

안면부 재건에서 전외측 흉벽을 공여부로 하는 전층 피부이식술의 유용성

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Usefulness of Full-thickness Skin Graft from Anterolateral Chest wall in the Reconstruction of Facial Defects

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Purpose: Full thickness skin grafts are useful in the reconstruction of facial skin defects when primary closure is not feasible. Although the supraclavicular area has been considered as the choice of donor site for large facial skin defect, many patients are reluctant to get a neck scar and some patients do not have enough skin to cover the defect owing to the same insult occurred to the neck such as burn accident. We present several cases of reconstruction of facial skin defects by freehand full-thickness skin graft from anterolateral chest wall resulting aesthetically acceptable outcome with lesser donor site morbidity.

Methods: Retrospective review was performed from March, 2007 to September, 2009. 15 patients were treated by this method. Mean age was 31.5 years. The etiology was congenital melanocytic nevus in 7 cases, capillary malformation in 5 cases and burn scar contracture in 3 cases. Mean area of lesion was measured to 67.3 cm² preoperatively. The lesion was removed beneath the subcutaneous fatty tissue layer. The graft was not trimmed to be thin except defatting procedure. For the larger size of defect, two pieces of grafts were harvested from both anterolateral chest wall in separation and combined by suture.

Results: The mean follow up period was 9.7 months. All the grafts survived without any problem except small necrotic areas in 4 cases, which healed spontaneously under conventional dressings in 6 weeks postoperatively.

Color match was relatively excellent. There were 2 cases of hyperpigmentation immediately, but all of them disappeared in a few months.

Conclusion: In cases of large facial skin defects, the anterolateral chest wall may be a good alternative choice of full-thickness skin graft.

Key Words: Full thickness skin graft, Skin graft, Donor, Chest wall, Facial defects

I. INTRODUCTION

Skin graft is a very useful method in the reconstruction of facial skin defects. Supraclavicular area has been considered to be the choice of donor site for a large facial skin defect because of its tissue color match and easy camouflage of donor site scar.¹ The maximal size of skin graft harvested from the supraclavicular area is reported 15 × 5 cm, but sometimes the scar becomes hypertrophic.² We experienced good results using the skin of anterolateral chest wall instead of supraclavicular area in patients requiring larger skin graft and reluctant to get a neck scar. So, we are to report our experience and propose some points to consider in harvesting large sized full thickness skin grafts.

II. MATERIALS AND METHODS

Retrospective review was performed. The distribution was from January, 2006 to September, 2009 in our hospital. The patients were informed of the advantage and shortcomings of the staged excision, tissue expansion and skin graft. 15 patients were chosen to get the skin graft procedure, but they refused to have a neck scar because they did not want to get another scar on the exposed neck area which causes cosmetic problem. Mean age was 31.5 years. The etiology was congenital melanocytic nevus in 7 cases, capillary malformation in 5 cases and burn scar contracture in 3 cases. The mean area of lesion was measured to be 67.3 cm² (17.5 to 150 cm², Table

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Table I. Summary of Patient Details

Case	Age / Sex	Diagnosis	Site	Size(cm)	Donor	F/U(mo.)
1	52 / F	BSC	Chin	11 × 6	Unilateral	2
2	69 / M	CM	Lt. cheek	11 × 9.5	Both	23
3	12 / M	CMN	Forehead	9 × 8.5	Both	16
4	44 / F	BSC	Neck	9 × 5	Unilateral	2
5	59 / M	BSC	Forehead	15 × 2		
			Nose	9 × 6	Both	9
			Chin	13 × 10		
6	12 / F	CMN	Lt. cheek	13.5 × 6.5	Both	32
7	15 / F	CMN	Lt. cheek	15 × 10	Both	16
8	39 / F	CM	Forehead	8 × 3	Both	4
9	18 / F	CMN	Forehead	15 × 6	Both	9
10	49 / M	CM	Forehead	7 × 4	Unilateral	4
11	41 / F	CMN	Lt. cheek	5 × 3.5	Both	15
12	18 / M	CMN	Glabella	5.5 × 3.5	Both	3
13	21 / F	CM	Rt. cheek	6.5 × 4.5	Both IMF	1
14	6 / F	CMN	Lt. cheek	8.5 × 4.5	Both	7
15	18 / F	CM	Lower lip	8 × 2.5	Rt. IMF	2

BSC, burn scar contracture; CMN, congenital melanocytic nevus; CM, capillary malformation; IMF, inframammary fold.

I). All the procedures were performed under general anesthesia. Template of the graft was designed along the outline of the contralateral normal side of the face. The facial lesion was removed beneath the subcutaneous fatty tissue layer and the skin graft from the chest wall was harvested a few millimeters larger than the template to compensate for contraction. The skin graft was dissected from the adipose tissue of the anterolateral chest wall by scissors and then basted to the bed of the facial recipient site. For the defects larger than 5 centimeters in width, two pieces of grafts were harvested from bilateral anterolateral chest wall, respectively. Tie over dressing was kept in site for 72 hours postoperatively. The graft was checked and pressure dressing was applied for 2 weeks.

III. RESULTS

All the grafts survived without any problem except some focal necrosis less than 1 cm² in 4 cases, which was healed in 6 weeks postoperatively by conventional dressing. The average of follow up period was 9.6 months

(from 1 to 32 months). Hyperpigmentation developed in two cases which was reduced by applying hydroxyquinone in a few months. There were no problems associated with the donor site. Although the donor site scar was long, they could be hidden by ordinary clothes including colorless shirts.

A. Case 1

A 69-year-old male patient had a capillary malformation on his left hemiface. We removed the capillary malformation lesion beneath the subcutaneous tissue and debulked the bulging left upper lip. Full thickness skin graft from bilateral chest wall which measured 11 × 9.5 cm in total was transferred to the cheek and nose. Split thickness skin graft from the thigh was transferred to the forehead and temple. The skin graft was well taken and he got another full thickness skin graft from post-auricular area to periocular lesion 1 year later (Fig. 1).

B. Case 7

A 15-years-old female patient had a congenital melanocytic nevus over left cheek. We removed the melanocytic lesion

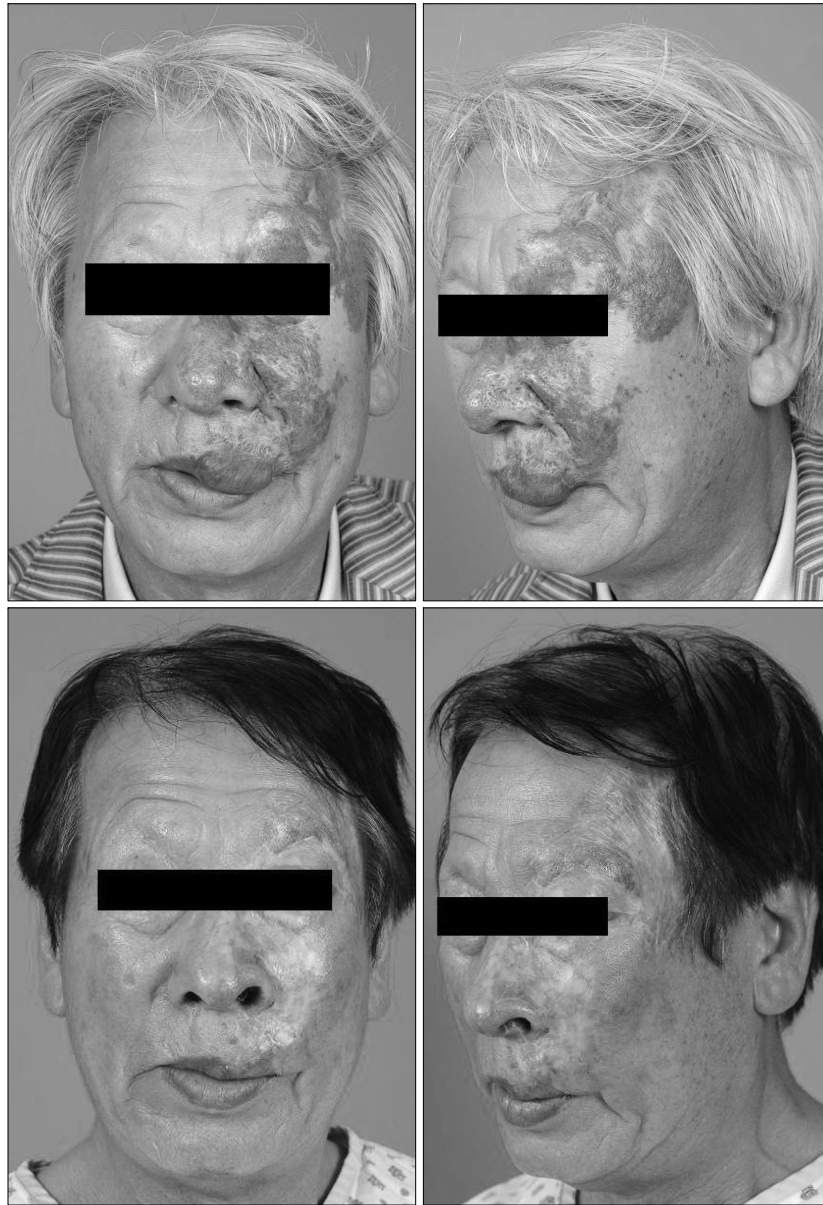


Fig. 1. Capillary malformation of the left hemiface. (Above, left), (Above, right) The lesion covered over the nose, cheek, forehead and temple of left side. (Below, left), (Below, right) 23 months after the operation, the contour and color made harmony to the surrounding skin.

of her cheek beneath the subcutaneous fatty tissue layer, which was measured 15×10 cm in total. The skin graft was harvested from the bilateral anterolateral chest wall and it was transferred to the face. There were no postoperative problems. The facial skin graft had similar color and texture with surrounding normal skin. The contour of cheek and the facial structures such as lateral canthus, nasolabial fold, oral commissure and ala looked symmetric to the normal side. The donor site scar could be easily covered by common clothes and the scar widening was minimal (Fig. 2).

C. Case 11

A 41-years-old female patient had a congenital melanocytic nevus over left face. She had got a tissue expander operation before, but there was some remnant lesion. She refused to get another tissue expander operation that costs numerous operations, long operation time, and the time to inflate. The postauricular area was already used before and she did not want to get another scar at the visible site. Full thickness skin graft was harvested according to the raw surface of the nasolabial fold, and it was transferred. Although the color



Fig. 2. Congenital melanocytic nevus of the left cheek. (Above, left), (Above, right) The lesion covered her left cheek, which measured 15 × 10 cm. (Center, left), (Center, right) 16 months after the operation, the facial contour, graft color and texture matches to the surrounding skin very well. (Below, left), (Below, right) Donor site scar was easily hidden by common clothes, and scar widening and hypertrophic change was minimal.

of skin graft was a little bit dark, she was satisfied to avoid more operations, time to inflate and another scar at the easily visible site.

IV. DISCUSSION

Variable options are available for the reconstruction of facial skin defects including primary closure, skin graft, tissue expansion and flap surgery. Although other

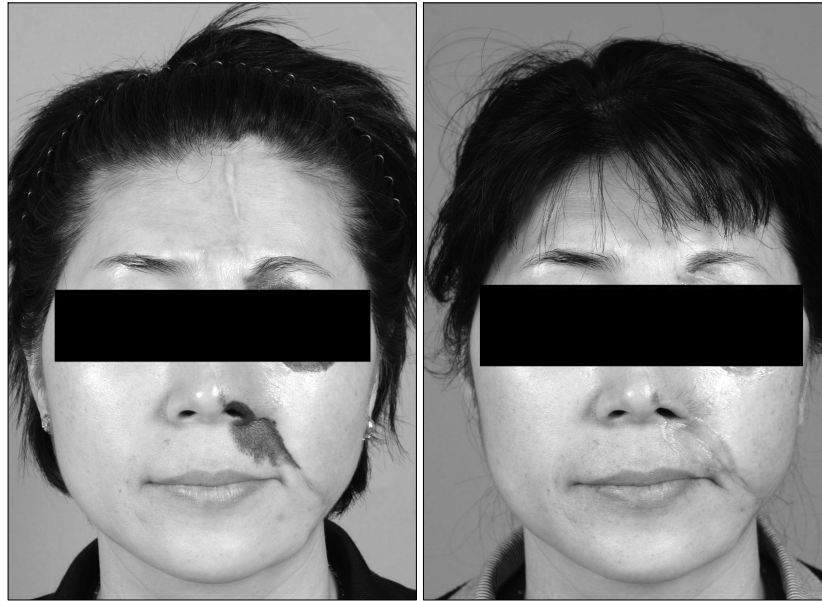


Fig. 3. Congenital melanocytic nevus of the left face. (Left) She had a tissue expander surgery before, and she refused to get another scar at visible site such as forehead. Although the lesion is not so large, she had no remnant skin at postauricular area. (Right) 15 months after the operation. The anterolateral chest skin was transferred to the nasolabial fold.

options may have more appealing results in cosmetic respect, they require numerous procedures, delays, cost and longer operation time than the skin graft. Full thickness skin graft is still a useful method due to its relative simple procedure, acceptable color match, skin texture and less distortion of facial contour.¹

The most commonly reported donor sites of full thickness skin graft for facial defects are preauricular, postauricular, upper eyelid and melolabial fold skin because of the best tissue match and the ability to camouflage the donor site scar.¹ However, the lack of large sized full-thickness skin graft's donor site is a challenge for reconstruction, and the supraclavicular area is traditionally selected which is reported to be harvested in 15 × 5 cm size at maximum in the patient who has no restriction of neck skin.² Some authors tried to maximize the use of graft by modification of design of skin graft, or using tissue-expanded donor site.³⁻⁶ Taking into consideration that harvesting the larger size of neck skin tends to make a widened or hypertrophic scar, it is preferable to select the donor site from the area that are less visible and have less tension.

Although it is believed that non-blush skin tends to result in a dark pigmentation or necrosis,^{1,7} lateral thoracic region is reported to offer a relatively good color match, texture, enough thickness and size.⁵ Additionally, our design is along the relaxed skin tension line which

prevents scar widening relatively, at the anterolateral chest wall whose dermis is thinner than posterolateral thoracic wall. Another common source of full thickness skin graft is inguinal crease. But, we think this method is better in the respect of the color match which is supported by another report which commented that the most powerful factor influencing on the lightness of skin graft is the lightness of the donor site skin.⁸ Therefore, we utilized the skin of the anterolateral chest wall, which has more light skin color than that of inguinal area, and easier camouflage of the scar than that of supraclavicular area. And donor site scar is invisible even in patients wearing collarless shirts. Graft loss due to poor perfusion can be prevented by meticulous bed preparation of the facial defect which has abundant blood supply. For the patients who have very thick thoracic skin, graft thinning could be a valuable procedure.

The supraclavicular area may be a good source of full thickness skin graft in elderly patients due to the laxity of the skin and wrinkles which provides more large graft and easy camouflage of the donor site scar. But it is not feasible in the young patients and the supraclavicular donor site scar may be easily visible when they wear a collarless shirt. Using the anterolateral chest wall skin as a donor site of full thickness skin graft, we could get large skin graft which has good color and texture match, and minimize the donor site morbidity.

V. CONCLUSION

Full thickness skin graft is a useful procedure in the reconstruction of facial skin defect. In cases of large graft is needed or patients are reluctant to get a neck scar, anterolateral thoracic wall skin can be a good option in the respect of graft quality and donor site morbidity.

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