

Limited Mouth opening causes and its Treatment modalities among Peoples in Al-khoms, Libya

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Abstract: Reduced mouth opening is a common clinical problem and many individuals experience it at least once in his or her life and most dental practitioners see patients with restricted mouth opening quite often. It can occur due to a variety of underlying conditions which may involve complex factors. Hence, it is essential for the clinician to thoroughly investigate and examine these cases for proper diagnosis and its appropriate management. Main objective of this study is to find the major cause(s) for Limited or restricted mouth opening and its frequency of treatment method followed in Libya for the cure and healthy life. Study was conducted at Al-khoms Teaching hospital, Al-khoms, Libya from January 2017 to December 2017. Total 75 cases (58 male and 17 females) with limited or restricted mouth opening problems were admitted in the hospital in the studied period. Limited mouth opening was diagnosed by complete physical examination and imaging. Majority of cases with limited mouth opening in this study are due to Oro-facio trauma followed by TMJ. In all parameters, male cases are more predominant than the female cases. Regarding treatment, non-surgical method is more effective for the correction of the similar problems. Surgical treatment is used in the sever and required cases.

Key Words: Reduced mouth opening, Oro-facio trauma, Temporomandibular joint.

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I. Introduction:

Limited or Restricted mouth opening is a commonly encountered problem in oral and maxillofacial surgical practice. Trismus is simply a limitation of movement (Soames and Southam, 1998). The problem of reduced mouth opening is caused by variety of reasons. In healthy individuals mouth opening is around 30-50mm. But when the mouth opening is limited to a maximum of 20mm the individual is said to have a reduced mouth opening or trismus (Gupta et al., 2010). Males usually have slightly greater mouth opening than females. (40–60 mm, average of 35 mm). The Normal Lateral movement is 8-12mm (Scully, 2008), and normal protrusive movement is approximately 10mm (Hupp et al., 2008 and Visscher et al., 2009). The causes of this are varied and successful treatment requires an understanding of the underlying disorder. Trauma is the most commonly identified cause, followed by infection (odontogenic, otitis media, and mastoiditis). Internal temporomandibular joint (TMJ) derangements may also lead to chronic hypomobility problems. Traumatic perinatal events and neuromuscular conditions can also result in hypomobility in infancy.

Congenital trismus affects the structures of mastication including the masseter and pterygoid muscles, the temporomandibular joint (TMJ), nerves that innervate the mouth, and other supportive tissues (Stubblefield et al., 2010). When the muscles and surrounding tissue are damaged, limited mouth opening will occur. This limited mouth opening will lead to muscles atrophying and joint degeneration.

The potential causes of trismus are diverse but can be broadly divided into: (1) Intra-articular causes where there is pathology of the temporomandibular joint itself. Intra-articular causes include: ankylosis, arthritis, synovitis, and meniscal pathology (Dhanrajani and Jonaidel, 2002). (2) Extra-articular causes that can restrict movement of the jaw. Restricted mouth opening caused by extraarticular pathology is what most physicians recognize as trismus and its causes can be further divided into congenital disorders and acquired disorders.

Persistent limited mouth opening can be treated by non-surgical conservative approach or surgical approach and in some cases combination of both may be required. The majority of patients with jaw disorders achieve good symptomatic relief with non-invasive management. Long term follow-up studies show that 85% to more than 90% of patients have few or no symptoms after conservative treatment (Garefis et al., 1994). Several surgical techniques have been suggested for treatment of limited mouth opening and can range from arthroscopic surgery to more invasive and complicated methods such as TMJ prosthesis and distraction osteogenesis.

Main objective of this study is to find the major cause(s) for Limited or restricted mouth opening and its frequency of treatment method followed in Libya for the cure and healthy life.

II. Materials And Methods:

A prospective study was conducted at Al-khoms Teaching hospital, Al-khoms, Libya from January 2017 to December 2017. Total 75 cases (58 male and 17 females) with limited or restricted mouth opening problems were admitted in the hospital in the studied period. Limited mouth opening was diagnosed by complete physical examination first to determine the cases properly and confirmed it by X-ray and CT-Scan imaging methods. Except for those cases caused by acute trauma and tetanus, trismus tends to develop slowly and some patients may not be aware until they can only open their mouth to 20 mm or less. A simple diagnostic test is the 'three finger test'. Ask the patient to insert three of their fingers into the mouth. If all three fingers can fit between the incisors, mouth opening is considered normal but if less than three can be inserted, trismus likely. The frequency of causes and treatment were analysed.

III. Results And Discussions:

Limited or restricted mouth opening can often be a difficult yet challenging problem to face. Oro-facio Trauma is the most common cause of bony and fibrous ankylosis (Chidzonga, 1999). Temporomandibular dysfunction (TMD) or TMJ pain dysfunction syndrome related pain is the most common persistent oro-facial pain with a prevalence of about 10-15% worldwide. A TMJ infection resulting in hypomobility is most commonly the result of contiguous spread from an odontogenic infection, otitis media, or mastoiditis (Hadlock et al., 2001).

Frequency of various causes for the limited mouth opening is given in the table 1. Oro-facio trauma cases more with 42.67% in male and female cases with 14.67%. This increase in the percentage of trauma with limited mouth opening cases in male may be due to more possibility of moving outside and facing more Road traffic accident (RTA). Next to the trauma, TMJ cases are more to attend the hospital with different reasons. In the present study, the percentages of TMJ male cases are 22.67. Tumour and oral sub-mucous fibrosis (OSMF) cases are not attended during study in the Al-khoms teaching hospital.

1. Frequency of causes for Limited Mouth opening:

S. No.	Causes	No. of cases			
		Male	%	Female	%
1.	Oro-facio Trauma	32	42.67	11	14.67
2.	Infection	06	08.00	01	01.33
3.	TMJ	17	22.67	04	05.33
4.	Cancer/tumor	00	00	00	00
5.	Surgical interventions	03	04.00	01	01.33
6.	Oral sub-mucous fibrosis (OSMF)	00	00	00	00
	Total	58	77.34	17	22.66

(% from the total number of cases)

Myositis ossificans traumatica (MOT) or fibrodysplasia ossificans circumscripta involving the muscles of mastication, is generally associated with a traumatic event or repeated episodes of minor trauma and can result in mandibular hypomobility (Aoki et al., 2002) Diagnosis of MOT is confirmed by identification of calcifications within the muscles of mastication on CT scans. Minimal response is found with physical therapy and stretching exercises; consequently, surgical treatment is often undertaken to remove the ectopic bone. Other treatment modalities include acetic acid iontophoresis, magnesium therapy, and the use of etidronate sodium (Wieder, 1992).

No cases with tumor have come across during the present study. Mass lesions (both benign and malignant) can also result in mandibular hypomobility. Squamous cell carcinoma of the tongue base or tonsillar pillar and nasopharyngeal carcinoma are often accompanied by trismus. Masses involving the mandibular muscles invariably affect the range of motion and need to be included in the differential diagnosis (Michael et al., 2004).

2. Frequency of treatment for Limited mouth opening:

S. No.	Treatment	No. of cases			
		Male	%	Female	%
1.	Non-surgical	46	61.33	13	17.34
2.	Surgical	05	06.67	01	01.33
3.	Both	07	09.33	03	04.00
	Total	58	77.33	17	22.67

(% from the total number of cases)

Gupta et al., (2010) treated the similar complaining cases in accordance with the severity of diseases. When it was severe and complicated, they used surgery for the correction of Limited mouth opening. Persistent limited mouth opening can be treated by non-surgical conservative approach or surgical approach and in some cases combination of both may be required. Treatment frequency is table in Table 2. Correction of Limited mouth opening in the present study is done with Non-surgical process. 61.33% of male and 17.34% of female cases is corrected/treated by non-surgical method. Mostly it is treated by Non-surgical treatment (Medication and physiotherapy or exercise). Similar treatment is also done by Garefis et al., (1994). A multidisciplinary medical model that includes patient education and self-care, cognitive behavioral intervention, pharmacologic therapy, physical rehabilitation, and/or orthopedic appliance therapy is involved for the management of nearly all patients (National Institute of Health assessment statement, 1996). Physical therapy is recognized as an effective, conservative approach for patients with jaw disorders.

Surgical method of correction is less in this study with the 6.67% male and 1.33% in female. Various surgical methods such as Arthroscopic surgery, Disc repositioning, Discectomy, gap arthroplasty, chondrochondral graft, auricular graft, dermis, alloplastic grafts, TMJ prosthesis and distraction osteogenesis are used for the for the correction of related symptoms with less mouth opening. Thomas and Annette (2017) treated the similar cases complaining and diagnosed with bilateral elongated mandibular coronoid process with the surgery process. Limited mouth opening can also occur with coronoid fractures and depressed zygomatic arch fracture. In both cases, extra-articular ankylosis may occur as a result of calcification of the formed haematoma, resulting in fusion of the coronoid process to the zygomatic arch. In addition, other fractures of the mandible and the associated muscular contusions and soft tissue lacerations are all can lead to subsequent restriction in the jaw movements. Various physiotherapeutic techniques and strategies have been suggested involving spatula, wedge and TheraBite Jaw Motion Rehabilitation System (Kim et al., 2014). The exercise program should be initiated shortly after surgery and the patients should be instructed to perform the exercises several times a day involving maximum mouth opening and translation movements in all directions.

In conclusion, the aetiology of limited mouth opening is varied; it can be secondary to trauma, infection, inflammatory or rheumatologic conditions, radiation therapy and less commonly as a manifestation of some psychiatric disorders or adverse drug reaction or as a postsurgical complication following craniotomy procedure or orthognathic surgery. Successful treatment requires an understanding of the underlying disorder and can range from more non-surgical conservative approach than an invasive surgical intervention and in some cases combination of both may be required.

IV. Conclusion:

In the present study, causes of limited mouth opening are more. But the majority of cases are due to Oro-facio trauma followed by TMJ. In all parameters, male cases are more predominant than the female cases. Regarding treatment, non-surgical method is more effective for the correction of the similar problems. Early treatment of this condition is better for the patient and can greatly improve quality of life. This condition is manageable with the appropriate intervention and treatment plan. Knowing that the discovery of this condition is relatively recent and therefore immature in its diagnosis as well as treatment, offers patients optimism that future innovations will lead to greater success in its treatment.

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