



Surgical Options for Managements of Mandibular Disease

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Editorial

The mandible is unique in its shape as horse shoes or its development from maxillary process of the branchial arches and Meckel's cartilage during intra uterine life, its cartilaginous type of bone. Its anatomical structure consist from two bodies united in the midline and two ascending ramus carried the condyle and coronoid process, the body articulated with the glenoid fossa forming the Temporomandibular Joint (TMJ), which is synovial joints carrying two compartments with inter articular disc moved with the condyle head during opening and closing of the mouth, the mandible is the only movable part of facial skeleton and its unique function in mastication, speech, swallowing and they carrying teeth, the body and ascending ramus forming an angle of 90°. Four muscles of mastication are attached to the outer and inner surfaces and they are temporalis, masseter, medial pterygoid and lateral pterygoid. The tongue occupy the floor of the mouth formed by mylohyoid muscles the sublingual gland cited in the floor and submandibular gland cited in the submandibular fossa on medial side of body of the mandible.

The surgical options

1. Traumatic injuries, either civil injuries of Road Traffic Accident (RTA) or as result of missile war injuries, the managements of severe injuries of the facial Skelton is based on Kummoona 4 golden C, 1-Control of airway, 2- control of shock by fluid and blood transfusion, 3-control of bleeding by cauterization of small blood vessel and ligation of big vessels and 4-control of fragments by putting bone fragments in the same anatomical position and fixed by plating or stainless steel wire or plating system, in civil injuries we mainly used arch bars and Inter Maxillary Fixation (IMF) for reduction and fixation of fractures, the fractures mainly effect the body of the mandible and the angle, these cases might showed favorable fractures with no displacement or unfavorable fracture with displacement by muscular pull of masticatory muscles such as temporalis, masseter, medial pterygoid, while lateral pterygoid muscle displace fracture condyle, the unfavorable fracture required open reduction for reducing the fractures and fixed by plating or stainless steel wires of 0.5 mm. Fracture condyle either intra capsular fracture, we treated these cases by few drops of hydrocortisone with active mobilization of the joint while sub condylar fracture was treated by IMF for 3 weeks.

The other type of injuries is Missile war injuries, either blast injuries which is quite complicated and the managements by the same principle by applying 4 Golden C and they are the missile with 2 types, one with high velocity rifle or with low velocity rifle injuries or by shell fragments. The severities of injuries depend on velocities of the missile than the mass of object, there is lacerations of soft tissue and bone destruction and the priorities is to repair the soft tissue after controlling bleeding and shock and fragments of jaws put it in position, the wounds either perforating, penetrating or avulsed. These cases might require series of operations in the primary phase for life saving principle or secondary phases required plastic repair of soft tissue by local or regional flaps and bone graft.

2. Surgical managements of tumor of lower jaw required resection of the jaw with immediate reconstruction of the resected area by autogenous bone graft from iliac crest as cortical-cancellous bone graft secured with rigid fixations by stainless steel wire of 0.5 mm or by plating, hemimandibulotomy done for tumor involve the whole mandible usually radical resection of the mandible was carried with immediate reconstruction by bone graft, we might need two pieces of bone graft with rigid fixation without need for Intermaxillary Fixation (IMF) but for full functional activity to restore the growth of the graft ,this statement is based on Moss theory of functional demand of periosteal matrix of facial skeleton. Malignant tumors after radical surgery with supra-omohyoid neck dissection followed by DXT and chemotherapy (5Fu+Toxter+Carbitol), these cases required prosthesis to replace the resected bone but not bone graft because does not survive.

3. Skeletal deformities of the lower jaw, like class III male occlusion, either with open bite or without, these cases usually treated by push back by sagittal split osteotomy for large lower jaw and

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by vertical sub sigmoid osteotomy for milled cases, body osteotomy used in the angle for correction of open bite cases but a trough should be made in osteomised bone as a room for inferior dental nerve or a bed otherwise the nerve pressed by two segments of bone and the patient complains from numbness of the lip. In cases with large tongue which is a problem to the patient causing relapse, the tongue should be excised as wedge shape to reduce the size without effect on functional activities of the tongue. Receding chin treated as milled cases by Sialastic implant but for more severe cases was treated by horizontal osteotomy of the chin and bone graft from iliac inserted in between as sandwich technique and fixed by platting or by stainless steel wire of 0.25 mm.

4. Reconstruction of the TMJ, for ankyloses after complete excision of the condyle and coronoid process with re attachment of muscles of mastication. The operations that designed for adult people with stiff and ankylosed TMJ, was treated by using two part chrome cobalt prosthesis (Kummoona 1968), where the growth of the face is completed while in children we do use Kummoona Chondro-Ossous graft for restoration of function and growth of the mandible and mid face, the graft has the ability to restore growth, remodeling and repair of the TMJ.

5. Reconstruction of the TMJ for recurrent subluxation and dislocation of the TMJ by using figure like fascial flap from temporal fascia inferiorly based rotated for reconstruction the lax capsule laterally and anteriorly and bone graft from iliac crest in a gap created

in the zygomatic root of temporal bone of 1/2 cm in front of articular eminence in 45° toward the joint and apiece of bone of about 1 and 1/2 cm obtained from the iliac crest was impacted in the gap it work as an obstacle to prevent forward movement of the condyle, this technique is an ideal technique for these cases (Kummoona 2010).

6. Distraction technique defined as the process of generating new bone by stretching distraction osteogenesis for elongation of the lower jaw mainly designed for cases with first arch dysplasia syndrome and work for limited length and also been used for advance lower jaw in new borne baby with Pierre Robin Syndrome.

Distraction is passing through three phases, phase one is the surgical phase, the second phase is the Latent period phase which is the most important phase and critical phase which elapsed between 3-7 days and the third phase is the consolidation phase. In surgical phase fixation of the distraction device was applied and an osteotomy gap created, the latent period phase started by formation of clot and growth factors released from the platelets from the bone marrow of the stump of bone with releasing of mesenchymal stem cells and formation of new fibers and the fibrous tissue oriented in the same direction of distraction forces, these cellular changes occur during latent period with formation of osteoid tissue, these studies on distraction carried by the author quiet recently experimentally on Rabbits.