Soft Palate Dimensions and Configuration Changes in Oral Submucous Fibrosis (OSMF)- A Radiographic Study

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Abstract

Introduction: It is a highly potent and premalignant condition affecting the oral cavity of people consuming arecanut, gutka. The clinical presentation of Oral Submucous Fibrosis depends on the stages of the diseases during detection is characterized by juxta epithelial inflammatory reaction and progressive fibrosis of submucosal tissue that affect most parts of the oral cavity, such as in the soft palate.

Aim: To assess the changes in dimensions and configuration of soft palate by using digital lateral cephalometry was considered**.**

Materials and Methods: A total of 10 subjects of both the gender, in the age group 20-60 years, were selected from the Outpatient Department of Oral Medicine and Radiology. These 10 Subjects were divided into two group, group I comprised 5 patients which is clinically diagnosed Oral Submucous Fibrosis (OSMF) and group II comprised of 5 individuals having habit with no mucosal changes, the dimensions and configuration (shapes, anteroposterior length and supero inferior width of soft palate) was evaluated using digital lateral cephalometry. The data were statistically evaluated by using the SPSS statistical software 21.0 Version, the Chi Square test was used for the comparison of categorical variables. The level of the significance for the present study was fixed at 5%.

Results: In the subjects with Oral sub mucous fibrosis (OSMF) the shape commonly observed are Type 1-leaf shaped followed by Type 2 Rat shape. The mean AP score in Oral sub mucous fibrosis (OSMF) was 26.82±4.77 whereas in the subjects without Oral sub mucous fibrosis (OSMF) the mean AP score was 33.62±2.67. The difference between the groups was statistically significant. In the subjects with Oral Submucous Fibrosis (OSMF) the mean SI score was 7.80 ±1.77 whereas in the subjects without Oral Submucous Fibrosis (OSMF) the mean SI score was 9.34± 1.42. The difference between the groups was statistically non-significant.

Conclusion: As stages of Oral sub mucous fibrosis (OSMF) increases the anteroposterior soft palate length get decreased and supero inferior soft palate width get increased.

Key words*: OSMF, Cephalometry, soft palate, anteroposterior length, superoinferior width.*

Introduction

The oral cavity is a complex form with advanced details and varied functions. It is limited by the palate, the floor of mouth, the cheek, and the lips, as well as by uvula and the palatine arches on each side of uvula. [1] Soft palate is considered to be mobile part situated posterior to hard palate which is fibromuscular in nature. The salient feature of soft palate is that it helps in velopharyngeal closure and thus aid in normal

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physiologic function like sucking, swallowing and pronunciation,phonation,respiration.[2]

Few studies in the literature dimensional changes of soft palate with increasing age, change in cleft lip and palate and in patient with sleep apnoea was noticed.[3]The lateral skull view is the most important view for assessment of oral structure including hard and soft tissue images.[1,2] Haider et al in 2000, did a cross sectional study and reached to conclusion that the soft palate is the first tissue to be affected in Oral Sub Mucous Fibrosis (OSMF) and as the disease increase in severity, are more likely to be found in anterior as well.[4]

Lateral cephalogram is good diagnostic aid to assess the soft palate and its morphology .These images showed as different configurations of soft palate noticed in various individuals, as the morphological variants and changes in angulation of soft palate i.e. 30 degree or greater between distal part of uvula ,The longitudinal axis of soft palate noticed which can lead to various condition such as obstructive sleep apnoea , difficulty in swallowing, speech and respiration.[1,3] It is less expensive , more useful, easily achieved with reduced radiation exposure [5]

Oral submucous fibrosis (OSMF) is one of the most common premalignant lesion conditions affecting the oral cavity of people consuming arecanut and gutka. It is a chronic, progressive scarring disease affecting the people of south east Asian origin, including the Indian subcontinent.[6]

The aim of the study is to assess the soft palate dimensions and configuration in Oral sub mucous fibrosis (OSMF) patient using digital lateral cephalogram with respect to different clinical stages of oral submucous fibrosis (OSMF) in clinically diagnosed patients and to compare the various shapes and size of soft palate with respect to age and gender in OSMF.

Material and Method

The present study was conducted in department oral medicine and radiology of Teerthanker Mahaveer dental college and research Centre, Moradabad, India. This study was approved from institutional authorized ethical committee. Also, written informed consent was obtained from each subject prior to the study.

A total of 10 subjects were taken in the study and divided as two groups, group I comprised 5 patients who is clinically diagnosed Oral Submucous Fibrosis (OSMF) and group II comprised of 5 individuals having habit with no mucosal changes with age group 20-60 years. With Inclusion criteria that Patients clinically diagnosed with oral submucous fibrosis (OSMF) and were considered. And Normally healthy individuals for control group with the history of habit without any mucosal changes,

Exclusion criteria Congenital anomalies i.e. congenital cleft lip and palate, systemic disease, syndrome, any Odontogenic or space infections, Patients with TMJ pathologies and traumatic conditions, Pregnant females, Patient who underwent surgeries for carcinoma of soft palate, hard palate or tongue were excluded from study.

Based on history of habit and clinical features, diagnosis and grading of the OSMF. the clinical diagnosis was made and classify the stages of OSMF by Dr. Ranganathan et al (2001).[7] they are of four group as

Group 1- only symptoms, with no demonstrable restriction of mouth opening.

Group 2- limited mouth opening 20 mm sand above.

Group 3-mouth opening less than 20 mm.

Group 4-OSMF advanced with limited mouth opening. Precancerous changes seen throughout the mucosa.

All the lateral cephalogram was taken by using Digital lateral cephalograms in radiology department using Planmeca proline XC, panoramic and cephalometric machine. A tube potential of 68kvp , a tube current of 5mA, and exposure time of 17 sec were used to develop the contrast digital image saved in operating system Microsoft Windows XP Professional.

All these radiographs were observed and categorized and evaluated by oral and maxillofacial radiologist. The length of the soft palate will be evaluated by measuring linear distance from posterior nasal spine to tip of uvula in anteroposterior length and the greatest width to be measured for the superior inferior diameter of the soft palate.

Different patterns of soft palate were recorded and classified according to Shapes reported by Supriya Rathore et al 2019 [8] as follows Type 1 (leaf shape),Type 2(rat tail), Type 3(butt shape), Type 4(straight line shape), Type 5(s shape), Type 6(crook shape), Type 7(u shape) Type8 (bifid shape).

The data was entered in the prescribed Performa and analysed using the SPSS statistical software 21.0 Version. The descriptive statistics included frequency and percentages. For the purpose of inferential statistics, the Chi Square test was used for the comparison of categorical variables. The level of the significance for the present study was fixed at 5%.

Results

Among 10 subjects four females and six male Patient was considered and after observing and statistical analysis the result obtained were

SOFT PALATE SHAPES ACCORDING TO STAGES OF OSMF

In the subjects with Grade I OSMF 100% of the subjects were having leaf pattern of soft palate whereas in subjects with Grade II OSMF 50% were having Distorted and rest 50% were having Leaf pattern. In the subjects with Grade III OSMF 50% were having Leaf and 50% were having Rat Pattern, The difference between the groups was statistically significant.

COMPARIOSN OF AP AND SI BETWEEN SUBJECTS WITH AND WITHOUT OSMF

In the subjects with OSMF the mean AP score was 26.82±4.77 whereas in the subjects without OSMF the mean AP score was 33.62±2.67. The difference between the groups was statistically significant.

In the subjects with OSMF the mean SI score was 7.80 ±1.77 whereas in the subjects without OSMF the mean SI score was 9.34± 1.42. The difference between the groups was statistically non-significant.

Shapes observed in the study

Fig.1 DISTORTED SHAPE

Fig .2 LEAF SHAPE

Fig .3 RAT TAIL

Fig. 4 BUTT SHAPE

Table- 1 : PALATE SHAPES ACCORDING TO STAGES OF OSMF

	Distorted	Leaf	Rat tail	P value
Stage I	0	1	0	0.001
	.0%	100.0%	.0%	
Stage II	1	1	0	
	50.0%	50.0%	.0%	
Stage III	0	1	1	
	.0%	50.0%	50.0%	

Chi Square test at $p \leq 0.05$ is significant

Table -2 : COMPARIOSN OF AP AND SI BETWEEN SUBJECTS WITH AND WITHOUT OSMF

	GP	Mean	Std. Deviation	Std. Error Mean	P value
AP	Without OSMF	33.62	2.67	1.19	0.030 (Significant)
	With OSMF	26.82	4.77	2.38	
SI	Without OSMF	9.34	1.42	0.637	0.190 (Non-Sign)
	With OSMF	7.80	1.77	0.886	

Disscusion

Oral Submucous fibrosis has a multifactorial etiology, areca nut and gutka considered to be most common and superior cause for the disease.it does not only influence buccal mucosa, tongue, lips but submucosa of soft palate as well. [6,1] Acquiring careful understanding concerned to the changes noticed in soft palate during the increasing stages of oral submucous fibrosis and in the individual who is having a habit with no mucosal changes will be helpful for the dentist to halt the progressive disease at that particular stage to prevent further complication and restore structural and functional outcomes.

The clinical observation of soft palate is not possible, so to evaluate the changes in soft palate lateral cephalometry is a prime radiograph to be concerned. The cephalometry helps to visualize the dimensional and configurational changes noticed in the soft palate with less radiation exposure.

In present study distorted shape is noticed in group I which is correlating with study done by khaitan t et al [1] in healthy individuals.

In the present study, group I (OSMF)shows predominantly 60%leaf shape followed by 20% distorted and 20 %rat shape which was in agreement with studies done by Ashwani et al[6], Deshmukh et al [5], chintamaneni et al [9], Shanker et al [10]. And leaf shape pattern is more predominant in group II of about 40% leaf and 40% rat shape which is in accordance to the studies done by khaitan .t .et al 1, Nagaraj et al [2], Santosh et al [3], you et al[10].

According to the stages in our study group it was found that leaf shaped, group 2-50% distorted ,50% leaf shaped ,group-3 50%leaf and 50% rat shape observed, which is similar to the study done by Patil et al[5] in group 1 only group 2 and group 3 result was dissimilar to our study.

According to anteroposterior length and superoinferior width in group I was 26.82±4.77 and SI 7.80 ±1.77 and Group II AP length 33.62±2.67 and SI width 9.34± 1.42. Corelating with Patil et al[5], Supriya et al[8] Chintamaneni et al [9],Shanker et al [10], with respect to AP length the SI width was non-significant in our study.

Conclusion

As the disease progresses the dimension and configuration of soft palate also changes. Lateral Cephalogram can be efficiently used to assess the shapes and size of soft palate which is altered in individual with or without the habits, so it can be beneficial in assessing fibroses in individual with habit at an early stage.

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Shapes observed in the study

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