Reconstruction of Lower Face with Submental Artery Perforator Flap

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For the methods to reconstruct defected soft tissues on face, a skin graft, local flap, free flap, tissue expander are used in various ways, considering location and size of the lesions.1 What is the most important point for their reconstruction is to make them not to be appreciable by using a similar shape, color and material.1 In case that the size of defects is not large, the result of reconstruction is told to be the most excellent if tissues are supplied from adjacent parts of the neck as donating ones because they are more similar to the face than other parts of a body. Approximately, 20 years have been passed since the submental artery flap, one of various neck flaps, was introduced by Martin et al.2 in 1993. As a qualified flap, it has been used popularly at clinics. But this flap may cause some damages on marginal mandibular branch of facial nerve at the lower jaw when lifting is done. In order to reduce this risk, flap harvesting should be carried out with special caution. This is too much for the beginners. It may take more time.1

Recent topic for micro surgical flap is about the perforator flap, which has been also studied for the case of submental artery and good results are reported as well. But the report about the submental perforate flap is so rare in Korea that these writers have performed operations with the perforator flap to patients with skin basal cell carcinoma which occurs at the lower face. Their results are so satisfactory that the authors are presented the submental artery perforator flap and literature reviewed.1,3

CASE REPORT

The patient was a lady with an age of 67. She came to the hospital because of mass. It was located between her right lower lip and the jaw. Its size was 2.5×2.5 cm. It was black, protuberant and of analgesia. With a biopsy, it was confirmed to be skin basal cell carcinoma (Fig. 1). The operation was performed under general anesthesia. For excision, from tumor to the point where the tissues were regarded as normal were removed in addition of 1 cm. For the base part, the part just above muscle fascia was included (Fig. 2). The range of tumor was identified through frozen biopsy while the operation was being performed. After that, for reconstruction of excisional part of the defected soft tissues, the perforate flap...
for submental artery was performed, whose processes are as follows: After letting the patient’s head back, the border of jaw bone was marked on the skin. Then, the location of the perforate was marked by using Doppler ultrasound. In order for the perforate to be centered at the flap, an oval shape was designed a little slantly, with which the primary suture for the donating part was performed with ease. Putting on Loupe, cutting was done to dermis with the no. 15 knife. When dissecting was done to downward including subcutaneous tissues, platysma was seen. Then, further dissecting for muscle fascia was stopped. The direction was changed to the center of the flap, which made reached near the perforate through Doppler and visual field test. These processes were performed equally through cutting the margin of the flap, with which perforating vessel was made exposed. At the flap harvesting, especially soft tissues around perforating vessel were included a little bit and special caution was taken in order to reduce occurrence of venous congestion after the operation (Fig. 3, 4). When the flap harvest was finished, the flap was completed where pedicle was an axial, and the limit of the movement was disappeared. After a subcutaneous tunnel was made between the defected part and donating one, the perforate flap was moved and then the primary suture was
performed at the defected part and donating one (Fig. 5). It took only around 40 minutes, in short, from harvesting the flap to inserting it. Immediately after the operation, there was some venous congestion but it wasn’t so serious that only its process was observed. The congestion was disappeared around 3 to 4 days after the operation. One year has been passed since the operation was performed and there is no opinion about cancer recurrence. For the operational scars, the patient is satisfied (Fig. 6).

**DISCUSSION**

What is the most important point for reconstruction of defected parts is to reconstruct them with very similar tissues (like with like). In case of the face, cosmetic problems are so much more important than in any other parts of the body that local flap has been preferred using adjacent tissues whose color and texture are similar, if possible. Therefore, various local flaps were introduced at the neck part, including platysma flap, infrahyoid myocutaneous flap, etc. But they have some bad points: the movement of the flap is limited or reproducibility falls behind. The submental artery flap was introduced by Martin et al. in 1993 for the first time and it is the most certain method among several local flaps. But, for its anatomic structure, it may cause some damages on marginal mandibular branch of facial nerve at the lower jaw when the flap is harvested. In order to reduce this risk, flap harvesting must be carried out with special caution. This is too much for the beginners. The operation can be lasted for a long time and adjacent issues can be damage.

According to Ishihara, the perforate for submental artery exists with a fixed amount. The number of the perforate is told to be one at 62% and two at 38%. It is located between 3 cm and 5 cm from facial vessel which are felt by touch at the jawbone. The diameter of the perforate flap is around 2 mm. It is told to come out by penetrating platysma. The size of the perforate flap is told to be available to $10 \times 5$ cm.

When the submental perforate flap is compared to the submental artery flap, the strongest points of the submental perforate flap are as follows: The operation is very easy and quick because the perforate is peeled-off at platysma. It is very safe because there is no possibility for marginal mandibular branch of facial nerve at the lower jaw to be damaged. In some cases, it can be done under local anesthesia. Also, platysma can be preserved. The weak points are as follows: With the submental artery flap, the movement of the flap is comparatively so free up to lower part of the forehead that the locations can be selected in various ways. On the other hand, with the perforate flap, the length from platysma to skin is only around 2 cm. Therefore, reconstruction is limited only to lower face. Definitely, the length of perforator flap becomes longer if flap harvesting is done more downward along with platysma, which can make the flap moved a little further.
The authors have experienced that, for the reconstruction of skin basal cell carcinoma located at the lower part of the face, the submental perforate flap can result in esthetical excellence. Therefore, the submental perforate flap is considered to be a useful method among several ones to reconstruct the lower face.

ACKNOWLEDGEMENTS

This research was supported by the 2014 scientific promotion program funded by Jeju National University.

REFERENCES