Acromiocervical Flap As One of the Modality To Reconstruct Post-Burn Neck Contracture: A Case Report

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Abstract: Postburn neck contractures are frequent and may cause gross facial deformity and severe functional disability. Reconstruction of these deformities is challenging, especially to plastic surgeon. Several methods have been published including skin graft, local flap and free flap.

Patient and Method: The case presented in this paper is a postburn neck contracture which had been managed by two plastic surgeons in two different hospitals. This deformity limits the normal function of eating, speaking and appearance of this patient. Skin graft was used to correct this deformity but in the next few months neck contracture recurred.

Result: It results in minimal disability and in overall improved functional and appearance outcome. We report our experience using the acromiocervical flap on a case for reconstruction of neck contracture with a goal to prevent recurrence.

Summary: Skin Grafting is not an easy and simple procedure for reconstruction of the neck contracture. It requires comprehensive rehabilitation program including prolonged neck splinting and patient compliance. Considering those difficulties acromiocervical flap can be one of the modality to reconstruct post burn neck contracture because it is relatively simple and reliable.

Keywords : *Burn, neck contracture, acromiocervical flap*

Abstrak: Luka bakar yang mengenai daerah leher merupakan kasus yang sulit dan sering dijumpai. Luka bakar leher mengganggu fungsi gerak dan penampilan akibat kontraktur dan deformitas yang serius pada wajah. Hasil rekonstruksi yang memuaskan untuk kasus kontraktur leher merupakan tantangan bagi seorang spesialis bedah plastik. Beberapa teknik rekonstruksi kontraktur leher telah banyak dipubilkasikan, skin graft, flap local, flap regional maupun "free flap".

Pasien dan Metode: Kontraktur akibat luka bakar leher pada kasus ini telah ditangani oleh dua orang spesialis bedah plastik di dua rumah sakit yang berbeda dengan menggunakan modalitas skin graft. Namun di kemudian hari timbul masalah kontraktur leher ulang yang mengganggu fungsi bicara, makan, minum, dan penampilan. Kami melaporkan penggunaan acromiocervical flap pada kasus tersebut dengan harapan dapat mencegah timbulnya kontraktur ulang.

Hasil: Rekonstruksi kontraktur pada luka bakar terutama daerah leher untuk mencegah terjadinya kontraktur ulang dengan menggunakan acromiocervical flap merupakan salah satu pilihan karena mudah dikerjakan, *reliable* dan memberikan hasil secara kosmetik lebih baik.

Ringkasan: Skin graft untuk rekonstruksi kontraktur akibat luka bakar leher sebaiknya dipertimbangkan betul manfaatnya karena pengerjaannya tidak mudah, perawatan pasca operasinya tidak sepenuhnya dapat dikuasai karena memerlukan program rehabilitasi yang komprehensif walaupun telah menggunakan bidai leher sekalipun.

Kata kunci: *Burn, neck contracture, acromiocervical flap*

The neck is a transtitional area between the cranium and clavicles which connects the head with the body and the upper extremity. Some important organs with certain functions lie in the neck, such as larynx, trachea, esophagus and thyroid, these organs are enveloped by the superficial and deep cervical fascia. Muscles in the neck are

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Platysma and Sternocleidomastoideus which have the primary role in neck range of movement.[1]

Burns on the neck usually damaged the Platysma and Sternocleidomastoideus muscles because of their superficial location. These damages posed serious problems in the neck range of movement and appearance, because of neck contracture. In neck contracture, there are at least four deformities that could happen: (1) Retraction of the lower lip, (2) Retraction of the lower palpebral, (3) Increased tension on the face and neck areas so the size and thickness of the scars will increase severely everyday, (4) complex combination of the three deformities above. In children, neck contracture can also disturb the mandibular growth.[2]

Post-burn neck contracture reconstruction is still a big problem in Plastic Surgery. Several reconstruction techniques have been widely published, including skin graft, local flap, regional flap and free flap. All these techniques require contracture release by removing scar tissue and then choose the proper modality to close the defect.[3-5]

Skin graft is one option which is often being used to close the defect, depending on the skills of the surgeon and minimal donor site morbidity or complications. But the result does not satisfy the patient nor the surgeon, and the long-term use of pressure garment or splint is not pleasant for the patient. Actual reconstruction of the neck contracture was first started in 1842 when Mutter reported about the "Autoplasty Technique" using postero-lateral superiorly based neck flap.[6-10]

PATIENT AND METHODS

A 22-year-old man with history of 44% burns on the face, neck, anterior trunk and bilateral extremities region caused by kerosene-stove explosion eighteen months before admission, is presented in this paper. In the acute phase, he was treated in a local hospital for seven and a half months. During the care, several debridement and proper burn dressing were performed. But the patient did not comply to the use of neck splint (collar neck) to prevent neck contracture. Patient was discharged from the hospital and has never been seen in outpatient clinic until 4 months later. Then he developed neck contracture.

Patient was referred to another hospital for the next five months. During the second treatment, he received several surgical debridement and STSG procedures on the neck and anterior trunk. After these procedures

Figure 1. Pre operative pictures, multiple contractures in the face, neck and anterior trunk region

patient was suggested to use neck splint, but his compliance was poor. When the patient came to Cipto Mangunkusumo Hospital, he was diagnosed with multiple contractures on the neck, bilateral axilla and right elbow. Patient was complaining about the difficulties to eat, drink and speak due to scar retractions (Figure 1). We decided to reconstruct the neck contracture using acromiocervical flap to prevent relapse of the contracture (Figure 2-4)

DISCUSSION

Neck contracture may interferes with the function and appearance of the patients. In general, using local flap to close the defect can treat the treatment of scars in minimal or moderate size. If larger defect is found, we should use regional flap or skin graft. In this patient, he was treated previously by STSG, but the contracture recurred due to patient's non compliance in using neck splint. Skin graft procedures for neck contracture should be followed by neck splinting and require high compliance from the patient to follow the rehabilitation treatment. The neck splint should be used until the remodeling or maturation phase in wound healing which could last for months or years. Skin flaps can also be used to treat neck contracture. The skin flap provides long-term and more predictable outcome than STSG, and do not require postoperative splinting.

In this case, we used acromiocervical flap to reconstruct the neck contracture. This was the most possible local flap that still colud be be harvested in this patient. The acromiocervical flap has several advantages, which are easy to be harvested and constant anatomical base. It also has sufficient thickness, and the extent of this flap makes it possible to close a circular defect in the neck region. The outcome of acromiocervical flap in this case was aesthetically and functionally acceptable. Donor region usually can be closed primary, but in this case we closed the donor site by STSG due to the extensive scars on the anterior trunk.

Another modality to reconstruct the neck contracture is free flap. It has been reported that free flap could provide better functional result in post-burn contracture and

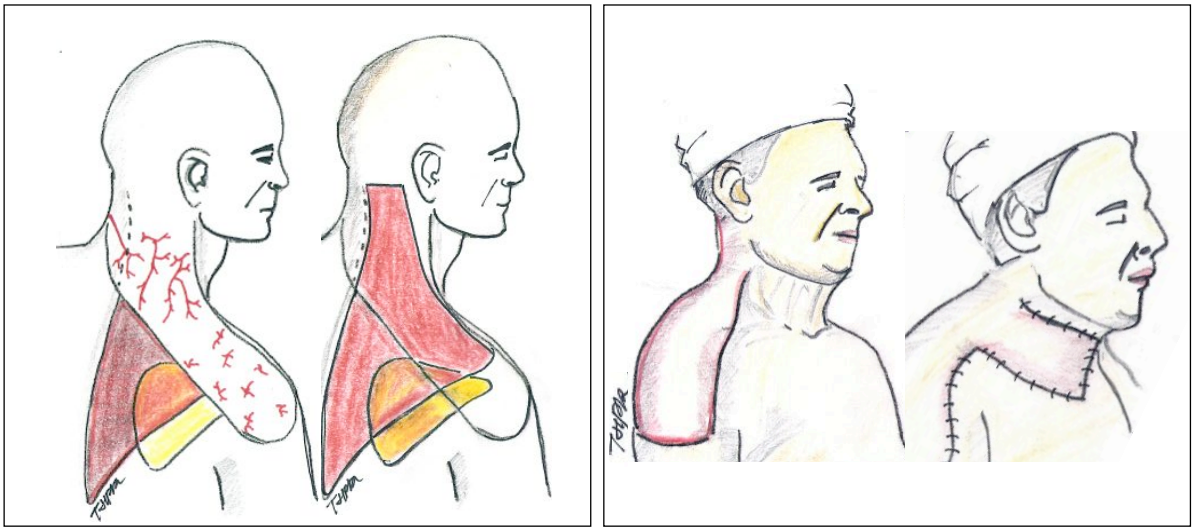

Figure 2. Acromiocervical flap design.

Figure 3. Intra operative flap dissection, the flap size was 9x30cm, perforator of the flap was auricularis artery and posterior occipital artery (middle), flap insetting in the neck, the raw surface was closed by STSG (right).

Figure 4. Post operative view

has a better aesthetic appearance. But the free flap procedure requires a high-skill microsurgeon, microsurgery equipments and long duration of operation.

SUMMARY

Reconstruction of post-burn neck contracture using acromiocervical flap is technically easy to harvest, reliable and provides good result in aesthetic and function. Another advantage for the patient is postoperatively more comfortable because the patient does not have to use splint, and rehabilitation program can be started earlier to prevent relapse in neck contracture.

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