Bilateral unexpanded supraclavicular flaps for single-stage resurfacing of anterior neck contractures

ABSTRACT
Context: Anterior neck scar contracture causes functional and esthetic deformity which is difficult to conceal. Supraclavicular flap is an accepted modality for neck scar reconstruction but has limitations of reach and skin deformation if used as a pedicled flap. Island flap and propeller modification can allow primary closure of donor site.
Aims: The aim of the study is to assess the efficacy of bilateral supraclavicular unexpanded flaps in single-stage release and resurfacing of anterior neck contractures.
Subjects: Seven cases of anterior neck contracture were operated with release and flap cover. Grades of contracture treated were Onah 2b, 2c, 3b and 3c.
Methods: All cases underwent single stage release and resurfacing with bilateral propeller island supraclavicular flaps. Patients were followed up to an average 30±10 months using extension angle to check for recurrence.
Results: All cases achieved satisfactory cosmesis at 1 year followup. The average increase in neck extension angle achieved at 1 year was 22.9 ± 10°. No recurrence of contracture was noted. One flap had partial necrosis requiring skin graft. Two cases had axilla scarring requiring graft closure for donor site. Average flap length was 14.4 ± 1.7 cm. Average flap width was 7.1 ± 1 cm.
Conclusions: Bilateral supraclavicular flaps can be used to resurface anterior neck contractures in a single stage with acceptable donor-site morbidity.
Keywords: Anterior neck contracture, bilateral supraclavicular flap, island propeller flap

INTRODUCTION
The neck connects the head with the body and is functionally and anatomically designed to achieve maximum three-dimensional motion. Neck contractures are associated with esthetic and functional deficit. Severe contractures can result from deep tissue damage involving the lower lip, chin, neck, and chest. Thus, neck scar contracture patients suffer from restriction of neck movement, shoulder stiffness, compensatory kyphosis, visual field deficits with diplopia, lower lip ectropion, incomplete oral occlusion with drooling of saliva, and difficulties with feeding, swallowing, posture, and chin development.

The ideal neck reconstruction will preserve the cervicomental angle and possess color and contour match with the surrounding unburnt neck skin. As per Onah, return of the patient to Stage 1 of neck movement is the aim of anterior contracture release. The means of resurfacing the neck defect has evolved from split-thickness grafts to expanded full-thickness grafts, axial pattern flaps to island perforator propeller flaps, microvascular tissue transfer, tissue expansion and prefabrication, and skin substitutes.

The demographic profile of postburn neck contracture does not usually allow multistaged and expensive modalities of...
treatment. The aim of this study was to perform single-staged release and esthetic reconstruction of anterior neck contractures using bilateral unexpanded supraclavicular flaps.

**SUBJECTS AND METHODS**

Seven female patients presenting with anterior neck contractures to the Department of Plastic Surgery underwent the procedure and follow-up between 2015 and 2019. Age of the patients ranged from 24 to 65 years. The duration of neck scar contracture was between 12 and 360 months. Institutional Ethics Committee approval was obtained for the study, and informed consent was documented for all cases.

The patients were examined for the nature of contracture and the presence of unburnt skin in the supraclavicular territory and offered bilateral supraclavicular flap reconstruction if they fit the inclusion criteria:
1. No previous block dissection of neck
2. No neck irradiation
3. Supraclavicular flap territory not burnt
4. ASA 1–2 grade.

The Onah classification was used in this study which divided neck contractures into Grade 1–3 for anterior contracture. Each grade was further subdivided into Class a, b, or c.

- **Grade 1:** Patient able to flex the neck and bring the neck and jaws to anatomical position while erect. Limited extension away from the anatomical position with inability to place an object located on the ceiling, at 90° to horizontal plane while sitting, within the visual field
- **Grade 2:** Able to flex the neck and bring neck and jaw into anatomical position while erect. Significant pull on the uninvolved lower lip on attempting extension from anatomical position
- **Grade 3:** Anterior mentosternal contracture. The patient’s neck is contracted in the flexed position and the chin (occasionally lip) is restrained down to the anterior trunk
  - Subgroup a: Mature contracting band not exceeding two fingers breadth
  - Subgroup b: Contracting band is broad, but sufficient supple adjacent neck skin to cover the resultant defect
  - Subgroup c: Contracting band is broad involving most or all of the anterior part of the neck and/or number of contracting bands in the neck, including mentosternal band.

**Photography and extension angle**

Patient outcomes were documented using photographs. The neck extension angle was compared before surgery and at 3 weeks and 1-year postoperative using the method described by Devi *et al.* The patient was photographed in lateral view against a neutral background. The patient was asked to extend the neck as far as possible, keeping gaze upward to the ceiling while maintaining lower lip seal. This gave us the maximum extension possible for the individual without facial disfigurement. Using Adobe Acrobat Pro-DC software, three lines were drawn. Line A was drawn in the Central Axis of patients’ body, Line B was drawn from center of the auditory meatus to lower border of the orbit to represent the Axial Plane of the skull, and Line C was drawn parallel to Line B passing through the mentum. The angle between Line C and Line A was measured as the Extension angle [Figure 1].

**Flap marking**

The supraclavicular flap territory is based on the supraclavicular perforator of the transverse cervical artery. The flap territory extends posteriorly to the anterior border of the trapezius muscle, anteriorly to the lower border of the clavicle, laterally to the mid-deltoid muscle, and medially up to the anterior contracture margins.

Using a 10 MHz handheld Doppler probe, the perforator was identified within the triangle bounded laterally by the external jugular vein, medially by the clavicular head of the sternocleidomastoid, and inferiorly by the clavicle.

**Contracture release**

All patients underwent orotracheal intubation with fiberoptic laryngoscope used in three cases. The patient was positioned with shoulder pillow and neck extension given. Using scalpel and electrocautery, the anterior neck scar contracture was excised in the supraplatysmal plane, excising the investing layer of cervical fascia with the scar. The scar and skin were removed as one unit. The release extended beyond the mid-axial plane at the level of the hyoid bone to release the submental unit from the anterior neck subunit.

![Figure 1: Extension angle measurement](image)
The submental unit was involved in six of our seven cases. The submental scar was released from the anterior neck scar and then excised along with cervical fascia. The platysma was divided at the hyoid bone level to create a superior segment and an inferior segment. The superior segment was elevated between the mandibular angles up to the inferior border of mandible and then sutured to the inferior border of the mandible.

Flap elevation
Head extension and lateral rotation were performed on table to confirm the adequacy of contracture release. The craniocaudal dimension of defect was measured from mentum to suprasternal notch and divided by two for flap width marking. Bilateral flaps were marked within the flap territory, fusiform in shape allowing primary closure of donor site.

Flap elevation was begun laterally, including the deltoid fascia into the flap. The flap edges were sutured to the fascia to prevent shearing. The perforators from the deltoid branch of thoracocromial axis and posterior circumflex humeral artery and trapezius musculocutaneous perforators were divided. The supraclavicular axial vessel was identified by flap transillumination and traced up to its origin from the transverse cervical artery. The fat and lymph nodes around the origin were preserved, no attempt being made to skeletonize the vessel. The middle supraclavicular nerve was preserved in the flap. The external jugular vein had a venous tributary arising from the flap near its pedicle which was preserved with minimal dissection allowing for flap rotation.

The flaps were rotated into the defect, as per the lie of the defect, the flaps were rotated between 130° and 200°. The flaps were fixed with tacking sutures stretching out to the edges of the defect and the tongue-shaped medial extension of the flap was used to cover the perforator location. The flaps were left to perfuse in the new position and donor area closure performed in two layers using 2/0 polyglactin and 2/0 Nylon mattress sutures over suction drains. In two cases, the axilla was unilaterally scarred with restricted skin movement and the defect over deltoid was closed with skin graft. The donor defect up to midclavicular region in all cases was closed per primum. The central closure of supraclavicular region was aided by mobilization of infrACLavicular and supratrapezius skin.

Flap inset and postoperative care
The final inset of the flaps was performed using 3/0 polyglactin and 4/0 nylon sutures. The suture lines passed obliquely across the neck and did not undergo hypertrophy with neck extension. Patients were given a padded dressing and allowed sitting up position on the evening of surgery. The next day, the patients were mobilized for feeding and on the second postoperative day the patients were mobilized out of bed and drains removed. Physiotherapy for neck flexion-extension, lateral rotation and lateral flexion, and shoulder abduction was performed on day 3 and patients were discharged by day 5.

A soft cervical collar was given to retain the padded dressings and for patient comfort and exercises were continued for 3 weeks. At 10 days, sutures were removed and the patient was commenced on silicone gel for the suture lines. At 3 weeks, patients were counseled regarding examination for scar hypertrophy, pressure garments for face–neck–body contour, exercises for neck and shoulder mobilization, and resumption of all activities of daily living. At 1 year, patients were called for photography and documentation of satisfaction and thereafter followed up telephonically to document the recurrence of contracture.

RESULTS

Seven cases of anterior neck contracture were treated in our unit with single-stage release and resurfacing with bilateral unexpanded supraclavicular flaps. The patients were all of working age group and unable to afford or follow-up for tissue expansion or multistaged treatments [Table 1].

The patients underwent excisional release of the submental and anterior neck scar contracture. Platysmaplasty was performed in all cases to deepen the cervicomental angle. No patients required strap muscle or sternocleidomastoid division. Flaps were inset into the defect after confirming full neck extension and lateral flexion. Additional procedures were elbow contracture release and breast and inframammary scar excision and skin graft resurfacing. Average flap length was 14.4 ± 1.7 cm. Average flap width was 7.1 ± 1 cm. Flaps were rotated between 130° and 210° [Table 2].

Two patients required skin grafting of donor site. One patient had a partial unilateral flap necrosis and required a delayed skin graft. One case of type 2 diabetes had loss of submental FTSG and required delayed submental skin grafting. In five cases, both submental and anterior neck units were resurfaced with supraclavicular flaps, in one case submental FTSG was performed and one case did not have submental involvement [Table 3].

The patients were followed up on discharge at 3 weeks and 1 year to document the extension angle and to compare it to the preoperative extension angle. Average follow-up was
was performed. Postoperative course and physiotherapy were uneventful, and she commenced a soft cervical collar and face mask at 3 weeks. There was no scar hypertrophy and neck extension improved from 107° preoperative to 114° at 3 weeks and 139° at 1 year. Lip seal and facial and neck esthetics were judged excellent by the patient at 1-year follow-up [Figures 2-6].

Case 1
A Para 2 homemaker, aged 30, with 1-year duration, Grade 2C (Onah) neck contracture was operated. Submental and anterior neck subunits were resurfaced with bilateral supraclavicular flaps. Primary donor site closure over drains

Table 1: Patient parameters

| Number | Age  | Duration months | Lip ectropion | Onah Grading | Chest scar | Axilla scar | Other pathology                          |
|--------|------|-----------------|---------------|--------------|------------|-------------|------------------------------------------|
| 1      | 30   | 12              | No            | 2c           | No         | Yes         | Extrinsic lip ectropion                  |
| 2      | 25   | 16              | No            | 2c           | No         | No          | Right elbow flexion contracture          |
| 3      | 65   | 360             | Yes           | 3b           | No         | No          | Intrinsic lip ectropion + drooling       |
| 4      | 28   | 264             | Yes           | 3c           | Yes        | Yes         | Extrinsic lip ectropion + retrognathia   |
| 5      | 26   | 30              | No            | 2b           | No         | No          | Hypertrophic scar tendency               |
| 6      | 24   | 48              | No            | 3c           | Yes        | No          | Extrinsic lip ectropion + bilateral inframammary contracture + webbing |
| 7      | 40   | 60              | No            | 2b           | No         | No          | Extrinsic lip ectropion + bilateral inframammary contracture + webbing |

Table 2: Defect and flap dimensions and rotation

| Number | Defect size CC × ML (cm) | Flap (left) CC × ML (cm) | Rotation (left) | Flap (right) CC × ML (cm) | Rotation (right) |
|--------|--------------------------|--------------------------|-----------------|---------------------------|------------------|
| 1      | 17×15                    | 8×15                     | 130             | 9×17                      | 180              |
| 2      | 15×14                    | 8×15                     | 150             | 7×15                      | 180              |
| 3      | 20×12                    | 10×16                    | 150             | 10×18                     | 170              |
| 4      | 14×14                    | 7×14                     | 210             | 7×14                      | 150              |
| 5      | 14×11                    | 7×18                     | 150             | 7×13                      | 210              |
| 6      | 15×13                    | 7×13                     | 150             | 8×13                      | 210              |
| 7      | 14×16                    | 7×16                     | 200             | 7×15                      | 160              |

Case 2
A domestic worker, aged 65, with type 2 diabetes, suffering from a 30-year-old neck contracture, Onah Grade 3b,
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Table 4: Extension angle

| Parameter     | Extension angle preoperative | Extension angle at 3 weeks | Extension angle 1 year | Difference in angle at 1 year |
|---------------|------------------------------|----------------------------|------------------------|-------------------------------|
| Mean          | 106.43                       | 119.43                     | 129.29                 | 22.86                         |
| SD            | 15.84                        | 15.2                      | 12.89                  | 9.89                          |
| Minimum       | 80                           | 105                       | 105                    | 12                            |
| Maximum       | 132                          | 132                       | 144                    | 33                            |

SD: Standard deviation

Figure 2: Case 1 Preoperative Onah Grade 2c neck contracture

Figure 3: Flaps elevation and defect

Figure 4: Rotation of flaps

Figure 5: One-year postoperative frontal

with lower lip ectropion and drooling was operated. Lip contracture necessitated release under sedation followed by orotracheal intubation. Submental and anterior neck subunits were resurfaced with 10 cm × 16 cm and 10 cm × 18 cm flaps. Simultaneous elbow contracture was released. Lateral donor site on the left dehisced at 1 week and required split skin graft cover. Six months postprocedure, the lower lip release and FTSG resurfacing was combined with cosmetic Z plasty for lateral neckband as a daycare procedure. She received physiotherapy at 2 weeks and soft collar and face mask at 3 weeks. Extension angle improved from 105° preoperative to 120° at 3 weeks and 137° at 1 year. Lip seal was adequate and facial and neck esthetics were excellent for the patient at 1 year [Figures 7-11].

Table 4: Extension angle

| Parameter     | Extension angle preoperative | Extension angle at 3 weeks | Extension angle 1 year | Difference in angle at 1 year |
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| SD            | 15.84                        | 15.2                      | 12.89                  | 9.89                          |
| Minimum       | 80                           | 105                       | 105                    | 12                            |
| Maximum       | 132                          | 132                       | 144                    | 33                            |

SD: Standard deviation

Case 3
A hotel employee, aged 28, presented with a 22-year-old neck contracture, Onah Grade 3c, with symmastia and inframammary contractures. Poor Mallampati score and retrognathia required fiberoptic laryngoscope-aided orotracheal intubation. Submental and anterior neck subunits were resurfaced with 7 cm × 14 cm bilateral supraclavicular flaps. Left axillary scarring necessitated skin graft closure over left deltid. Inverted T excision of symmastia and inframammary fold creation with split-thickness skin graft (STSG) resurfacing was done. Postoperative physiotherapy was started after 5 days, and cervical collar, face mask, and body vest at 3 weeks were commenced. She returned for improving neck definition
and underwent flap subcutaneous fat debulking after 6 months. Neck extension improved from 80° preoperative to 105° at 3 weeks and 1-year follow-up. Extrinsic lip ectropion improved with neck release. She was advised orthognathic and orthodontic therapy for chin definition and occlusion. Lip seal was excellent and neck esthetics were good at 1-year follow-up [Figures 12 and 13].

**Case 4**

A home nurse, aged 24, presented with a 4-year-old neck contracture, Onah Grade 3c, with symmastia and inframammary contractures and hypertrophic scar tendency. Neck scoliosis necessitated fiberoptic orotracheal
intubation after release under sedation. Submental and anterior neck subunits were resurfaced with bilateral 7 cm × 13 cm and 8 cm × 13 cm flaps. Primary closure of donor sites was achieved over drains. Postoperative course and physiotherapy were uneventful and she started soft cervical collar and face mask at 3 weeks. At 6 months, she returned for symmastia release, bilateral inverted T inframammary fold resurfacing with STSG, and right breast mastopexy. She developed hypertrophic scarring along neck folds which resolved with six sessions of intralesional triamcinolone with silicone gel application. Extension angle improved from 112° preoperative to 118° at 3 weeks and 125° at 1 year. Lip seal, facial, neck, and breast esthetics were judged excellent at 1-year follow-up [Figures 14-17].

DISCUSSION

Neck contracture release and resurfacing has evolved to match the requirements of the patient. The plastic surgeon has to decide the best option based on the type of scar and contracture, the patient's ability for expenditure and time off from work and the technical points of reconstruction. These include anticipated defect, depth of excision, surrounding structure involvement, whether local flap options are available, and possibility of utilizing microvascular, tissue expansion and prefabrication techniques to achieve esthetic and functional reconstruction of the neck.

The neck contracture takes precedence over other burn reconstructive surgeries for torso and limbs, as neck extension is essential for providing general anesthesia for future surgeries. Neck contracture results in kyphoscoliosis and loss of lower lip seal resulting in difficulty in vision, balance, feeding, swallowing, and speech. The stigma arising from a scar contracture in the highly visible neck area restricts ability to interact in society, find a job, travel for education, or get a life partner.

In the Indian scenario, skin graft is still the mainstay for release and resurfacing of severe neck contractures. Devi et al.[3] classified their patients as per Onah grading and focused on improving the extension angle to attain Onah Grade 1 neck movement. Type 1 contractures received Z plasty, type 2 contractures received excisional release and either local transposition flaps or supraclavicular flaps, and type 3 contractures were treated with excisional release and skin grafts. Mody et al.[5] in a study of 22 cases, performed incisional release in 41% versus excisional release in 59% and resurfaced using skin graft in 86% cases versus 14% receiving flaps. Onah[2] in Nigeria, identified 22 of 41 cases as being Grade 3b and performed skin grafting for the majority of these cases.

El Hadidy et al.[6] in a study on burn wounds covered with skin grafts studied a group of 25 patients grafted between day 25 and 35. They established, in cases of late burn excision, that meshed and nonmeshed graft contracted to mean

![Figure 12: Lip ectropion with Grade 3c contracture](image12)

![Figure 13: Esthetic Grade 1 neck and good lip seal](image13)

![Figure 14: Scoliosis with Grade 3c contracture](image14)

![Figure 15: Esthetic Grade 1 neck with correction of scoliosis](image15)
wound size of 40.5% and 51.5% respectively. Even allowing for subsequent grow back, meshed graft achieved 69.5%, whereas nonmeshed graft achieved 75.5% of mean wound size. Waymack[7] studied 143 cases of pediatric neck release with Z plasty and incisional release with skin grafts and noted contracture recurrence rates of 81% and 62%, respectively. The use of a neck hyperextension brace for 1-year postoperative reduced recurrence rate to 17%; however, this required patient compliance. A multicenter randomized control trial in 2017 compared perforator-based interposition flaps to full-thickness grafts for burn scar contractures. In this study, Stekelenburg et al.[8] identified a significant difference in mean surface area between flaps and skin grafts at 3 months (123% vs. 87%, \( P < 0.001 \)) and at 12 months (142% vs. 92%, \( P < 0.001 \)). Subjective scoring in Patient Observer Scar Assessment Scale also favored interposition flaps over full-thickness grafts.

Zhang et al.[9] defined the cervicomental angle as the main focus for neck contracture release. They proposed excisional release at the level of hyoid bone beyond the midaxial plane with fishtailing, aggressive excision of cervical fascia with scar over the lip/chin and anterior neck, incisional release for submental subunit, platysmaplasty with augmentation of mandibular contour and genioplasty and resurfacing using microvascular flaps for lip/chin/submental units, and skin graft for anterior neck subunit. They did not advocate expanded supraclavicular flaps citing multiple operations and hospital stay. Their patients received a neck brace at 2 weeks and wore it for up to 6 months postoperative.

Luo et al.[1] advocated a two-stage procedure. In the first stage, targeting the anterior cervical and submental region, they performed cicatrix resection, contracture release, division and elevation of the platysma to form two platysma flaps, and skin grafting. After 3–6 months, targeting the mental region, they performed scar resection, correction of lower lip eversion and reconstruction with free parascapular skin flap. They focused on correction of cervical contour and movement with first surgery and then correction of mental region defects up to 8 cm width with free flaps to restore chin projection. All the cases received tailored elastic bandages and extension splints between 3 and 6 months.

Microvascular reconstruction of the anterior neck has received attention in recent years. Upadhyaya et al.[10] in 2013, advocated full radical release of the anterior neck from menton to sternum and resurfacing with free scapular flap, radial flap or groin flap anastomosed to superior thyroid, or facial vessels. Local flaps were either unavailable in the case series or would have resulted in disfiguring scars in areas of visibility. Parwaz et al.[11], in 2014, proposed the free parascapular flap anastomosed to facial artery for moderate-to-severe anterior neck contractures. Scars involving more than two-thirds of the submental and anterior neck subunits would be not amenable to local flaps and the parascapular flap was preferred for anterior neck vertical scar defects.

In our case series, patients were counseled regarding the need for splinting after skin grafting and the possibility of shoulder scarring and the need for shoulder physiotherapy after supraclavicular flap surgery. They chose the single-stage flap surgery without time off from work for expansion. The surgical scars for flap donor were hidden beneath any normal Indian female garment and no patient developed debilitating scar hypertrophy or shoulder stiffness. Lip and chin subunits were not resurfaced in our patients. Flap inset scars were running obliquely across the neck, unlike the vertical scars of microvascular transfer and thus could be concealed in neck flexion creases. No specific quilting sutures were performed; however, platysmaplasty adequately restored the cervicomental angle depth and chin projection.
Ability to perform physiotherapy after one to 2 weeks after surgery resulted in a steady and progressive improvement in neck extension angle on follow-up. There was no use of cumbersome splints with the attendant frictional ulcers, graft loss, and restriction of activity associated with skin grafts. Use of pressure garments with scar modulation as early as 3 weeks postoperative resulted in soft supple scars merging with the flap margins.

The supraclavicular flap was described by Cormack Lamberty, in 1979, describing the axial course of the vessel within the flap territory. In 1995, Khouri et al. described the expanded supraclavicular flap. Pallua et al., in 1997, described the island modification of the flap for resurfacing mentosternal contractures to prevent complications such as dog ear formation, cervical sagging, and need for subsequent revisions associated with pedicled flaps. Mentosternal scars were resected up to esthetic unit borders, and flaps were rotated at 130°–180° for inset into submental and anterior neck units. In 2000, Pallua and Magnus Noah advanced the tunneled supraclavicular flap for resurfacing the face, neck, and anterior chest without medial neck scarring. They identified two veins draining the flap, one parallel to the artery perforator draining into transverse cervical vein and one into the external jugular vein, and one or two supraclavicular nerves running in proximity to the vessels into the flap. They advocated preserving connective tissue around the vessel to prevent lymphostasis. In 2005, Pallua and von Heimburg presented an ultrathin preexpanded supraclavicular flap for face reconstruction.

Loghmani et al. studied 41 supraclavicular flaps and reported a high success rate (90.24%). The study stated that flaps >10 cm in width would not achieve primary closure. They utilized tissue expansion only for unilateral supraclavicular flaps. Vinh et al. studying 101 island supraclavicular flaps, stated that islanding the flap allowed it a 4–5 cm greater reach than pedicled flaps. The flap width of 10 cm for primary closure was reiterated and the island pedicle was refined by ligating the transverse cervical artery beyond the origin of the supraclavicular perforator. The possibility of supercharging the distal end of the flap by posterior circumflex humeral vessels was also described. Vinh described an 86.7% flap success rate in neck contractures and Pallua et al. noted an 87.5% success rate.

Studies done by Balakrishnan and Sivarajan have gone further to mobilize the pedicle into the neck by dividing the clavicular head of sternocleidomastoid, increase flap retrograde drainage by including the external jugular vein in the flap base, and improve sensibility by retaining the middle supraclavicular nerve in the pedicle. Margulis et al. has elevated the supraclavicular flap prefabricated with the thoracocromial vessels in a three-stage procedure for neck resurfacing. Yang et al. has described the expanded cervicoacromial flap based on the supraclavicular artery transferred in two stages for neck contractures. Su et al. has proposed the supraclavicular artery island flap as an option for head-and-neck reconstruction in vessel depleting necks postradiotherapy.

**CONCLUSION**

The criteria for successful resurfacing of burn scars require a thin reliable flap harvested close to the face/neck region with good skin texture match and a smooth hairless skin surface, with sensitivity and the ability to conceal the donor site with everyday clothing. The supraclavicular flap matches all these points. In addition, as pointed out by Ismail and Elshobaky, it has a quick harvesting technique, a wide arc of rotation if islanded, a pivot point just adjacent to the neck, and relatively simple surveillance as compared to free flaps, with single-stage reliable donor-site closure. In our study, we were able to utilize the bilateral supraclavicular flaps to resurface moderate-to-severe neck contractures and achieve aesthetic and functional goals in a single-stage surgery with minimal donor-site morbidity.

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**Conflicts of interest**

There are no conflicts of interest.

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