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Verifying Relationship between fovea palatinae and the posterior palatal seal in Kashmiri population

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Abstract

Background: The present study was carried out to study the position of fovea palatinae in relation to posterior palatal seal (post dam) in Kashmiri population sample, whether in front, at or behind, and gender differentiations.

Material and methods: 50 subjects were randomly selected. In each subject, hard and soft palate junction, anterior and posterior vibrating lines and fovea palatinae were located and marked. Using Vernier caliper and divider, the distance between these lines and fovea palatinae were measured and assessed for the location of vibrating line whether in front, at or behind the fovea palatinae.

Results: The results showed that 50.9% of patients had their vibrating line at their fovea palatinae, 44.5% had it in front and 6.4% behind. There were highly significant differences between; age groups of patients and gender distribution of patients.

Conclusion: The study concluded that fovea palatinae is: A reliable anatomical land mark that helps in determining the posterior palatal seal (post dam). The majority of patients had their vibrating line at their fovea palatinae.

Keywords: Posterior palatal seal, post dam, fovea palatinae, vibrating line, hard and soft palate junction

1. Introduction

The location and achievement of Posterior Palatal Seal (PPS) though important has so far remained a highly controversial issue as the searching of literature reveals various methods; viz: 1. the arbitrary technique of scraping the cast before processing, 2. selective loading impression technique and 3. physiological impression technique [1]. Even in these methods there are great variations regarding the pattern (single bead/ double bead/ butterfly), depth of scraping (0.5 -1.5 mm), material use (wax/green stick) and stage of recording (during border moulding/after final impression/ during trial denture/ during denture delivery).

One of the easiest and most commonly practiced method for determining the extent of posterior palatal seal and that of the maxillary complete denture is using the anatomical landmarks (fovea palatinae and hamular notch) [2, 3]. All authors agreed about the relation between the vibrating line and the posterior border of the maxillary denture [4-6]. The vibrating line of the palate is the junction between the movable and immovable portion of the soft palate [4, 5]. To determine the location of the vibrating line there are the following techniques:

1. Phonation of the "ah" sound [6].
2. The swallowing method [7, 8].
3. The nose blowing method [6].

The aim of this study is to investigate the reliability of fovea palatinae for determining the posterior border of the maxillary denture.

Materials and methods

A clinical examination of the palate of patients with edentulous maxillary arch, randomly selected from patients attending prosthetic Department in Government Dental College and Hospital. The palate of each patient was examined for evidence of pathological changes, for the visibility, number and location of the fovea palatinae, plus the visibility of the vibrating line. Out of 50, 32 male and 18 female of age groups ranging from (40-85) years. These patients were asked to open wide and pronounce "ah" sound repetitively; both the fovea palatinae and the vibrating line were marked with an indelible pencil after drying the area with

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gauze. Each patient was examined by three seniors independently. If they agreed to the position of the vibrating line whether in front, at or behind the fovea palatinae. They will proceed to the next patient if not they will repeat the examination until their results coincide. Suitable statistical methods were used in order to analyze and assess the results using a computer through the SPSS program.

Result

In the present study, 23 subjects out of 50(46%) had fovea palatini on junction between hard and soft palate. Out of these

23 subjects, 12 subjects had their anterior vibrating line also coincided with the junction. 10(20%) subjects had fovea between the junction and the anterior vibrating line. The mean distance of fovea from the junction was 2.72mm posterior or on other way fovea was 2.44mm anterior to the anterior vibrating line. 3(6%) subjects had fovea on the anterior vibrating line. 12(24%) subjects had fovea between anterior and posterior vibrating line. In 1(2%) subject fovea coincided with posterior vibrating line while the anterior vibrating line coincided with the junction (Table 1).

Table 1: Location and distance of fovea.

Score	Anterior to the junction	On the junction	Between junction and AVL/VL (mm)	On AVL	Between AVL and PVL (mm)	On PVL
No. of subjects	0	23(46%)	10(20%)	2(4%)	14(28%)	1(2%)
Mean distance	-	-	2.72	-	2.44	-

Table 2: Distance between different anatomical lines.

Distance between Junction and AVL (mm)			Distance between AVL and PVL (mm)			
Mean distance	Right	Mid	Left	Right	Mid	Left
Mean distance	2.76	2.38	2.79	5.55	6.22	5.40

In 10(20%) subjects there was only one vibrating line. In 80% subjects there were 2 vibrating lines. In 23 subjects, the junction between the hard and soft palate and the anterior vibrating line coincided. In the rest the mean distance between junction and hard palate was: at right side 2.76mm, in mid line 2.38mm and in left side 2.79mm. The mean distance between the anterior vibrating line and posterior vibrating lines were: right side 5.55mm, midline 6.22mm and on left side 5.40mm (Table 2).

Discussion

In order to gain good retention of the maxillary complete denture an adequate seal must be obtained along the posterior border [9]. There is a great variation regarding the position of fovea palatini. In our study most of the subjects had fovea on the junction between hard and soft palate. However, Chen found that majority of the subjects had fovea palatini on or behind the anterior vibrating line [5]. In the present study; only 4% had fovea palatini on the anterior vibrating line and 30% behind the anterior vibrating line.

Majority of the subjects i.e. 66% in our study had fovea anterior to the anterior vibrating line. According to Lye, fovea palatini is located 1.31mm anterior to anterior vibrating line [5]. In our study it is located 2.44mm anterior to the anterior vibrating line (but within the soft palate). According to Winkler; anterior vibrating line is an imaginary line located at the junction of the attached tissue overlying the hard palate and the movable tissue of immediately adjacent soft palate [10]. If these statements are to be considered; then fovea palatini lie within the soft tissue covering the hard palate. But in our study no single subject had the fovea anterior to the junction.

According to Bolender, fovea lies about 2mm behind the vibrating line (which is posterior vibrating line as it is produced during the phonation of 'ah' sound) [6]. We found only one subject whose fovea was on the posterior vibrating line but there was none in whom fovea was present behind the posterior vibrating line.

According to Rashedi *et al.* [1] most of the dental school in US are teaching 'one vibrating line' concept but 80% of our subjects had two vibrating lines. Out of these 80%, 23 subjects had junction and anterior vibrating line coincided

Conclusion

Recording the posterior palatal seal is an important clinical step during fabrication of maxillary complete denture. Locating anterior and posterior vibrating lines and using them to determine the posterior extension and PPS should be recommended.

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