

Head & Neck Cancer and Reconstruction: A Three Years Experience

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Head and neck cancer has been a great challenge to surgeons and physicians for a longtime. There is always some degree of morbidity associated with this cancer. This retrospective study looked at the head and neck cancer resections and reconstruction performed at Services Hospital and Shaukat Khanum Memorial Cancer Hospital over a period of last three years with review of literature.

Key Words: Hand & neck, cancer, reconstruction

Head and neck cancers develop at the expense of tissues of the facial cervical region, that is, between the base of the skull superiorly and the superior orifice of the thorax inferiorly. Eighty-five percent of head and neck cancers develop at the expense of the mucosa of the upper respiratory and digestive tracts or their appendages (such as the lymphoid tissue of Waldeyer's ring). The remaining 15% consist of cancers of the thyroid gland, salivary glands, skin, bones and cartilage vessels, nerves and soft tissue, each of these tumors obviously has its own specific features.

Materials and methods

The records of 57 patients who had undergone head and neck resection and reconstruction at the Services Hospital and Shaukat Khanum Memorial Hospital, Lahore from January 1996 to January 1999 were reviewed retrospectively. Data for age, sex, primary diagnosis, resection, reconstruction, adjuvant treatment, neck dissections, histology, adequacy of resection margins were extracted. The major pathologies, which needed resection, are in Table 1. A variety of reconstructive procedures requiring different sort of tissue transfer were performed as in Table 2a due to many reason (Table 1).

Table 1 Resections requiring reconstruction

Tumors	
Tongue	14
Floor of mouth	16
Retromolar trigone/mandible/alveolus	10
Cheek/buccal mucosa/oral cavity	8
Maxilla	2
Skin	21
Parotid/submandibular gland	7
Exposed mandibular prosthesis	1
Total	69

Discussion

The implications of head and neck cancer for the patient and his family are so complex that the time has long since passed that one individual physician can manage the entire problem. The entire spectrum of patient care, including patient education, diagnosis, treatment planning, treatment decisions, rehabilitation, social problems, require an integrated multidisciplinary team effort.

Table 2. Reconstruction

Lat Dorsi Myocutaneous flap	6
Pectoralis major flap	15
Deltpectoral flap	16
Forehead flap	5
Local fasciocutaneous flaps	12
Galeal/temporoparietal flaps	2
Scalp rotation flap	2
Split skin graft	18
Full thickness skin grafts	6
Total	78

Table 3. Adjuvant treatments

Radiotherapy	
Preoperative	4
Postoperative	19
Chemotherapy	1

Table 4. Block neck dissections

Block neck dissections	9
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Table 5. Histology

Squamous cell carcinoma	11
Well differentiated	11
Moderately differentiated	22
Poorly differentiated	13
Adenocarcinoma	3
Adenoidcysticcarcinoma	1
Mucoepidemoid carcinoma	1
Basal cell carcinoma	7
Haemangiopericyotama	1

Table 6. Adequacy of resection

Complete excision	42
Incomplete excision	14

Although head and neck cancer is not common but there is a significant morbidity and mortality attached to this condition in the adult population group. There has been significant advancement achieved in the diagnosis and staging of the disease but the treatment has still not altered the course of the disease and not accompanied by parallel improvement in survival¹. With the advent of multidisciplinary approach involving general surgeons,

otolaryngologist, plastic and maxillofacial surgeons and radiotherapists along with better anesthetic facilities and improved nursing and social rehabilitation, it has revolutionized the complex management of these patients. Modern methods of reconstruction in head and neck surgery has not prevented the decreased survival associated with this cancer, but it has certainly improved the morbidity resulting from extirpation of these cancers. The surgical treatment of advanced carcinoma of head and neck area often require extensive dissections, necessitating large flaps for reconstruction. In recent years, there have been more acceptances of immediate repairs following the removal of these large cancers. As a result, patients are more willing to undergo these extensive operations to improve their chances of cure, with reasonable expectations that an immediate reconstruction will provide adequate functional and cosmetic result. If the cancer has progressed beyond any hopes for cure, sometimes palliative surgery with repair may be offered to lessen the suffering. The new anesthetic developments along with ancillary support such as high running care, nutritional monitoring and correction along with the new concepts of skin circulation and availability of flaps have enabled Plastic Surgeons to choose from a variety of reconstruction options.

The goals of treatment in head and neck cancer are ablative cure; restoration of function, and reconstruction of form. A well considered coordinated plan of treatment jointly conceived by the ablative and reconstructive surgeon in no way compromises the chance for cure, rather tumor resection can be even more aggressive because reconstructive surgery now offers primary repair techniques for defects of increasing severity. The functional objectives in reconstruction are:

- Maintain oral continence
- Facilitate swallowing
- Prevent aspiration
- Preserve speech
- Protect vital structures
- Achieve primary wound healing

The history of reconstruction closely parallels the development of increasingly effective procedures for tumor excision. Before Crile's³ description of the radical neck dissection in 1906, less than half of the patients with cancer of head and neck were cured by surgery, and methods of reconstruction were non-existent. With the advent in the first half of 20th century of adjunctive radiotherapy, effective general anaesthesia, blood transfusion, antibiotics and a better understanding of metabolic care, there came more radical and daring procedures for tumor ablation, the success of which was reflected in high cure rates. The quantity of life having been extended, efforts to improve the quality of life in cancer survivors followed and immediate reconstruction was born.

Local flaps usually do not provide enough bulk to replace the lost tissue. There is the added disadvantage of staged reconstruction with inevitable prolonged hospital

stay and repeated admissions with its associated costs. The pedicle distant flaps such as deltopectoral flap and pectoralis major myocutaneous flap introduced in 1978-79^{4,5} made huge advance to circumvent the problems associated with local flaps. The use of myocutaneous flaps which provide bulk and cover represent a significant advancement in reconstructive surgery. However these flaps have their own limitations. Donor site defects restricted reach of the flaps due to short pedicle, smaller volume and high number of complications and morbidity associated with these flaps have made their use slightly restricted. These of pedicle latissimus dorsi flap as originally described by Quillen et al in 1978^{6,7} for head and neck reconstruction had its advantages. It provides both the bulk as well as pliability. One can use a double or triple island of skin in order to reconstruct full thickness facial defects for lining as well as cover or defects at different levels by simply deepithelializing the intervening segment. Whereas a pedicle pectoralis major flap would hardly reach zygoma, a pedicle latissimus dorsi will reach the scalp by dividing the circumflex scapular artery. In the mouth lat dorsi is easier to support than pec. major as it is less susceptible to being dragged by its pedicle. It offers much better cosmesis at the donor site especially in female patients where as breast deformity often results from pectoralis major flap.

Bakamjian⁸ introduced the Deltopectoral flap in 1965, and the modern era for reconstruction began. The distinction made by McGreggor (1973)⁹ between axial and random flaps demonstrated an axial pattern flap to have an anatomically recognized arteriovenous system running along its axis. The resultant study of vascular skin pattern led to the recognition of the importance of muscular perforating vessels and the subsequent development of new myocutaneous flaps such as pectoralis major¹⁰ and latissimus dorsi flap. Free transfer of skin with its own blood supply therefore evolved naturally in parallel with sophistication of the technology for microvascular anastomosis and has been performed successfully since the early 1970's¹¹ so that a wide variety of free flaps can now be employed to bring bone, fat, connective tissue, nerves, muscles and skin to the head and neck for reconstruction. The evolution of microsurgery and concurrent availability of the vast number of donor sites have revolutionized the head and neck surgery. The introduction of radial forearm flap in 1980's¹², which could be used to bring skin, fat, fascia, tendon, nerve or bone for reconstruction as an isolated or composite transfer has changed the outlook completely. This along with other fasciocutaneous flaps with thin pliable skin has made functional reconstruction easy especially for intraoral and pharyngeal defects. Microvascular surgery is technically demanding and training under an expertise mandatory. However the skill involved is not limited to performing anastomosis. Design, elevation and transfer of flaps are all important as in the choice and preparation of recipient vessels. Using the microscope or binocular loupes may perform the anastomosis. Microvascular surgery is always associated

with morbidity and there is a learning curve as with any new procedure or technique. The reveal of a tissue flap has inevitable consequences, however minor, and there remains the added possibility of wound infection or bony fracture. No longer is the cure considered worse than the disease in some cases, rather, the majority of patients can be restored to a good functional and cosmetic state through primary reconstruction.

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