

Temporomandibular Joint Ankyloses that Affect Children and Reconstruction by Kummoona Chondro-Ossous Graft

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Ankyloses is the most severe insult to temporomandibular joint (TMJ) is a distressing disease effect children by traumatic injury to damage the joint structures and mandibular growth and function, sometimes intrauterine injuries to the face and joint end with ankyloses of the joint noticed during delivery.

Ankyloses means stiff joint either unilateral or bilateral, the bilateral one effect the growth of the mandible, maxilla and midface or in bilateral the jaw severely undeveloped featuring as bird face. Types of ankyloses are fibrous type, bony type or mixture of fibrous and bony structure.

These children were suffering from feeding from bottles or mastication and swallowing and speech and the tongue in retroposition blocking the oropharynx and sometimes they were suffering from difficulties of breathing during sleep.

Mechanisms of ankyloses

Trauma to TMJ during early childhood during development and growth period of TMJ always end with ankyloses. Trauma to the chin transmitted along the long access of the ramus of the mandible to the TMJ, the condyle of the TMJ with short neck and spongy vascular condyle, the severe impact causing destruction of the mesenchymal tissue that is mediated for adapting, repair, remodeling and growth and cartilaginous part with fragmentation of the intraarticular disc or meniscus, bleeding causing haemarthrosis with edema and swollen area associated with spasm of the muscles.

The severity of injuries with strong impact may extend to the base of skull, to petrous bone and surrounding cranial sutures and spheno-occipital synchondrosis with callus formation extend from the TMJ to skull base causing further damage, trauma to skull base and petrous bone may cause tearing of Dura and CSF leakage from the ear and the case considered as head injury case with 4 Golden Kummoona C for life saving should be applied with advice and cooperation of Neurosurgeon.

The solution is by reconstruction of the TMJ by Kummoona Chondro-Ossous Graft, after excision of the ankylosed mass and callus and elongated coronoid with re-attachment of masseter, medial pterygoid muscles proved to be an ideal technique postulated for managements of TMJ ankyloses.

The surgical options of reconstruction of the TMJ and advances of Maxillofacial Surgery during the last 4 decades represent an important challenges to maxillofacial surgeons, there is always a therapeutic proposal has been put forward for tissue damage as result of disease or trauma to anatomical structures of the TMJ and there is always reconstructive procedures with autogenous tissue and prosthesis for reconstruction of the TMJ.

Morphological changes of the face that caused by TMJ ankyloses

The sequences of traumatic injury to TMJ ankyloses in children with extensive callus formation, with damage to disc and glenoid fossa. This callus formation extended to skull base effecting sagittal sutures, the petrous bone and sphenoid-occipital synchondrosis, these changes leads to deformity of skull base, mandible and midface on the effected side with stiff joint. These changes due to damage and disturbance of growth center in the condyle and to growth pattern of facial skeleton, featuring shortening of the long and transverse Axis of the skull base with medially positioned ankylosed TMJ and shorting of ascending ramus and under developed mandible and midface on the effected side.

Changes of pharyngeal-laryngeal inlet with hyperplasia of epiglottis and the tongue in retro-position.

Compensatory mechanism developed by excessive growth on the masticatory muscles of masseter and medial pterygoid attachment's processes observed in the mandible in the angle on one side and on genial tubercle on other side for attachment of supra-hyoid and genioglossus muscle these changes leads to formation of antegonial notch which is good mark and sign for diagnosis of ankyloses of TMJ.

General anesthesia is quite difficult with these changes affect the upper respiratory airway due to large tongue in retroposition, deformity of laryngeal-pharyngeal inlet and hyperplasia of epiglottis deflating the anesthetic tube during insertion, these problems required both expert anesthetist ,expert surgeon with long experience and guided endoscopic tube, in the past we were doing tracheotomy but not nowadays.

Managements

There is two biological techniques for substitutions for reconstruction of the TMJ:

1. Costa-Chondral graft
2. Kummoona Chondro-Ossous graft

Costa-Chondral graft well studied by great people like Sir Harold Gilles ,John Kenneth and the late great British Maxillofacial surgeon the Late Professor David Poswillo 1974,he tested this graft experimentally on Meccaca Iris Monkeys, the result of his research was very optimistic and the whole procedure was very popular for the 4 decades, but there are a lot of objection about this graft, the attachment of the cartilaginous part with the rib very fragile easily dislodged with long intermaxillary fixation(IMF) for 6 weeks end with stiff joint and muscles and pain also an over growth was reported recently.

Kummoona Chondro-Ossous graft 1986 first primary report, our graft proved to be more acceptable graft and widely used for reconstruction of the TMJ, because the cartilage is firmly attached to osseous element, the graft firmly fixed to ascending ramus and the patient advised to chew after few days, the graft contain mesenchymal stem cells in the second granular layer of the graft, the graft has the potential to grow and to restore function and normal height of the face and it has the ability to grow, repair, remodeling of TMJ and spasm of muscles.

The graft is the ideal technique proposed for reconstruction of TMJ children.

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