

Comparative Evaluation of Inter-Incisal Distance in the Management of Temporomandibular Joint Ankylosis in Noma Patients

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INTRODUCTION

Ankylosis is a Greek word which means "fusion of the body part". Temporomandibular joint ankylosis (TMJ) is an abnormal immobility and consolidation of the TMJ (Manganello-Souza & Mariani, 2003). It is a state in which the mandibular condyle is fused to the glenoid fossa of the temporal bone (Zhi et al., 2009). TMJ ankylosis is extremely disabling affliction that severely affect patient's mastication, speech, appearance, access to routine dental care as well as psychological development (Singh et al., 2014). This condition Several etiological factors have been

implicated among which trauma and infection like Noma disease are the leading causes (Do Egito Vasconcelos et al., 2009). The main factor in TMJ ankylosis is the reduction in mouth opening, the extent of which depends on whether the ankylosis is fibrous or bony, unilateral or bilateral and, partial or complete (Bello et al., 2012) One of the most important aspects in the management of temporomandibular joint (TMJ) ankylosis is to achieve satisfactory mouth opening (Jakhar et al., 2013). It is best evaluated by measuring interincisal distance (IID). The treatment of this condition is via

surgical procedures targeting aggressive removal of the ankylotic mass and creation of a new joint to ultimately reestablish an acceptable mouth opening (interincisal distance to be more precise) (Loveless et al., 2010). To achieve this acceptable interincisal distance, aggressive physiotherapy must be instituted and maintained. This requires supervision and patients' cooperation. Hence the aim of this study was to evaluate and compare the pre, intra and, post-operative IID in the management of TMJ ankylosis secondary to Noma.

MATERIALS AND METHODS

This was a retrospective study conducted at Noma Children's Hospital Sokoto over a period of 3years (November 2016 to October 2019). Noma Children Hospital was established in 1999 by the Sokoto State government to provide free services to curtail Noma diseases that became endemic in the study region. Ethical approval was obtained from the state ministry of health (SKHREC/065/2022). The case records of patients who were managed for TMJ ankylosis were retrieved. Patients' demographics including; age, sex, laterality of the ankylosis, surgical procedure, preoperative, intraoperative and

postoperative IID were extracted. Case notes with incomplete record were excluded and, the data obtained from this study were analyzed using Statistical package for social sciences (IBM SPSS) version 25.

Result

A total of 42 case notes were retrieved and analyzed. There were 16(38.1%) males and 26(61.9%) females (figure 1) in the range of 5-25years with mean $\pm$ SD of 10.0 $\pm$ 5.1years (table 1). Unilateral ankylosis constitutes the majority (32(76.2%)) whereas bilateral cases constitute (10(23.8%)) Figure 2. The mean $\pm$ SD preoperative(P1) and intraoperative(P2) IID are 5.0 $\pm$ 4.7mm and 41 $\pm$ 6.6mm respectively. The mean $\pm$ SD postoperative IID at 1st and 2nd review (P3 and P4) are 35 $\pm$ 8.2mm and 32 $\pm$ 8.0mm respectively (table 1). Comparison of age categories and P3 yielded a reduction in IID with decreasing age which was not statistically significant ($\chi^2 = 12.336$ df=6 p-value= 0.055). However, comparison of age categories and P4 revealed reduction in IID which was significant ($\chi^2 = 30.707$ df=6 p-value= 0.000) (Table 2).

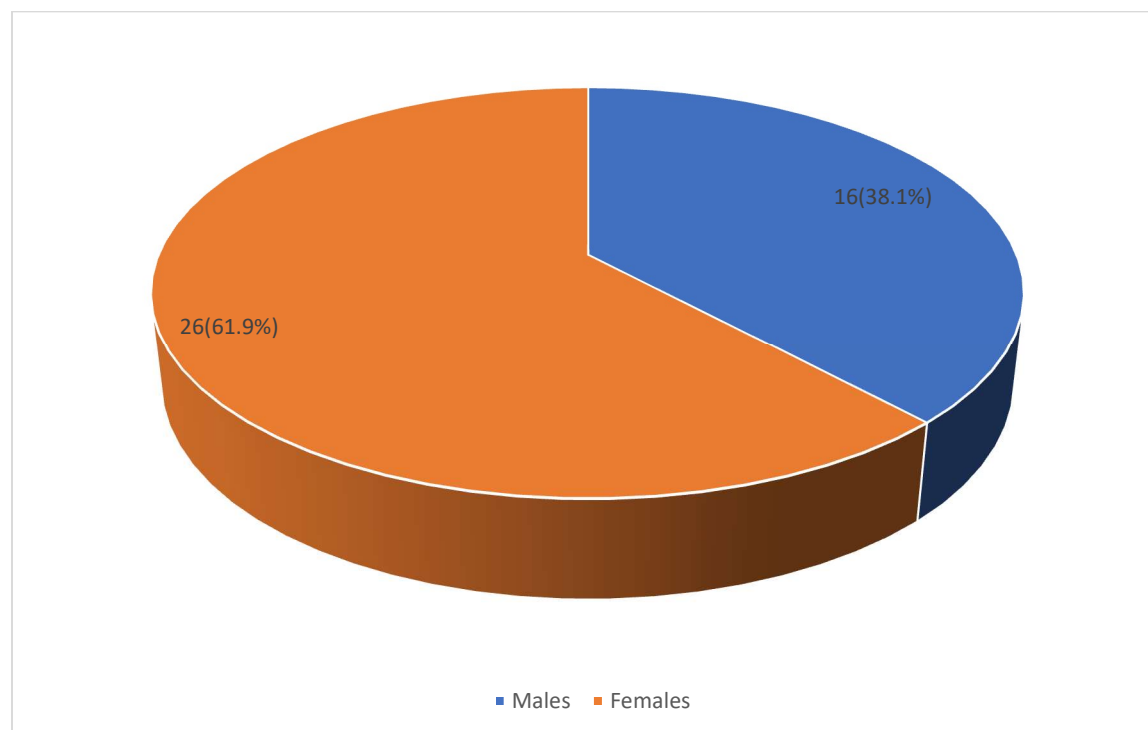


Figure 1: Sex distribution of the study cases

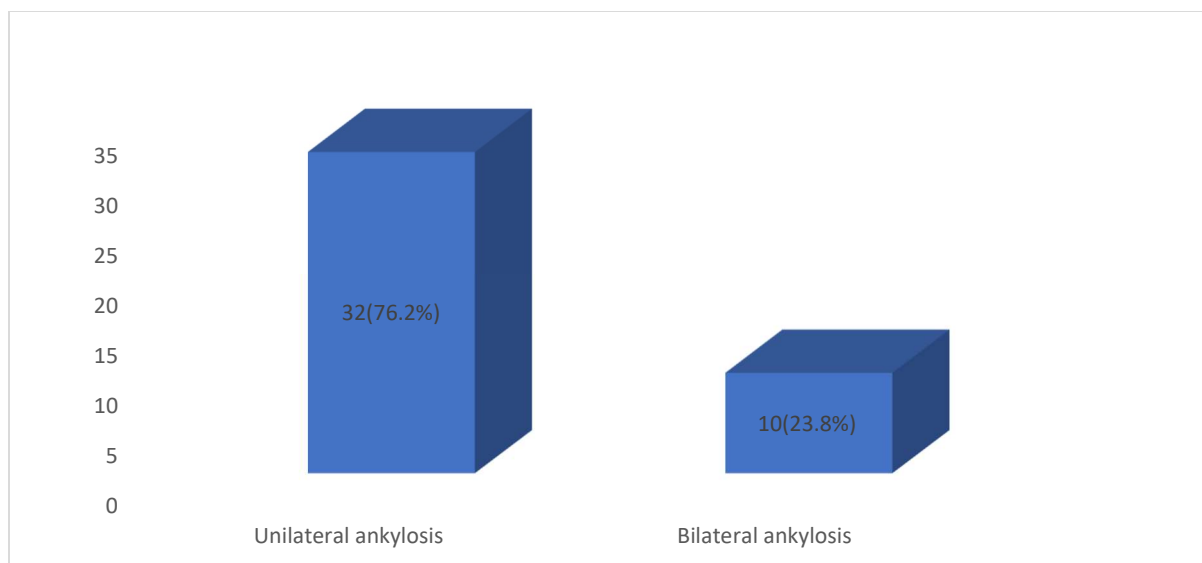


Figure 2: Laterality of the cases of the study

Table 1: Mean and standard deviations of the age, pre, intra and postoperative IID

Variable	Mean±SD
Age	10.0±5.1years
Preoperative interincisal distance (P1)	5.0±4.7mm
Intraoperative interincisal distance (P2)	41±6.6mm
Postoperative interincisal distance at first review (P3)	35±8.2mm
Postoperative interincisal distance at second review (P4)	32±8.0mm

Table 2: Comparison of age categories with pre, intra and, postoperative IID

IID at P3(mm)	Age category years)					Test statistics	Level of Significance
	5-10	11-15	16-20	21-25	Total n(%)		
<30	12(28.6)	5(11.9)	4(9.5)	2(4.8)	23(54.8)	$\chi^2=12.336$ df=6	p-value= 0.055
30-40	7(16.7)	2(4.8)	3(7.1)	2(4.8)	14(33.3)		
>40	0(0)	2(4.8)	2(4.8)	1(2.4)	5(11.9)		
Total	19(45.2)	9(21.4)	9(21.4)	5(11.9)	42(100)		
IID at P4(mm)							
<30	13(31.0)	2(4.8)	0(0)	0(0)	15(35.8)	$\chi^2 = 30.707$ df=6	p-value= 0.000
30-40	16(38.1)	4(9.5)	4(9.5)	0(0)	24(57.1)		
>40	1(2.4)	0(0)	0(0)	2(4.8)	3(7.1)		
Total	30(71.4)	6(14.3)	4(9.5)	2(4.8)	42(100)		

CONCLUSION

Aggressive jaw exercise is a key factor in maintaining the achieved intraoperative IID during TMJ ankylosis management. The age of the patients should be considered before intervention since age influences patients' cooperation in performing aggressive jaw exercises to prevent re-ankylosis.

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