

Reconstructive Surgery for Patients with Head and Neck Cancer

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Abstract

In the last two decades, there have been several changes in the field of head and neck surgery. Reconstructions using microvascular free flaps completely replaced earlier methods. More significantly, there has been a paradigm change toward attempting to re-establish normal function and appearance in addition to reliable wound closure to safeguard key structures. In the current work, an algorithmic method to head and neck reconstruction of various types will be presented. Wherever possible, this approach will be evidence-based. Oncologic head and neck resections frequently produce intricate abnormalities that are difficult to restore. A multipurpose flap with the benefits of both a local flap (i.e., one that is dependable and simple to harvest) and a free flap is urgently needed (thin, pliable with good colour match).

In this work, we evaluated the supraclavicular artery flap's applicability to head and neck oncologic abnormalities. The transverse supraclavicular artery served as the foundation for the flap, which was employed as a pedicled fasciocutaneous. We evaluated the risks associated with this reconstructive technique as well as its effectiveness. Between 20011 and 2012, 11 instances received supraclavicular artery flaps, 5 of which were male and 6 of which were female. The average flap measured 5 to 6 cm. nine donor areas had to be mostly closed, and one needed split skin grafting. In a lesion affecting the lateral third of the midface, we only experienced one full flap loss, which was due to a band of restricting Skin Bridge over the vascular pedicle. Out of 3 patients who underwent augmentation pharyngoplasty following a near total laryngectomy, two patients experienced pharyngeocutaneous fistula (without flap loss). The supraclavicular artery flap is a thin, adaptable, dependable, simple to harvest tissue that can be used to reconstruct head and neck oncologic abnormalities with good cosmetic and functional results at both ends (donor and recipient).

Keywords: Reconstructive surgery; Neck dissection; Head and neck cancer surgery; Squamous cell carcinoma; pulmonary thromboembolism.

Introduction

Complex deformities from head and neck oncologic resections are difficult to reconstruct. Split thickness skin grafts, ultrathin flaps, local or free flaps, and other reconstructive techniques are all available for resurfacing this area. In order to restore both form and function in the face region, one must take into consideration the aesthetic units and create an adequately thin flap. Equally crucial are matching colour and texture. A loco regional flap should also leave the donor site with the least amount of morbidity possible and, ideally, be concealed by clothing [1]. The closer the donor location is to the recipient site, the more closely the skin will match the recipient site, according to Gillies' theory. Regional muscle flaps, such as the pectoralis major my cutaneous flap, can be challenging to manipulate during surgery and to place into a three-dimensional defect because of their weight. In female patients, the bulk from breast tissue further complicates handling and placement. Furthermore, young ladies worry about the resulting breast deformities. This area of the male body is substantially less hairy than the male anterior chest, making it useful for inner mucosal lining. Free flaps necessitate specialised microvascular training, extend patient operating times, and raise costs due to extended hospital stays and operating room time [2].

Head and neck reconstruction surgery is a rapidly evolving area. The expanding usage of microvascular free flaps is largely responsible for the advancements made in the last ten years. The anterolateral thigh, fibula osteocutaneous, and suprafascial radial forearm fasciocutaneous free flaps have all become popular flaps for repairing a variety of abnormalities. The reliability and adaptability of these flaps have grown as the anatomy of these flaps has become more familiar. The sole priority is no longer reliable wound closure without exposing essential structures. Every reconstruction aims to preserve function,

including speaking and swallowing, and to restore attractiveness. At the majority of centres, free flap success rates now consistently surpass 95% or greater. Additionally, reducing flap donor site morbidity is a crucial factor [3]. The preservation of recipient vessel alternatives and flap donor sites should also be taken into account because to the high rate of recurrence as well as long-term problems following large head and neck resections and reconstructions. The next paper will evaluate and explain projected results of an algorithmic approach to mid-facial, mandibular, oral cavity, and pharyngoesophageal reconstruction [4].

Materials and Method

This report is a prospective analysis of cases that underwent supraclavicular artery flap between 2011 and 2012, of whom 5 were males and 6 were females, after obtaining informed consent from the patients. There were 8 mucosal lining reconstruction cases, including 1 case of palate resection, 1 case of inferior alveolus following marginal mandibulectomy, 1 case of buccal mucosa resurfacing following composite resection for buccal alveolar cancer, 2 cases of full tubed hypo pharyngeal defects following circular pharyngectomy, 2 cases of partial hypo pharyngeal defects following near total laryngectomy, and 4 cases of cervicofa (2 from parotid composite defects, 1 after post

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auricular skin reconstruction following temporal bone and 1 cheek defect post oral cancer) [5].

Among the most challenging and contentious aspects of head and neck oncologic reconstruction is the management of mid-facial abnormalities. Prosthetic obturators, pedicled flaps, and free flaps are available options. Grafts or alloplasts may also be used occasionally. Due to their restricted volume and reach, pedicled flaps have lost some of their prior attractiveness. For certain patients with minor abnormalities, prosthetic obturators continue to be an excellent option. Obturators may be difficult or impossible to retain for extensive defects, especially in edentulous patients. Obturators are also not ideal for deformities that need resection of the soft tissues of the face, orbital contents, or orbital floor finally, some patients might not like the bother of having to constantly remove, clean, and replace their obturators for fit and/or hygiene reasons [6].

The most effective method for mid-facial reconstructions using different bony and soft tissue free flaps has been documented, yet there is still disagreement about it. The fact that the defects left behind by oncologic excision are so diverse is one of the main issues with reconstructing the mid-face. In addition to the maxillary bones, these anomalies frequently affect the soft tissues of the face, palate, and orbit, as well as a number of other facial and cranial bones. An understanding of the requirements for prosthetic rehabilitation, which is used not only in place of reconstruction in some cases but also frequently in conjunction with local and distant tissue transfer procedures, is necessary for successful outcomes in mid-facial reconstruction. This is in addition to mastering a wide range of reconstructive flaps and craniofacial plating techniques [7].

Discussion

The first person to depict and label the vessel arterial cervical is superficialis, which began as a branch of the thyrocervical trunk, was an anatomist, according to a Gillies citation from 1923. Kazanjian and Converse carried out the first clinical application of a flap in 1949, which refers to the shoulder region where military personnel are honoured. Mathes and Vasconez carried out the initial anatomical research in 1979, describing the vascular region and therapeutic applications in head and neck reconstruction. The cervicothoracic flap is the new name for the flap. In fact, Lamberty and Cormock introduced the supraclavicular fasciocutaneous island flap in 1979. He accurately identified the supraclavicular artery as a perforator that typically comes from the transverse cervical artery (93%) or suprascapular artery (7%). By doing in-depth anatomical studies and studying the vascularity of what is now known as the supraclavicular island flap, utilised for a range of head and neck oncologic abnormalities, researchers “rediscovered” this flap and made it popular [8].

In our study, the mean harvest time for supraclavicular artery flaps was 50 minutes, which is comparable to Chiu finding that it took less than an hour. In comparison to a supraclavicular artery flap, the average harvest time for a radial free forearm flap is 76 minutes, and additional time is needed for microvascular anastomosis. The vascular pedicle was not traced using a handheld Doppler. In the interest of oncologic safety, this surgery may not be necessary when there are nodal neck metastases at Levels 4 and 5-especially if the initial lesion is situated in the hypo pharynx. When the pedicle is used to resurface abnormalities above the mandible, it should not be tunnelled under restricting bands of the neck skin that lies above. Similar precautions should be taken to prevent pedicle torsion. The sole entire flap loss for a post-parotidectomy deformity was caused by these two circumstances [9].

Described the increased loss of cutaneous paddle and leak rates whenever the PMMF flap is inset for inner mucosal defects, Pharyngeal fistula after closure of pharyngeal defects was observed in 2 out of 3 patients; one was mild and was handled conservatively, while the other required a formal PMMF. Radial free forearm flap fistula rates have been recorded at 32%, while pectoral major my cutaneous flap fistula rates have ranged from 13 to 63%. Due to its flexibility, the supraclavicular artery flap can therefore be used to resurface both mucosal and outer cutaneous lesions with equal fistula rates without the need for specialist microvascular skills. One patient who was asthmatic and receiving steroid treatment postoperatively for her asthmatic condition experienced Epidermolysis and partial flap failure. Patient required unanticipated obdurate prosthesis to seal or nasal communication after receiving conservative treatment [10].

Except for two patients who required split skin grafting, donor site morbidity of the supraclavicular artery flap in our study was modest. Despite the fact that Chiu et al. reported 2 cases of shoulder cellulitis and 1 case of shoulder wound dehiscence, it should be emphasised that they did not routinely insert a drain below the flap. Such issues were not present in our study because we frequently used drains. There is a greater possibility of seroma formation postoperatively because to substantial anterior and posterior undermining of the flaps; suction drains prevent and aid in minimising wound problems.

Pectoral major flap donor site morbidity includes loss of the anterior axillary fold, distortion of the female breast form, and a small functional impairment brought on by muscle loss.

Radial free forearm flap donor site morbidity includes the requirement for skin grafts to seal the donor area, tendon damage, decreased grip strength, and sensory abnormalities [11].

In comparison to standard pectoral major or radial free for arm flaps, supraclavicular artery flap has no significant cosmetic or functional morbidity while concealing the donor site, particularly in females. With reports that flaps may now be made with the middle supraclavicular nerve included, flap usage is expected to increase. This needs to be weighed against the senior author’s most recent experience, which involved 2 cases of dysesthesia in a series of 6 patients following circular hypopharyngectomy and will be discussed in an update of a larger series (AMS) [12].

Conclusions

Despite its small size, our research suggests that certain locally advanced head and neck malignancies may benefit from surgery. The idea that surgery can be a crucial component of the treatment plan for T4b non-laryngeal head and neck malignancies and has given patients a survival advantage over alternative therapeutic modalities was supported by the data. It also seems sensible to provide post-operative chemo radiation to a patient who is having surgery for a T4b HANC. One drawback of our retrospective analysis is that we only focused on primary tumour excision and neglected to account for nodal disease. The relevance of surgery in advanced head and neck cancers, including primary laryngeal tumours, will be clarified by additional trials including more comprehensive data. Locally advanced T4b head and neck cancers are difficult to treat and emphasise the value of a multidisciplinary team approach since cases should be reviewed by plastic surgery, medical, surgical, and radiation oncology professionals. Of course, the patient’s decision and a thorough discussion of the available treatment options with the patient remain of utmost importance.

Conflict of Interests

None

Acknowledgement

None

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