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Opinion

Temporomandibular Joint Reconstructions by Kummoona Techniques

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Temporomandibular joint (TMJ) is a highly specialized unique joint, it's a synovial joint while other joint hyaline cartilage.

It consist from two compartment, upper and lower compartment and the meniscus or the disc separated between the two, the disc elliptical and consist from 4 parts, the anterior band, intermediate zone, posterior band and posteriorly as elastic recoil tissue, the anterior band attached to the upper fibres of lateral pterygoid muscle and the lower fibres which is more strong and attached to condylar fossa, in normal TMJ the posterior band located on the head of the condyle any disturbance in function of upper muscle fibres of pterygoid muscle will lead to click joint and the displacement of the disc are two types either reducible or irreducible.

There are two functional movements of the TMJ, active movements responsible for masticatory process in both hinge and excursion movements, the passive movements which's function during breathing, speech, laughing, swallowing and yawing. The active movements required more force and only used only for short time during mastication's which elapsed no more than 1and 1/2 hour while passive movement been used during the day and night.

The radiological examination of the TMJ by CT scan and MRI for pathological status of the joint, while arthrography is the ideal technique to demonstrate any disc displacement or perforation of the disc usually the more respected technique by arthrography is by inserting the die in the lower compartment and the die might enter the upper compartment only in perforation of the disc.

It's one of the most active joints in the body that accommodate more than 2000 hinge and excursion or sliding movements. The articular surface of the condyle is covered by thick and dense fibrocartilage to withstand the load of masticatory process and the TMJ is covered by capsule with tough fibrous tissue and lined by synovial tissue with synovial phringes secrete synovial fluid for lubrication of the joint and protein for nourishment of the cartilaginous part of the TMJ.

The most common disease of the TMJ in underdeveloped countries is Ankylosis which is quiet rare disease in Europe and US, this disease featured stiffness of the joint with difficulty to open the mouth and facial deformity as underdeveloped mandible and midface, the patient usually compline from snoring and respiratory apnoea due to deformity of the upper part of respiratory tract. The aetiology of the disease is due to trauma to the condyle in children with fragmentation of the disc and damage to the cartilaginous part of TMJ.

The managements of adult ankylosis of the TMJ where the growth completed is by Kummoona two-part prosthesis after excision of ankylosis mass and cricoidectomy.

In children the management completely different because the child in growth period and required to reconstruct the condyle and ascending ramus after excision of the ankylosed part of the joint with excision of the coronoid and reattachment of muscles of mastication and the TMJ was reconstructed by Kummoona Chondral-Osseous graft from iliac for restoring growth of the mandible, midface and remodelling and repair of the condyle. The aetiology due to trauma to TMJ. The ideal age for reconstruction is between 5 - 6 years before the child going to school.

Other disease involving the TMJ are hypoplasia of the condyle in children and First Arch syndrome, the hypoplasia of the condyle was treated by reconstruction of the TMJ by Chondral-Osseous graft after excision of hypoplastic condyle.

In First Arch syndrome which is a congenital disease occurred due to early occlusion of Sta pedal artery of the first arch and second arch during embryonic life.

The managements required a series of operations. The first operation is by doing commissuroplasty for correction of microsomia with excision of tags in front of the ear as remanent of Meckel's cartilage and reconstruction of the atrophied masseter muscle by Kummoona Platysma muscle flap, 6 months later reconstruction of the missing zygomatic arch of temporal bone by bone graft and reconstruction of the glenoid fossa by cartilage graft from the normal ear in opposite side. By waiting for another six months, we reconstruct the ascending ramus and condyle by Kummoona Chondral-Osseous graft, thick and bulky masseter muscle required to invest the graft for survival. These series of operations should be done between 5 - 7 years.

The last step is for correction of the occlusion beginning by orthodontic and fallowed by distraction and osteotomy for correction of jaw relationship.

Condylar hyperplasia usually occurred during puberty the cause might be trauma and hormonal changes causing facial deformity with twist face to other side. These cases was treated by high shave condylotomy and bilateral osteotomy for correction of occlusion.

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