

MANAGEMENT OF TEMPOROMANDIBULAR JOINT DISLOCATION AT MAYO HOSPITAL LAHORE

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ABSTRACT

For the management of TMJ dislocation, controversies always surround to the various conservative and surgical modalities. Hence a retrospective study was planned to audit the demographics, etiology and patterns of occurrence and to enumerate the treatment modalities of TMJ dislocation at the Department of Oral and Maxillofacial Surgery / Mayo Hospital Lahore, fifty two cases of TMJ dislocation were retrospectively studied from 2013 to 2017. Patient records contained information about age, sex, type of dislocation, immediate event preceding the dislocation, treatment modality used and reported complications regarding dislocation. Thirty two patients (62%) were males and 20 (38%) were females. Their ages ranged from 1-80 years with a mean of 37 years. 23/52 patients were presented with acute dislocation which were managed by manual reduction and analgesics. 19/52 patients were presented with chronic recurrent dislocation in which 7 patients were injected with autologous blood, 9 patients were treated with intermaxillary fixation and three patients were given STD injection. Chronic long standing TMJ dislocation in 10 patients were managed by eminectomy in 7 patients and condylectomy in 3 patients. This study concluded that male sex, middle age, yawning, and low socio-economic status appeared to be associated with TMJ dislocation; however, this observed relationship was not statistically significant. Different treatment modalities exist. This study highlighted the advantages and effectiveness of conservative methods of treatment.

Key Words: Temporomandibular joint dislocation, autologous blood, Mayo Hospital

INTRODUCTION

Temporomandibular joint (TMJ) dislocation is an unusual but debilitating condition of the facial skeleton caused by either structural deficiency or imbalance in the neuromuscular function.¹ Laxity of the capsular ligament and articular disc, spasm of the lateral pterygoid muscles and long-lasting internal derangements are the causes of alteration in the neuromuscular function.² Structural deficiency include some condylar changes, i.e., narrowing or flattening, reduced articular eminence height, morphologic changes of the zygomatic arch, squamotympanic fissure and glenoid fossa.³ In the TMJ dislocation, age and alterations in dentition plays a specific role.⁴ There are some other causes of dislocation which include over function during yawning, laughing, seizures or vomiting, root canal treatments, laryngoscopy, oroendotracheal intubation and transoral fiber optic bronchoscopy.^{3,4,7} Some tranquilizers may also lead to TMJ dislocation.⁹ There is also an association of some syndromes with it for instance: the Ehlers-Danlos syndrome, Mar fan syndrome and orofacial dystonia.⁹

The pathophysiology of dislocation is a luxation in which joint displaced from its articulation and incapacity to revert back to its normal position. This dislocation can be subdivided into subluxation (partial) or luxation (complete), acute and chronic (protracted or recurrent), bilateral or unilateral.^{1,2,3} Anterior dislocation is most common among all. Other forms are rare and mostly associated with trauma which includes lateral, medial, superior into the middle cranial fossa and posterior dislocation.

Among all reported cases of joints dislocation in the body, mandibular condyle dislocation represents 3% and has different classifications on the base of symmetry either unilateral or bilateral, position (medial, lateral, superior, anterior and posterior), time of presentation (acute or chronic), number of occurrences (recurrent or non-recurrent), etiology (non-traumatic and traumatic) or spontaneous.^{9,10,11}

Most patients are presented with “open lock”, i.e. the inability to close the oral cavity, dribbling saliva, incapacity of lips, speech problems and lip incompetency. Association of acute dislocation with pain in the preauricular region but there is rare association of chronic recurrent dislocation with it. The preauricular region indicates emptiness in the joint space by palpation and patient may look worried.¹⁶

The most important diagnostic tools in the TMJ dislocations are clinical history and examination. Plain and panoramic radiographs are considered as

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confirmatory diagnostic aids which show the direction of articulation. Three-dimensional computed tomography is considered best regarding perfection to show its entity.⁸

Management depends upon type of dislocation. Acute dislocation is usually managed by symptomatic pain relief with analgesics and manual reduction.⁹

The conservative methods are selected first in long-standing or recurrent conditions whenever the results are not adequate, surgical methods are applied.^{9,10,11}

Various sclerosing agents are used as conservative method like, morrhuate sodium, sodium tetradecyl sulfate, alcohol, sodium psylliate and platelet rich plasma, which are injected to the joint space.^{12,13} In chronic protracted dislocation, reduction is achieved by elastic rubber traction with arch bars and intermaxillary ligature/fixation wires with elastic bands¹²

In recurrent dislocation, Brachmann (1964) reported the use of autologous blood, which is well liked presently.¹⁰ In recurrent TMJ dislocation, another latest conservative method of botulinum toxin A (BTX-A) is used.⁹

Chronic long standing dislocation are surgically managed. Various methods like condylotomy, modified condylotomy, and myotomy are used.¹⁴ Surgical procedures have been suggested by some authors that either separate the mechanical obstacle in the condylar path or create a mechanical obstacle by augmenting the articular eminence.⁹

Autogenous bone grafting e.g. calvarial bone or iliac crest can be used for accretion of the articular eminence.⁸ Numerous materials have also been utilized to enhance the eminence like vitallium mesh implants, L-shaped pins, and mini implants.^{8,9} The downward displacement of zygomatic arch acts by hindering the path of condylar translation, described by Mayer in 1933. This technique was modified by Dautery, in which the greenstick fracture was carried out at the zygomaticotemporal suture to serve as a stop to upward and forward movements of condylar head and inward and downward displacement of anterior segment.

When all the pertinent treatments fail in chronic recurrent and chronic protracted dislocations, particularly those with correlated degenerative joint disease, then total joint replacement should be considered.¹¹

The Oral and Maxillofacial surgery department at Mayo Hospital routinely receive patients with TMJ dislocation which are managed with different treatment modalities so a retrospective study was planned to foreground the presentation of pattern of TMJ dislocation and its management in our environment.

MATERIALS AND METHODS

Fifty two cases of temporomandibular joint dislocation presented and retrospectively studied at the Oral and Maxillofacial surgery Department, Mayo Hospital Lahore Pakistan from 2013 to 2017. Patient records contained information about age, sex, type of

dislocation; immediate event preceding the dislocation, treatment modality used and reported complications regarding dislocation. According to Adekeye et al, TMJ dislocation was classified into acute, chronic (prolonged) and recurrent dislocation.

The acute cases of TMJ dislocation was conservatively managed which include relief from symptomatic pain with analgesics and manual reduction and analgesics which was performed by pressing the mandible downward, then backward and upward sequentially.^{18,19} Conservative method was used to manage subluxation (chronic recurrent dislocation) by the use of sclerosing agents, sodium tetradecyl sulfate, by injecting them into the joint space^{19,21}. Intermaxillary fixation (IMF) was also used in case of protracted dislocation. The autologous blood was also used while dealing with chronic recurrent dislocations. It follows the principle to restrict mandible movement by the insertion of fibrosis in the upper joint space, the pericapsular structures, or both¹⁹. 2-4ml volume of blood was used in the upper joint space and in the pericapsular structures, its volume ranges 1-1.5 ml and repeated twice for 3 weeks. chronic long standing dislocation was managed surgically by either eminectomy or condylelectomy.

RESULTS

Within the period reviewed, the records of 52 patients could be retrieved, including 32 males (62%) and 20 females which accounts (38%), producing a male : female ratio of 1.7 : 1.0. Ages patients ranged from 15 - 80 years with 37.8±15.3 years mean age. Fourth decade of life is considered as the peak incidence.

Sex distribution of patients in the study. Acute and recurrent dislocations were the most commonly presented type of dislocations, accounting for 56.2% and 32.3%, respectively, and were predominantly bilateral (96.2%).

Only six (11.5%) patients presented in the form of psychiatric illness with a known underlying predisposing condition. These patients were receiving anti-psychotic therapy. 10 patients (9.5%) could not relate any event preceding their joint dislocation while in 26 (50%) of the patients, main etiological factor was yawning, followed by trauma in 10 patients.

Twenty three out of 52 patients were presented with acute dislocation which was managed conservatively by manual reduction and analgesics. Patients were adequately counseled regarding precautions to avoid excessive opening of the mouth and procedures which require prolonged opening of the mouth. These patients could not be followed as they were attended in the out patient department.

Nineteen out of 52 patients had chronic recurrent dislocation. In 9/19 patients intermaxillary fixation was done for three weeks. All patients responded well to this treatment except for two patients which were then injected with autologous blood in the upper joint space of TMJ. 7 out of 19 patients were given autologous blood which was injected into the upper joint space of

TABLE 1: PARAMETER OF STUDY & NUMBER OF PATIENTS

Parameters of the study		No. of patients	Percentage
Gender distribution	Male	32	61%
	Female	20	39%
Age distribution(- years)	< 40 years	35	67.4%
	>40 years	17	32.6%
Type of dislocation	Acute dislocation	29	56.2%
	Recurrent dislocation	16	32.3%
	Chronic dislocation	7	13.1%
Predisposing events/factors	Yawning	26	50%
	Trauma	10	9.5%
	Psychiatric illness	6	11.5%
	Unknown	10	9.5%
Treatment	Manual reduction	23	44%
Conservatively managed	Intermaxillary fixation	9	17.3%
	Autologous blood transfusion	7	13.4%
	Sclerotherapy	3	5.7%
Surgically management	Eminectomy	6	11.5%
	condylectomy	4	7.6%

the joint. All the patients who were injected autologous blood responded well to this treatment regime. Three out of 19 patients were treated with sodium tetradecyl sulphate STD sclerosing agent, patients got relieved from recurrent dislocation with this method. Autologous blood was more cost effective and easy to give in this group of patients while managing the recurrent dislocation conservatively.

Ten out of 52 patients had chronic long standing dislocation of TMJ joint. In 6 patients eminectomy was performed while 4 patients had condylectomy. All the patients managed surgically didn't complaint of any compromise in the TMJ function and temporary as well as permanent facial nerve lag didn't occur in any of the patients.

DISCUSSION

Temporomandibular joint dislocation (TMJ) has been registered in different age groups.¹⁴ Current study indicates a high incidence of TMJ dislocation in the fourth decade of life. This incidence was high in 40-90

years of age. While in some other studies 20-29 years age group was described as peak age of incidence.⁹

More cases of TMJ dislocation were documented in males than females, these findings were similar to some other studies.⁹ But In contrast, female preponderance was presented in some studies.^{9,13} Cultural and religious beliefs and study area may correlate to this difference. Therefore, being predominantly Muslims; women were more confined to their homes. As a consequence, some cases of female patients may not report to the hospitals for treatment.

Although acute TMJ dislocations were more commonly presented (56.2%) but a considerable number of patients were documented with chronic dislocation as well. Several factors are reasons for late presentations which includes, financial constraints (low socio-economic class), religious beliefs which represent TMJ dislocation as spiritual events, cultural beliefs, shortage of skilled healthcare professionals and missed diagnoses by other practitioners. For seeking treatment, some cases with the factor of long distance traveling of about 300km.

According to etiology of TMJ dislocation, most common etiological factor was "yawning" in our patients (50%). which is similar to other studies. Trauma is the most frequent cause according to another report.¹³ In TMJ dislocation, the pathophysiology of yawning is not understood completely. It is considered that repeated forceful yawning may cause a slight dislocation of restricted joint ligaments with the passage of time, consequently an increased range of condylar movement results which indicates it as a predisposing factor. In current study, six of the patients presented with psychiatric conditions and were using tranquilizers. In psychiatric patients, documentation of TMJ dislocation exists in literature and may cause the following orofacial dystonic reactions, which are drug induced in nature and frequently the use of dopaminergic agents are considered the main cause. Antipsychotic agents may lead to dislocation; however foregoing reports incriminate thiotixene, haloperidol, aripiprazole and risperidone. Only one patient was on risperidone in this study. Although, non-antipsychotic agents with antidopaminergic activity may lead to dystonic reactions, just like antiemetics/metochlopramide.^{18,21}

Mainly, TMJ dislocation is clinically diagnosed. There are various imaging modalities which are used to assess patient, planning for treatment and follow-up aids. In the present study, Plain radiography (particularly oblique and bilateral views) was considered the important imaging aid in patient's assessment because it is very economic and broadly accessible at most centers. There are some patient assessment modalities e.g. Trans-cranial oblique views of the TMJ, linear & rotational plain tomograms, magnetic resonance imaging, contrast computed tomography scans, arthroscopy, i-CAT scans (Imaging sciences International, PA, USA, Philadelphia), Dolphin imaging system (Dolphin Imaging & Management Solutions, Chatsworth, USA, CA) and some other.⁸ TMJ dislocation has been treated

surgically and non-surgically.^{7,8,9,10} When conservative measures have been failed then surgical treatment usually more preferable but literature do not present any stern criteria for the use of different surgical and conservative managements. The initiation of treatments like non-surgical treatment may be done by with or without intermaxillary fixation and general or local anesthesia. Manual reduction involves as non-surgical treatment in acute TMJ dislocation. In 23 (59.1%) of our patients, manual reduction was successful. But the present success rate is higher than the 27.6% as reported by previous study.⁷ In our study, more patients were presented with acute dislocation and can be correlated with this difference in the success rate.¹⁰

Some non-surgical methods like autologous blood injection in upper joint space, intermaxillary fixation and use of sclerosing agent (sodium tetradecyl sulphate) are recommended for chronic for of TMJ dislocation. In our study, autologous blood injection (into the upper joint space) was recommended treatment for chronic TMJ dislocation in seven of nineteen (66.7%) patients, however a previous study reported that success rate (54.5%) of this treatment was lower than the present study.⁹ In chronic long standing dislocation, surgery was the most preferred treatment.^{8,11} Eminectomy was performed in most of the patients (6/10) and condylectomy was performed in (4/10) four patients. All patients recovered well with no noticeable postoperative short term and long term complications.

Some other studies have preferred various surgical options e.g. vertical or oblique subsigmoid osteotomy, inverted L-shaped osteotomy, condylectomy and strategies that help in the depletion of dislocated condyle and prevent the dislocation after depletion (temporalis, eminectomy, muscle myotomy, accretion of the articular eminence or Dautrey's procedures).^{10,11,12}

CONCLUSION

From this study it was concluded that were middle aged men more affected. Yawning /excessive opening of the mouth also appeared to be associated with TMJ dislocation. Conservative method of treatment was quite effective.

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CONTRIBUTIONS BY AUTHORS

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| 1 Nabeela Riaz: | Collection of data and writing of manuscript. |
| 2 Shakir Mahmood: | Collection of data and writing of manuscript. |
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