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**ABSTRACT**

Recurrent mandibular dislocation (RMD) is a frustrating and unpredicted problem and occurs at any age. Almost of surgeons pay attention to the condylar compartments by variety of obstructing surgery to the condylar pathway. The problem of recurrent dislocation started since long time and according the knowledge available many trials of treatment were done. At the last few years and after revision of all surgical modalities and benefit outcome to the treated patients new surgery was adopted through the reorientation of the temporalis elevator muscle fibers. The surgery done for thirty six patients sustained recurrent mandibular dislocation and had been treated by conservative methods for a long time without satisfactory result. The cases include 24 females and 12 males with mean age 32 years, follow up was extended to six years in some of these cases with promising outcome.

**INTRODUCTION**

Recurrent mandibular dislocation is a frustrating and unpredicted problem frequently happen at any age with multi-factorial etiology. Conservative treatments had been started early by the ancient Egyptian whom they manually reduce the jaw dislocation. Hippocrate was described a manual method of reducing mandibular dislocation that was very similar to the techniques used today. Subluxation and dislocation of the tempromandibular joints (TMJ) has been extensively discussed in medical and dental literatures. The possible causes of recurrent dislocation are including long lasting internal derangements of (T.M.J), weakening of the capsular collateral ligaments, occlusal disharmony with skeletal open bite, masticatory muscle dysfunction (hypotonia), use of prochlorperazine therapy proved to induce muscle spasm and keeping the dislocated joints locked in abnormal position and abusing of tranquilizer and muscle relaxant drugs. Acute dislocation of the tempromandibular joints is quite different as the mouth is kept in wide opening without self passive reduction, manual repositioning is usually successful with or without the aid of sedatives, muscle relaxants or prearticular injection of local anesthesia, but in difficult cases and in case of failure of the previous
medications use of general anesthesia is mandatory. Unfortunately once dislocation occurs the joint stability factors including capsules, muscles and ligaments are seriously disrupted and predispose the mandible for further recurrent dislocation, and the treatment should be directed to re-correct and ‘maintain the stability factors required for normal TMJ function (Fig. 1, 2,3).

Variety of conservative means were tried including the intra capsular injection of sclerotic solution to create a fibrotic tissue changes which proved to be effective but for a short time. Botulinum toxin injection has been used as chemical denervation (Inhibition of acetyl choline release at the neuromuscular junction) of the lateral pterygoid muscle restrict the range of jaw opening in turn helping to prevent dislocation for two to four months. Extended injection to masseter and pterygoid muscles using type A botulinum toxin prevent the recurrent of dislocation for periods of two up to four months but the ability of the patients to do hard mastication are impaired. Recently intra articular autologus blood injection through the capsule to potentiate soft tissue fibrosis within the condylar compartment aiding to prevent the joint dislocation for unpredicted time. The inadequate of the conservative therapy to control the joint dislocation, and the patient lives with constant fear of habitual dislocations indicate the surgical intervention, many techniques of surgery are employed to limit the forward dislocation and the return back of the condyle to glenoid fossa. The common surgery used to restrain the forward dislocation of the condyle includes, plication of the capsular ligament. Scarification of the intraoral mucosa and temporalis muscle tendon was attempted by many surgeons without long lasting success and the intraoral scarring impede the mouth function. Dautrey 1975 developed his surgical technique of down fracture of the zygomatic arch anterior to the eminence with promising results but recurrence of some cases due to resorption of down fracture part of bone and its indication in flexible bone of young age restrict the indication in some extent. Deepening of the glenoid fossa by resection of the disk reduce the recurrence of dissolution but induce the osteoarthritic changes and painful jaw function. Mechanical obstruction was addressed for a long time to restrict the condylar path by augmentation of the articular eminence using different materials bone, cartilage and alloplastic implants with consequences of complication of either absorption of the graft, inflammation and looseness of the alloplastic materials. One of the most popular methods is the Myrhaug’s operation done in 1951, the operation based on flattening the articular eminence (Eminectomy).
TemporaliS muscle reorientation with good clinical results, but permanent mandibular hypermobility represent uncomfortable sequele to this operation, the pneumatization of the eminence and brain tissue descend increase the possibility of dural tear and it must be done bilaterally\(^{14,15}\). Surgical modification was done through eminectomy and redirectioning of the temporal muscle fibers through osteomatized zygomatic arch with good result\(^{16}\). From the review of literatures all kinds of operations used to treat the problems are depends on the open arthrotomy which are not free from many pathological changes in cases have already normal eminent height. So, new surgery with long-term follow up results instituted by reorientation of the elevator part of the temporalis muscle without open arthrotomy. The temporalis muscle is the strongest muscle of mastication. The muscle fibers are parallel to the long axis of bone with the condyle (Fig. 4).

**MATERIALS AND METHODS**

Surgical treatment for recurrent dislocation of the tempromandibular joints was indicated after all conserved modalities failed to keep the patient satisfied without recurrent of attack. The study include 36 patients 24 females and 12 males, the age of patients ranged from 8 -75 years with mean 32 years, the cases were selected from the outpatient Clinics of Oral & Maxillofacial Surgery Department, Shebin al Kom Teaching Hospital Al Menoufia and through the period of seven years started from 2001-2008. 16 patients (11F & 5M) have no history of previous surgery or using neuroleptic drugs with normal condylar compartment. nine patients had the first attack of mandibular dislocation while they were fatigued and did yawning, and seven patients had the first attack during shouting. Another seven patients (4F & 3M) were experienced the habit of dislocation including tonsillectomy in 5 cases and GIT endoscopy in two cases. While the other seven patients (6 F & one M) were under the treatment of psychiatrist. Further four patients (F & 3M) used to take anti emetic drugs for GIT problems, and the last two patients (M) used to take tranquilizer drugs since long time without medical advise. All patients were examined clinically and ra-diographically and routine admission laboratory investigations were done for every patient. Consultation was done with the psychiatrist about post operative withdrawal of the causative drugs before arrangement to surgery. Adequate explanation to the patient or his relative about the nature of surgery and postoperative instruction sheet was provided to each patient after discharge from the Hospital. Patients with shallow glenoid fosse and reduced eminent height were exempted.

**Operative Technique**

Under general anaesthesia-naso-endo tracheal intubation a modified pre-auricular incision with down extension to the auricular helix (Fig 5). The incision was carried out through the skin and tempopareital fascia,
the flap was reflected forward and the temporalis fascia was exposed and incised alone from posterior and reflected anteriorly to view the temporalis muscle from the temporal line to the arch, the direction of the muscle fibers anteriorly, vertically and posteriorly was clear intraoperatively and as described by anatomy (Fig 6). The middle part the temporalis muscle was selected and dissected free from the underneath of temporal bone. A variable muscular flap excised from the selected middle part and below the temporal line by about 1.5 cm. The jaw opened and excused by the assistant to conform the movement of the muscle flap (Fig 7). The residual part of the muscular flap was reanastomosed to the proximal part while the mouth in a closed and retruded position. The anterior and posterior parts of the muscle were reoriented together with resorbable sutures. The surgical flap returned back to its anatomical position and sutured in layers (Fig 8). On the next day and after good recovery intermaxillary fixation was applied for two weeks, and followed by other two weeks of exercise under the guidance of intermaxillary elastics and allowed to take soft diet thenafter and to return to his normal diet after that time. All patient were followed-up clinically for a long times extend to six years, radiographic examination done throughout the time and any recurrence or complication was reported.
RESULTS

Of 36 patients were treated by this modality, the postoperative course was uneventful and they resumed liquid diet for two weeks during the post operative arrest of jaw function by IMF. As the operation was done through the hairy skin of the temple (Fig 8) there was no facial conspicuous scare. The operation had been done in one side except in fifteen cases it was done bilaterally. In three cases of unilateral surgery the operation was repeated on other side after 2-3 years due to recurrent of dislocation. Follow up was extended for more than six years in almost of cases. No neurological deficits (frontal branch paresis) were recorded in all patients. No recurrent of dislocation throughout the time of follow up except in three cases of unilateral surgery after two to three years. The interincisal opening was restricted for the first two months post operatively without significant impaired of function and range of inter incisal opening was 2.5—3 cm improved and regained normality after further two months. The side to side movement of the jaw was affected in all patients and improved by the time which was variable between the patients and according the kind of surgery, many patients sustained temporal pain after surgery by one to two years and relieved by short course of non steroidal anti inflammatory drugs. Follow up by radiographs revealed normal relationship of the condylar compartments without forward displacement of the condyles anterior to the eminence in open position. Follow up was lost for seven patients after one years.

DISCUSSION

Chronic recurrent dislocation of tempromandibular joint usually create a state of jaw function disabilities and further stretching and laxity of the T.M.J capsular ligaments. The suffering of habitual dislocations can be triggered daily at any time during laughing, shouting, chewing and yawning. Consequently the condyle move without restraining. Since long time almost of surgeons attention were directed to remodel the bony configuration around the joint and its clear from the literatures that there is no standard methods for evaluation and treatment of this problem in proper way, as dislocation during the childhood age entail the use of surgical treatment without open arthrotomy to avoid the deterioration of condylar growth adaptation. The temporalis muscle is the most important one for maintaining the condylar compartment within normal anatomical relationship during trans-silatory movement, it arises from the whole temporal fossa. The muscle fibers are oriented into three directions from anterior to posterior and vertical and converge as they descend and becoming tendinous passing deep to the zygomatic arch to be inserted into the coronoid process and anterior border of the ramus down to retromolar triangle. The muscle is the strongest muscle of mastication and the fiber oriented to be parallel the ramus with condyle so its action plays an important role in maintaining the condyle in its normal anatomical relation during function as reported by Tony Leyland(17). Recurrent dislocation was successfully treated by Escoda and others by re directing the temporalis muscle fibers though an osteotomy of the posterior transverse root of zygomatic arch but the technique was not enough for long lasting success. Increasing of the positive power of the temporalis was achieved through the reorientation of both posterior and anterior muscle fibers with shortening of the elevator part proved to be enough to gain our successful result through the six year of follow up and as reported by Mathew et al 2004, muscle shortening increases the positive power and its maintaining capacity.

CONCLUSION

Chronic mandibular dislocation is a common frustrating complain. First of all you have to have a look to condylar compartments and surgery must be adopted accordingly. Post operative withdrawal of the causative drugs by consultation with psychiatrist and use of supportive therapy like Vitamin E & B 6 is very important to avoid the relapse after surgery. Temporal muscle shortening and reorientation is a non complicated operation if indicated in comparison to open arthrotomy.
REFERENCES