

TMJ ANKYLOSIS: A STUDY OF ETIOLOGY CLINICAL AND RADIOGRAPHIC PATTERN PRESENTING AT KHYBER COLLEGE OF DENTISTRY

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ABSTRACT

Objective: To determine etiological, clinical, & radiographic findings of Temporomandibular Joint ankylosis.

Methodology: This descriptive study was carried out at Department of Oral & Maxillofacial surgery, Khyber college of Dentistry Peshawar, from May 2006 to August 2007. Sixty patients of Temporomandibular Joint ankylosis, seeking treatment for the first time, were included. A structured proforma was used to record data.

Results: Gender distribution showed a male to female ratio of 1.5:1. Maximum number of patients presented in 5-10 years (n=21, 35%). Cause was known in 88.3% cases, with 66.6% had history of trauma due to fall. Typical radiographic pattern was seen in almost all patients.

Conclusions: Mismanaged condylar trauma due to fall in young age was the main culpable cause, with consequent Temporomandibular Joint ankylosis.

Key words: Trauma, Condylar Fracture, Temporomandibular Joint Ankylosis.

INTRODUCTION

Ankylosis of Temporomandibular joint (TMJ) is a disabling condition in which the patient experiences problems in food intake, speech and maintaining oral hygiene due to limited mouth opening. The facial deformity resulting from ankylosis also has a psychosocial impact¹.

Ankylosis is true joint pathology with bony mass or fibrous tissue replacing the normal articulation and immobilizes the mandible². It most likely occurs due to disruption of the meniscus and organisation of haematoma within the joint with or without a related intracapsular fracture of the condyle³.

Previous trauma, especially to the chin area in young age, has been documented as the most common etiological factor⁴. Besides that Inflammation of the joint due to local or systemic infections has also been associated with ankylosis⁵. Primary degenerative diseases of the joint, though rare, and neoplasms can also be related to the etiology of TMJ ankylosis⁶.

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The clinical manifestations of this condition depend to a large extent on the age at the time of onset, duration, and involvement of one or both joints. Clinical signs such as limited mouth opening, typical facial deformity similar to mild hemifacial microsomia in unilateral cases and micrognathia in bilateral cases and palpable bony protuberance on the joint region are the main presenting features^{2,3}.

History plays an important role in diagnosing ankylosis. It will often describe previous trauma⁷ (usually to the chin) and progressive restriction of jaw movement, previous infection, or birth trauma. Clinical examination and radiographs including Orthopantomogram (OPG) and Computed Tomography (CT) scan are equally important for diagnosing and classifying extent of ankylotic mass⁸.

TMJ ankylosis is common in Pakistan and main reason is ignored or mismanaged trauma to the joints in growing age. The poor socioeconomic status of the patients and absence of specialists causes delays in diagnosis which often increases facial disfigurement and causes complications in treatment⁹.

Aim of the present study was to generate local data on TMJ ankylosis and its most prevalent cause. This will help the surgeon to timely intercept before

this condition develops, will provide timely treatment before increased facial deformity occurs, and will thus, improve quality of life of patients with TMJ ankylosis.

METHODS AND MATERIALS

This descriptive study was carried out at Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry Peshawar, from 20th May 2006 till 20th August 2007. Permission of hospital’s ethical review committee was taken. A total of 60 patients with TMJ ankylosis were included. Patients with recurrent ankylosis after previous surgeries were excluded from this study.

Consecutive (non random) sampling technique was used in this study. Data collection procedure was fully explained and an informed consent was obtained from patient, or guardian in case of children. A detailed history was taken and thorough clinical examination was carried out. OPG was the standard radiograph and when required was supplemented by postero-anterior (PA face) view, lateral oblique face view and CT scan was advised for confirmation of diagnosis. The information collected was used to fill a structured proforma for each patient.

The data collected was entered into SPSS version 17 and analyzed by applying descriptive statistics. Mean ± standard deviation (SD) and percentage of age groups were computed for age. Frequencies and percentages were computed for cause (etiology), scar on the chin, unilateral/bilateral ankylosis, and the variables of radiographic evaluation.

RESULTS

Gender distribution of the study showed that 60% patients were male (n=36), while the remaining 40% were female (n=24), with a male to female ratio of 1.5:1.

The mean age of the patients in this study was 13.33 ± 4.85 years. Maximum number of patients presented in the age group of 5-10 years (n=21, 35%), followed by 31.6% in the age group of 11-15 years. The detail of age distribution is shown in Figure 1.

In this study, 88.3% patients (n=53) had a known cause, while in 11.7% patients (n=7) the cause was not known. Among the patients with a known cause, majority of patients sustained condylar trauma due to fall (66.6%), followed by road traffic accidents (RTA). Detail of etiology is given in Table-1.

In the present study, 58.3% patients had a scar on the submental region (n=35), while 41.6% had no scar on chin (n=25).

Table-1: Causes of Ankylosis

Causes	n	%
Fall	40	66.7
RTA	4	6.6
Birth trauma/ Forceps delivery	3	5
Others(Assault, horse-kick)	4	6.6
Ear infection	2	3.3
Unknown	7	11.7
Total	60	100

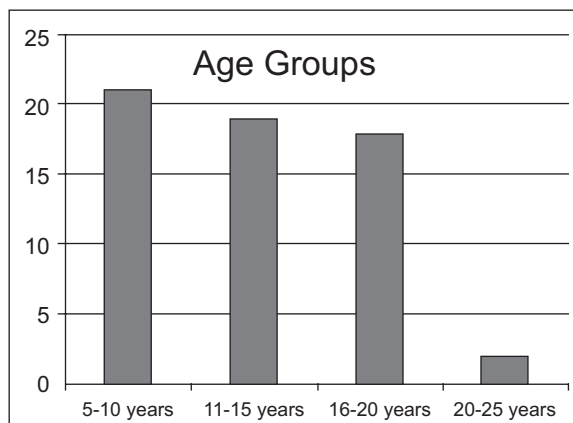


Figure 1: Age distribution of patients

Table-2: Radiographic findings of Ankylosis

Radiographic features	n	%	Total	
Condylar Mush-rooming	Unilateral	46	76.7	100
	Bilateral	11	18.3	
	None	3	5	
Loss of joint space	Unilateral	45	75	100
	Bilateral	14	23.3	
	None	1	1.7	
Ramus shortening	Unilateral	44	73.4	100
	Bilateral	14	23.3	
	None	2	3.3	
Antegonial notch obliteration	Unilateral	42	70	100
	Bilateral	14	23.3	
	None	4	6.7	

Also in 78.3% patients the ankylosis was unilateral (n=47), while in 21.6% the ankylosis was bilateral (n=13).

In the present study, the four typical radiographic findings of TMJ ankylosis i.e. mushrooming of condyle, loss of definable joint space, shortening of ramus and antegonial notch obliteration, were assessed in the patients’ OPG. Their results were tabulated, and given

in Table-2.

DISCUSSION

TMJ ankylosis is a relatively common condition of the younger age groups in the developing countries. The most striking finding in the literature is that the frequency of TMJ ankylosis in developing countries including Pakistan is much more than in the developed ones¹⁰.

Regarding gender distribution, in the present study more patients were male. Results are similar to study done by Ansari⁶, however, in studies by Long¹¹ and Tanrikulu¹², the number of female patients was more than the male. The relatively high number of male to female patients in our study may be due to the fact that male children are more active and involved more in outdoor activities as compared to female children.

In this study, the mean age of the patients was 13.33 ± 4.85 years. The youngest patient was a 5 years female child while the oldest was 27 years old male. Nineteen patients presented in 11-15 years while eighteen patients in 16-20 years. The most common age group came out to be 11-20 years with 37 patients, followed by 5-10 years (20 patients). The result is similar to studies conducted by, Sawhney¹³ and Li¹⁴. Involvement of the lesser age group is due to the fact that fractures of condyles are more common in children as compared to other sites of the mandible. Also, comminuted high condylar fracture which is not easily detectable on routine radiographs and has a greater predisposition towards ankylosis is more frequently seen in the young.

In this study, the etiology/cause of ankylosis was known in 88.3% cases (n=53), while in 11.6% cases (n=7) the cause was not known. The cause was previous trauma in majority of cases which consisted of the categories of fall (n=40) and RTA (n=4). The other categories of causes were birth trauma/forceps delivery, infection of ear, and others. Hence, ankylosis was post-traumatic in 80% of cases (n=48), falling off a hill/height or roof and knocking the chin or mandible being the most common form of trauma. It was verified in 58% patients by the presence of a distinct scar on the submental region.

Trauma to the chin and TMJ is documented as the most common cause of TMJ ankylosis in previous studies^{15,16,17} ranging from 64% to 97%. In recent studies,^{18,19} trauma, again was the predominant causal factor. Our etiological findings are comparable to the results of all these studies.

Topazian⁵ analyzed 229 cases of TMJ ankylosis for etiological information, 44 of which were new instances while 185 were collected from the literature. Out of these, 31% were due to trauma, 49% were related to infections and 19% to unknown causes. In the 44 new cases, 39% were associated with trauma, 43% with infection and 18% with unknown causes. These percentages show that infection was the most common etiologic factor in the past, while in the latest studies and in the present study it is the least involved cause. This change in etiological trend is due to the widespread use of antibiotics at the earliest sign of inflammation nowadays.

In the present study 58.3% children had scaring in sub mental region. This is important to recognize as chin is the most exposed part of the body of a falling child. In this type of injury force is directly transferred to the weak and highly vascularized pediatric condyle, thus careful assesment of condylar head is essential, if a child presents with a laceration over the chin with a history of fall²⁰. In the study by Xiang¹⁸ fractures of the condylar head with damaged articular discs were associated with ankylosis, after a follow-up of 6 months to 10 years. Hence a long term follow-up is essential in these cases especially if trauma occurs in childhood.

In our study 78.6% patients had unilateral ankylosis. These results are comparable to studies done by Long¹⁹, Abbas²¹ and Belmiro²².

Radiographic examination plays an important part in diagnosing and classifying ankylotic mass. The typical appearance of an ankylotic mass on a radiograph is described as "mushroom shaped"²³. The Panoramic radiograph or Orthopantomograph is the single, most commonly used informative radiograph for the diagnosis of TMJ ankylosis⁷. It shows both the joints which can be compared in unilateral cases⁸. The presence or absence of joint space, obvious bony abnormalities of the TMJ, coronoid hyperplasia, and pronounced antegonial notch can be differentiated. In this study loss of definable joint space was found in 98% of patients.

In this study 2 patients were advised computed tomography (CT) scans. Presently, the use of CT scans is helpful to define the true extent of ankylosis, and the relationship of ankylotic mass to the surrounding important anatomic structures, especially at the skull base¹⁶. Also, the presence of fractured condylar head on the medial aspect can be located as well as the bony fusion in cases of re-ankylosis can be appreciated⁸.

CONCLUSIONS

From this study it is concluded that:

1. Condylar trauma due to fall in young age was the main culpable cause, with consequent TMJ ankylosis.
2. Majority of the patients were male (60%).
3. Maximum number of patients presented in the age group of 5-10 years (35%).
4. Typical radiographic findings of TMJ ankylosis were present in almost all cases.

RECOMMENDATIONS

Early diagnosis of condylar injuries in children provides only chance of prevention of TMJ ankylosis. Tertiary care hospitals should have trained Oral and Maxillofacial Surgeons for proper management and follow up of children with condylar fractures. Public awareness campaigns about, consequences of fall and facial trauma in children, are need of the day.

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