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TISSUE REPAIR IN MAXILLOFACIAL REGION

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ABSTRACT:
The face is the most important means of communication and not only in term of verbal communication. The principal aim of the maxillofacial reconstruction still remains to avoid or to repair gross aesthetic disfigurement in cases of congenital malformation, tumor resection, post traumatic deformities. In addition to facial aesthetics, maxillofacial reconstruction also has important functional aspect in the reconstructive measures strive for the institution of the complex functions of the upper oro-digestive tract.

KEYWORDS- tissue repair, tension, scar, wound closure.

1. INTRODUCTION

Tissue repair, management of surgical or traumatic soft tissue wounds is an important precondition for successful plastic reconstruction because adequate skin coverage of the reconstructed part is mandatory and access to deeply situated structures has to pass through the skin surface. Closure of a skin(1) wound generally should be accomplished without tension. Lines of minimal skin tension running across the face in a well-known pattern which represents adaptation to two different types of functional mechanisms; The first type is represented by the lines of habitual expression in the face the second type, the lines of skin relaxation (such as circular lines in the neck). A scar within or parallel to the lines of minimal tension is not subjected to the intermittent pull of sub adjacent muscle and subsequent widening of the scars from tension.

A tissue graft(2) is defined as a portion of tissue removed from one side and placed at another, either in the same or in another individual, in order to repair a defect caused by operation, accident or disease. The autografts reflects the traditional way of solving surgical problem, namely success obtain mainly through pragmatic approach. Allograft(4), because they present problem of immunology, vitality, remodeling and storage. Have demanded a more extensive scientific study using animal to achieve some clinical success (BURWELL 1994).

Clinical uses and function of bone graft
Bone graft is used to provide a bridge of osteogenic tissue. The condition which surgeons are called to treat bone grafting include;

1. The delay and non-union of fractures
2. The arthrodesis of joint.
3. The filling of cavities in bone
4. The replacement of bone and joint loss
5. The augmentation of skeleton deficiency in the face.
6. The fusion of bone growth plate cartilages.

2. DISCUSSION

Autografts

The autogenous bone graft has several advantages over allo-or xenograft. It has greater osteogenic capacity and it is biocompatible. As the autograft resorbs, revascularization recruits mesenchymal cells differentiates as osteogenic, chondrogenic or other cell lines (BROWN & CRUESS). The high osteogenic potential of cancellous bone derives from the bone marrow it contains, and the marrow part as such can be used to induce bone growth into different porous materials (NAD et al. 1983). The cancellous graft[6] is moldable and resistant to infection. It vascularize fast and can be obtained quiet easily, usually as 'chips' from the iliac crest (BURWELL,1966). Unfortunately the amount of cancellous bone is limited moreover, it cannot be used in stress bearing area, and harvesting causes morbidity such as pain, hematoma, infection, nerve injury (BANWART et al 1995) or even iliac hernia or ureter injury (CHARLES et al 1975) ; (ESCALIS & DEWALT 1977). Major complication rate is 8.6%, minor complication 20.6% (YOUNGER &CHAPMAN 1989).

Cortical bone[8] is used when mechanical support is needed. Common donor site used to be fibula, ribs and iliac crest. Unfortunately to biocompatibility of the compact bone is poorer than the cancellous bone. Microvascular graft has overcome some of the drawbacks associated with the reconstruction of some of the large defects. Large cortico-cancellous grafts can be harvested with their nutrient vascular pedicle allowing the vessel to be anastomosed to suitable artery and vein in the recipient site. The healing takes place in the interface of graft and recipient bone as in the normal bone situation(WEILAND et al 1984). Donor site complication may however be more severe because the graft tends to be very large.

Allograft

The known limitation of autografting example secondary operation, limited availability of bone and operation morbidity, have encouraged the search for other option. The natural choice is allograft bone, human bone, usually harvested from a dead person or obtained in a hip fracture. The basic concept underlying allograft bone use was established in the early 1990's (BASCHIRZE V & PETROV) showed that most of the cell components in the graft after transplantation and that bone regeneration starts from the host bed (1992)

Allografts[9] demonstrate a lower osteogenic capacity, higher resorption rate and larger immunogenic response and less revascularization of the grafts than autograft (CHASE & HERDON, 1955; FRIEDLANDER et al, 1978). Despite of these drawbacks allograft offers a useful adjunct to the range of bone graft material. Bone can be minced and mixed with autogenous grafts in spinal fusion or hip prosthesis surgery's (BURWELL,1966). Allograft bone can even be used for large grafts comprising whole joints in tumor surgery. The results however are somewhat contradictory(AHO et al, 1998). To maintain the availability of the allograft bone, a well organized bone bank is needed (TOMFORD et al, 1987). The possibility of transmitting viruses may limit the use of allograft (BUCK & MALIN, 1994; KHAN et al 1998).

Xenografts

The xenogenic[10] bone graft, that is a graft made with bone from another species, presents similar problem as that of allograft. It elicit acute antigenic response with high failure rate. Partial deprotonations and defatting have been demonstrated to increase the antigenic response (KIEL BONE) at the cost of osteoinductive capacity. They are indeed rarely used.

Demineralized bone, decalcified bone was first studied in the rat in 19th century, when it was mainly used for filling cavity's in osteomyelitis operation (SENN,1889). It is manufactured in a process whereby first the bone marrow is removed, then the bone is defatted and then finally the mineral contents are decalcified with hydrogen chloride leaving the collagen matrix intact. Demineralized bone can be used in powder form, in chips, or in corticancellous form. YUREST & coworkers noted the osteogenic capacity of demineralized

bone and latter attributed to the influence of morphogenetic protein. Clinical demineralized bone has been used primarily for craniomaxillary reconstruction (MULLIKAN et al 1951).

The successful transfer of tissue for the closure of defect or repair of a defect depends on the survival of the graft, which in turn depends on the adequate vascular supply. Regarding the vascular supply it may be divided into no vascularized pedicle and vascularized flaps or grafts.

Cartilage crafts[3], unlike iliac bone or rib bone cartilage autograft survive well when in contact with cartilage or other tissues (muscle, fat, fascia) PIERE,1964. Costal cartilage, costochondral graft are widely used for reconstructive surgery. Such, grafts are obtained as living transplant are used for augmenting the external nose, forehead, zygoma, maxilla, mandidble, mastoid, auricle and eyelids(GILLIES & MILLARD,1957). The perichondrium should be retained when the costochondral graft is used (BREADON et al, 1972).
Auricular grafts[10], the uses and limitations of auricular composite autografts to reconstruct the external nose; nasolabial angle and auricle in man have been reviewed (CARLMOUNT & CONLY, 1978).

3. CONCLUSION-

The term transplantation designates the removal of a colony of living cells from a donor area and its transfer to the recipient site where it is capable of propagating a lineage of living cell. Skeleton tissues are now widely used in surgery as transplant to serve many proposes.

4. REFRENCE-

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