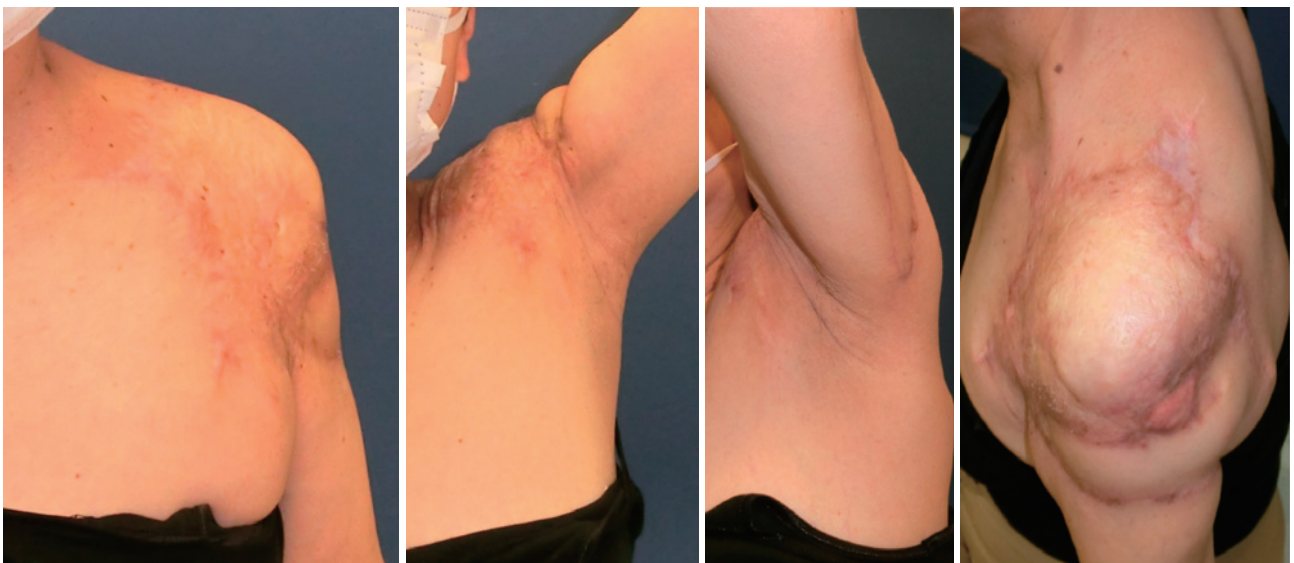


Fig. 3 Photographs at 18 months after surgery. Keloid recurrence was not observed.

Only the inactive central areas of the keloid remained. It is essential to preserve as much normal skin as possible during resection, including normal skin that has been hidden by keloid overgrowth. In our case, by slowly cutting along the red ridge, we exposed and were able to preserve a finger of keloid-overgrown normal skin (Fig. 2A).

High mechanical tension on the wound is a major risk factor for keloid formation and exacerbation⁴⁻⁶. This fact, and the resulting importance of limiting tension on the wound, underpins all surgical methods used to treat keloids, including fascial suturing and the use of Z-plasties and flap transfer^{2,3,7}. Resection of severe keloids leaves large defects for which primary closure would lead to unacceptably high wound tension. Thus, a transfer flap is needed. Skin grafting is a less favorable option because it is prone to secondary contracture and requires considerable donor-skin sacrifice⁷. The best transfer flap is a skin-pedicled flap, which is superior to an island flap because its skin pedicle allows the flap to stretch after surgery⁸. This more effectively reduces tension on wounds. The resulting flap should allow low-tension coverage of the defect and closure of the donor and recipient sites. Moreover, perforators should be checked preoperatively to ensure the flap has a perforator with adequate perfusion. A good perforator allows for the design of a skin-pedicled flap with a length to breadth ratio of 1:3 or 1:4.

Postoperative radiotherapy greatly reduces the risk of keloid recurrence. Our empirical findings suggest that when flap transfer is used, the start of radiotherapy can be delayed for 1-2 weeks after surgery. The donor site should also be irradiated. The Japanese guidelines on keloid treatment detail postoperative radiotherapy regimens for specific body sites¹. This approach reduces the risk of secondary carcinogenesis.

Steroid-plaster therapy suppresses keloid growth and is recommended in Japanese guidelines for existing keloids and postoperative recurrence¹. In Japan, we use 20 µg/cm² deprodone propionate tape, which is five times as strong as the fludrocortide-impregnated tape that is widely used in the United Kingdom and United States⁹.

Our patient was extremely satisfied with the results and said her present quality of life had improved significantly. However, we continue to treat patients with severe keloids that are refractory to even this aggressive combination treatment. Further research into novel thera-

pies and new therapy combinations is therefore warranted. Indeed, recent research has revealed a number of signaling pathways and molecules, the therapeutic inhibition or activation of which could have anti-keloid effects^{4,6,10}. Further studies that reveal the therapeutic potential of these strategies are needed.

Conflict of Interest: There are no financial disclosures to be made.

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