Usefulness of S-shaped Incision in Large Nevus Sequential Excision

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Summary: We devised the S-shaped incision as a technique for large nevus sequential excision. Using this technique reduces the number of operations needed to complete nevus resection and also shortens the final length and width of the scar. We report this technique after performing it on 7 patients and confirming its usefulness. (Plast Reconstr Surg Glob Open 2014;2:e224; doi: 10.1097/GOX.0000000000000193; Published online 3 October 2014.)

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equential excision is often used for the treatment of large nevi for which complete resection in a single operation is not possible. When sequential excision is performed, spindle-shaped resection is usually repeated until the nevus is resected completely. With the new technique of sequential excision adopted at our facility, S-shaped resection of the nevus is performed covering the maximum possible area of the nevus during the first operation. We report this technique after performing it on 7 patients and confirming its usefulness.

SURGICAL METHODS

During the first operation, an S-shaped skin incision line is drawn in a manner that allows resection of the nevus to the maximum extent possible (Fig. 1). Line drawing is performed within the nevus, and resection of the intact skin is avoided. The unresected parts of the nevus are combined into a form as close as possible to a spindle form, followed by suturing. During this step, the inclination of the S-shaped incision is adjusted so that the major axis of the combined unresected nevus becomes consistent with the wrinkle line1,2 and the relaxed skin tension line (RSTL).3 The second operation is performed after loosening of the skin around the nevus. If complete resection of the nevus during the second operation is difficult, resection is made to an extent as wide as possible during the second operation, and the remaining nevus is resected during the third operation.

RESULTS

This technique was applied to 7 cases, aged between 4 months and 19 years (Table 1). The site of the nevus was the abdomen in 3 cases and the scapula, forearm, brachium, and glabella in one case each.

Fig. 1. Surgical method of S-shaped incision.

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The nevus was circular or oval in shape, with the dimensions being $83 \times 60$ mm for the largest nevus on abdomen. In all cases, the nevus was too large to allow complete resection during a single operation. The number of operations needed until complete nevus resection was 2 in 6 cases and 3 in 1 case. No postoperative complications, such as disturbed flap blood flow or wound dehiscence, were observed.

![Image](image.png)

**Fig. 2.** Case 1. The patient was a 9-year-old girl, with nevus pigmentosus on the forearm ($55 \times 42$ mm), in whom the first operation was performed with an S-shaped skin incision (A and B). Four months after the first operation, the remaining nevus was resected completely, with a postoperative suture line of $80$ mm in length (C).
The postoperative scar was consistent with the wrinkle line or RSTL in all cases, and no case presented contracture. In this series of 7 cases, the final scar length was 2.32 times the horizontal diameter of the nevus on average.

CASE REPORT

Case 1

The patient was a 9-year-old girl, with nevus pigmentosus on the forearm (55×42mm), in whom the first operation was performed with an S-shaped skin incision, leaving 53×30mm of the nevus unresected (Figs. 2A, B). Four months after the first operation, when the skin became loose, the remaining nevus was resected completely, with a postoperative suture line of 80mm in length. The postoperative scar is inconspicuous 4 months after the second operation (Fig. 2C).

DISCUSSION

When a skin incision is made for plastic surgery, care needs to be taken to minimize postoperative scars. We have devised the Ω-shaped skin incision as a technique for skin tumor excision on the areas of skin with an arc-shaped fold. With this technique, the dog-ear that is formed during wound closure can be resected within the range of the first skin incision.

We recently devised a new line drawing method for our technique of continuous excision by which a nevus excessively large to resect during a single operation is resected with an S-shaped incision to a maximum possible extent during the first operation. A large-sized nevus is often circular or oval in form, and resection of the intact skin is not needed in cases where this procedure is adopted for the first operation. If the unresected parts of the nevus are combined into a spindle form in conformity to the wrinkle line or RSTL and the combination is sutured during the first operation, it will be easier to draw the lines for suturing before the second operation. Furthermore, because this technique sutures the skin defect while causing twisting of this area, the tension at the wound margin in the sutured area can be dispersed in multiple directions. As a result, the length of the waiting period until the next round of operation can be shortened. In all of our cases, the next operation could be planned at a 4-month interval. During the second operation, the nevus is resected in a spindle form, with care taken to avoid dog-ear formation. During this step, the direction of the tension applied to the wound margin differs from that during the first operation, offering a larger area of nevus suitable for resection and suturing. Thus, the number of operations until complete nevus resection can be reduced along with shortening of the final length and width of the scar.

CONCLUSIONS

We devised the S-shaped incision as a technique for large nevus sequential excision. Within this technique, the number of operations until complete nevus resection can be reduced along with shortening of the final length and width of the scar. We report this technique after performing it on 7 patients and confirmed its usefulness.

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