TEMPOROMANDIBULAR JOINT DISLOCATION: A RETROSPECTIVE REVIEW OF CASES TREATED IN TEACHING HOSPITAL, NORTH-WEST, NIGERIA

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ABSTRACT

Background: *Temporomandibular Joint dislocation is an uncommon acquired facial deformity. The condition may be traumatic or non-traumatic, acute or chronic, bilateral or unilateral in presentation.*

Objectives: *To analyze the causes, pattern, presentation, and treatments that were given to patients with Temporomandibular joint dislocation in our Centre.*

Methods: *This study is a retrospective analysis of Temporomandibular joint dislocations treated in the Accident and Emergency Unit and Dental/Maxillofacial Clinic, Barau Dikko Teaching Hospital Kaduna, Nigeria, from April 2012 to December, 2019. Information was collected from patients' record which includes: age, gender, causes, localization, frequency of occurrence and therapy.*

Results: *Twenty-eight patients were included. The mean age was 37.64 years and it occurred more in females than males at the ratio of 1.3 to 1.0.Yawning was the most frequent etiological factor. Most of the cases were non-traumatic (n= 24, 85.7%), mostly bilateral (n= 22, 78.6%) and presented acutely (n= 15, 53.6%). Twenty-four (84.7%) of the patients received conservative treatment, which consisted of reposition of the TMJ with (57.1%) or without (28.6%) analgesic and sedation. Only one had acrylic bite block and three had surgical correction because of ineffective conservative treatment.*

Conclusion: *Temporomandibular joint dislocation appears to be associated with female sex, middle age, yawning and the commonest treatment is manual reduction.*

Keywords: *Temporomandibular joint, dislocation, hypermobility, Hippocractic, repositioning.*

INTRODUCTION

The temporomandibular joint (TMJ) is a joint between the mandible and the temporal bone of the skull.[1,2] The condyle of the mandible articulates bilaterally in a concavity known as the glenoid fossa or mandibular fossa.[1] The movements of the TMJ are under neuromuscular control and comprise the muscles of mastication, the ligaments associated with the TMJ, and neural transmission carried by the mandibular division of the trigeminal nerve.[3,4]TMJ

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dislocation occurs when one or both mandibular condyles are displaced out of the glenoid fossa in front and above the articular eminence.[5]Dislocation may be reducible, if the condyle returns spontaneously to the glenoid cavity (subluxation) or irreducible when one or two condyles remain dislocated (luxation).[6,7] In the latter condition, the mouth remain open and the front teeth do not meet, due to the action of the elevator muscles with or without lateral deviation, and depending on whether the dislocation is unilateral or bilateral.[3] Dislocation of the joint may be unilateral or bilateral, anterior, posterior, superior, or lateral. Anterior dislocations are by far the most common.[4-6] The other dislocation types are commonly associated with trauma and concurrent fractures.[6]

TMJ dislocation frequently happens in relation with yawning and less often after mild facial trauma (such as a slap to the chin) or in the process of excessive laughter.[5]The literature reports female predominance and, according to a study, the condition seems to be linked to hormonal imbalance.[6] Although, the incidence is relatively low, it is crucial to address TMJ dislocation, as it has a vital and immediate impact on secretion needed for airway patency, as well as on pain.[7]

Different treatment modalities, both conservative and surgical, have been used to manage TMJ dislocation with varying success rates.[5,7,8] The aim of this retrospective study is to highlight the pattern of presentation of TMJ dislocation and treatment modalities commonly used in our environment.

METHODS

This is a retrospective study of patients treated in the Accident and Emergency Unit and Dental/Maxillofacial Clinic, Barau Dikko Teaching Hospital Kaduna, Nigeria, over a period of 7 years and 7 months (April, 2012 to December, 2019).

Patients were identified using daily clinic and accident and emergency records. Information collected were: age, gender, causes, localization, frequency of occurrence and therapy. The common clinical features presented by all our patients were: inability to close the mouth, pain, drooling saliva, protruded mandible and speech deficiency.

Thirty four cases were identified but because of inadequate information in patients' medical records only 28 cases were included in the study.

Data obtained were analyzed using the SPSS version 13.0(SPSS Inn., Chicago, IL USA). Statistical analysis was performed using descriptive statistics (frequencies and cross tab), with the test of a statistically significant relationship was set at a P-value less than 0.05.

Treatments

Conservative treatment involve Hippocratic maneuver, which consist repositioning the condyles back in the glenoid fossa by applying pressure on the lower posterior teeth to push the mandibular downward and backward. This was done with or without analgesic and sedation. Occlusal splint with acrylic bite block was also used to push the mandible downward, and manually the

mandible was pushed backward.

Surgical approach

When conservative treatments proved ineffective, surgeries were performed in three cases. Two had bilateral condylectomies under general anaesthesia, the approach was through pre-auricular incision and by careful dissection, the condyle was located at the impacted region in the middle portion of the zygomatic arch. The condyles were resected bilaterally and the mandible freed, occlusion was achieved and intermaxillary fixation was done. This was removed after two weeks. One had ramus osteotomy (inverted L osteotomy), the approach was through bilateral submandibular incision, the ligula was located on the ascending ramus medially, inverted L was cut above it to the angle of mandible, and the mandible was freed. Intraosseous wires were used to align the segment. Intermaxillary fixation was done. This was removed after four weeks.

RESULTS

During the studied period, from April2012 to December 2019, a total of 12 cases with TMJ dislocations were reported in our Accident and Emergency Unit and 16 at the Maxillofacial Clinic. Sixty percent (n=16) of all cases reported were females, while forty percent (n=12) were males. The ratio of female to male is 1.3:1.0 (Table.1).Patients' age ranged from 23 years to 65 years. Peak incidence was noted in patients in the fourth decade of life. The meanage was 37.64 years. A total of 10 (35.7%) patients with TMJ dislocation were under the age of 40 years.

Table 1: Age and Sex Distribution of Study Participants

Age Group [Years]	All study Participants		Male Participants		Female Participants	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
21-30	7	25.0	3	10.7	4	14.3
31-40	3	10.7	2	7.2	1	3.6
41-50	13	46.4	7	25.0	6	21.4
51-60	3	10.7	-	-	1	3.6
61-70	2	7.2	-	-	4	14.3
Total	**28 (100)**	**100**	**12**	**42.9**	**16**	**57.1**

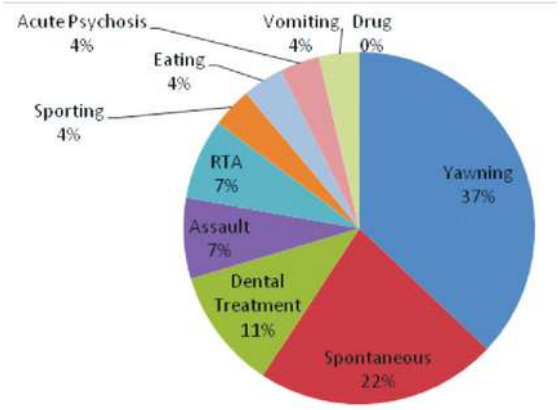

Figure 1. Etiological Factors of TMJ Dislocation IMF- Internal Maxillary Fixation

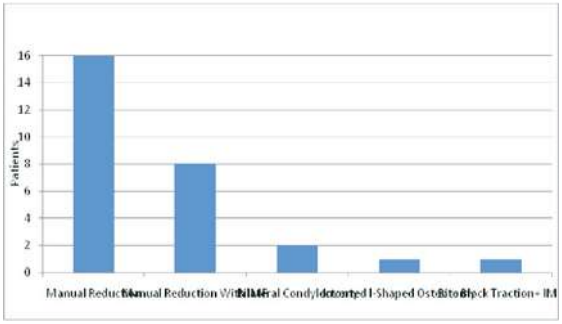

Figure 2. Treatment Type Used In The Management Of The Patients

Additionally, 85.7% (n=24) of incidents were non-traumatic.Twenty-two patients (78.6%) suffered bilateral dislocation, three (10.7%) right-sided TMJ dislocation, two (7.1%) left-sided dislocation and one (3.6%) lateral

sided. Fourteen patients (50.0%) referred to the TMJ dislocation as being a first-time event, five (17.9%) was second event while nine (32.1%) were recurrent events. Twenty-four (84.7%) of the patients received conservative treatment, which consists of reposition of the TMJ with (57.1%) or without (28.6%) analgesic and sedation (intravenous pentazocine 30mg and diazepam 5mg or 10mg respectively).Only one had acrylic bite block before reduction and two had bilateral condylectomies and one had bilateral ramus osteotomy (inverted L).

DISCUSSION

Dislocation of TMJ is an infrequent acquired facial deformity[4]. The goal of treatment of any TMJ dislocation is to return the condyle to its original physiological and anatomical position.[14,15] Aetiology of dislocation is very essential in history taking.[6]In our study the aetiology includes: yawning, assault, vomiting, dental treatments, feeding, psychosis and drug usage. It was reported that the first manifestation of metastasis of a primary lung cancer was non-reducible dislocation of the mandible.[16] Another case report describes an event of TMJ dislocation due to dystonia following a single dose of aripiprazole and another two cases of acute pure propranolol toxicity associated with bilateral TMJ dislocation[17,18].Most studies[5,6,9] agreed that yawning is the commonest cause of TMJ dislocation. In our study, yawning was the commonest cause and only one patient gave history of drug usage(risperidone). Agbara *et al*[16], in their study of TMJ dislocation in Zaria reported male predominance with a male to female ratio of 1.6:1.0 unlike our studywith female dominance of 1.3:1.0. The TMJ dislocation accounted for 3% of all documented dislocations throughout the body.[6] Spontaneous anterior TMJ dislocation is not a common condition, with a reported annual incidence of 5.3 per 1,000,000 patients who present to the emergency department (ED).[6]

Several theories[10,11,12] have been put forward to explain the onset of TMJ dislocation, such are: association with poor development of the articular fossa, laxity of the temporomandibular ligament or joint capsule, and excessive activity of the lateral pterygoid and infrahyoid muscles due to drugs, such as phenothiazines, metoclopramide, or systemic diseases (Parkinson's, multiple sclerosis, and epilepsy).[11] It may also be related to some neuromuscular disorders or disorders of collagen metabolism, such as ligamentous hyperlaxity, Ehlers- Danlous syndrome, or duchenne muscular dystrophy, which cause a predilection for joint laxity.[13] Furthermore, over-closure in edentulous patient is considered as a factor influencing the condyle position[13].

It is extremely important that the signs and symptoms are correctly diagnosed, so that treatment can be carried out as quickly as possible without further delay.[20]The common clinical features presented by all our patients were: inability to close the mouth, pain, drooling saliva, protruded mandible and speech deficiency. The time between dislocation and relocation is absolutely crucial because once dislocation has taken

place, spasms of the masseter and pterygoid muscles may worsen over time, causing the mandible to contract into the dislocation position, so that the reduction procedure becomes more difficult.[17] Our cases that presented two to four months after incidence, made conservative treatment unachievable and surgery was the final solution. The diagnosis of TMJ dislocation is based on clinical characteristics.[21] To evaluate the integrity of the TMJ, a radiological imaging such as plain radiograph, the orthopantomogram, and 3D computed tomography can be performed. Plain radiograph of a case showed the condyles completely out of the glenoid fossae and anterior to the articular eminence, protruded mandible and wide inter incissal distance. Magnetic Resonance Imaging is not commonly used to evaluate TMJ dislocation, but is indicated to evaluate chronic TMJ changes like degenerative processes, disc dislocations, or lesion of the discs. Several studies[15,16,17] have been done in Nigeria on TMJ dislocation.

In addition, our findings reported a marked incidence (85.7%) of non-traumatic etiology in TMJ dislocation as well as the predominant choice of the conservative treatment method (with or without analgosedation), which is consistent with many other studies.[14-16]

Further conservative treatments, such as the use of an occlusal splint or TMJ extraoral automobilization are used in chronic dislocation. Sclerosing agents (alcohol rivanol, 5% sodium psylliate, autologous blood injection (ABI, and botulinum A toxin) have been injected into the joint cavity in patients with recurrent TMJ dislocations, but are no longer used due to their side effects[12]. TMJ dislocation is a debilitating condition if not treated promptly. Therefore, all hospital staff should learn the immediate maneuver in restoring the dislocation.

LIMITATIONS

Our findings have to be considered with some caution, as the study was conducted retrospectively. Furthermore, complications of our treatments could not be ascertained due to lack of follow up.

CONCLUSION

TMJ dislocation is not a frequent condition. When it occurs, accurate diagnosis and rapid treatment are needed. All doctors should be familiar with targeted diagnosis and effective treatment. Manual reduction is sufficient in case of acute dislocation. In cases of repetitive dislocation or complicated dislocations, surgery is recommended.

CONFLICT OF INTEREST

The authors report no conflict of interest in this work.

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