

Prevalence of Fenestrations and Dehiscences in Southindian Dry Skulls

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Abstract:

Dehiscence is the incomplete coverage by bone over an area of a root that includes the cemento-enamel junction. Whereas fenestration is a window of bone loss which exposes the root surface to the gingival or alveolar mucosa. The fenestration is bordered by alveolar bone on the coronal surface.

Fenestrations and dehiscence are not prevalent in all the individuals. Although both are considered non-pathological conditions, a variation within the range of periodontal normalcy, their undiagnosed or unexpected presence may complicate periodontal surgical procedures or require changes in implant placement protocols. When incisors are retract, the risk of adverse effect is present. This must be carefully monitored to avoid negative iatrogenic effects. Hence these determinations are important for orthodontic and periodontal treatments.

The purpose of this research is to study the prevalence of fenestrations and dehiscence in South India by visual examination of adult dry skulls.

Keywords: Fenestration, dehiscence, maxilla, mandible, alveolar process.

INTRODUCTION:

The alveolar process is the thickened ridge of maxilla and mandible that contains the tooth sockets (dental alveoli) on bones that hold teeth (1).

It is one of the components of the periodontium, teeth investing and supporting apparatus (2).

Its structure and morphology are considered "unique" because of their lability and dependence on the teeth, which are housed in the osseous crypts called alveoli [3]. This teeth dependence commonly results in two encountered situations: dehiscences and fenestrations, which represent interruptions of the cortical plate contour (2).

A dehiscence is loss of alveolar bone on the facial (rarely lingual) aspect of a tooth that leaves a characteristic oval, root-exposed defect from the cemento-enamel junction apically. The defect may be one or two millimeters long or extend the full length of the root. Dehiscence includes gingival recession, alveolar bone loss and root exposure.

Whereas a fenestration is a "window" of bone loss on the facial or lingual aspect of a tooth that places the exposed root surface directly in contact with gingiva or alveolar mucosa.

Main difference between the two is that, in fenestration the marginal bone is intact whereas in dehiscence the denuded areas extend through the marginal bone.

Features of dehiscence and fenestration:

1. Both occur approximately in 20% of teeth.
2. More common on facial bone than on lingual bone.
3. More common in the anterior teeth than on the posterior teeth.
4. Mostly Bilateral (i.e occurs on both the sides of maxilla and mandible).

Causes:

1. Periodontal consequence of buccal-lingual tooth movement.
2. Periodontal consequence of mesio-distal tooth movement.

Famous periodontists consider them as important anatomic entities when related to periodontal surgery, affecting 20% of the teeth, more commonly placed on the anterior, than on the posterior region of the jaws (4).

Although dehiscences and fenestrations are considered non-pathological conditions, a variation within the range of periodontal normalcy, their undiagnosed or unexpected presence may complicate periodontal surgical procedures or require changes in implant placement protocols (2).

And moreover when incisors retract, the risk of adverse effect is present. This must be carefully monitored to avoid negative iatrogenic effects.

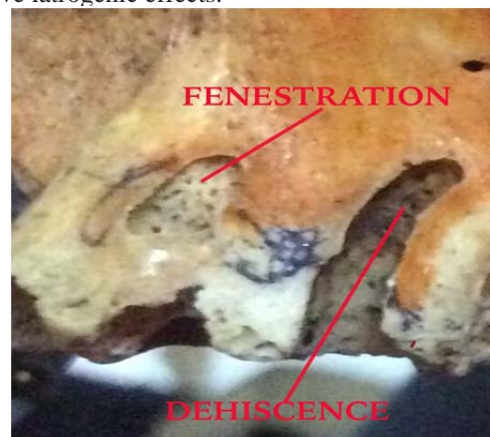


Figure 1: Fenestration and dehiscence in maxilla (left side).

Therefore, these determinations are important for orthodontic and periodontal treatments. In order to achieve a satisfactory and stable aesthetic result, dentists and periodontists must be aware of the normal bone anatomy for which the prevalence ratios of fenestrations and dehiscence are important.

Clinical importance :

The clinical importance of these determination relates to the consequence of raising a flap or preparing a receptor bed for gingival graft.

If the defect is a "Fenestration", soft tissue is capable of reattaching with the exposed surface with high predictability.

If the defect is a "dehiscence", reattachment to the level of the most apical aspect of the pocket or cervical depth is likely to be successful(5).

Hence this research was performed to evaluate the prevalence fenestrations and dehiscence in south indian dry skulls particularly as the overall prevalence of periodontal diseases in South India were found to be high.

MATERIALS AND METHOD :

This research was performed on 50 dry South Indian dry skulls from Saveetha Dental College and Hospitals, Chennai. It was done by visual examination of the dry skulls (both sides - left and right were examined) and the observations and recordings were tabulated as follows:

Right		Left	
Maxilla	Mandible	Maxilla	Mandible
Fenestration	Dehiscence	Fenestration	Dehiscence
Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

DISCUSSION:

Frequency Table for the following:

Fenestration- Right Maxilla

	Frequency	Percent	Valid Percent	Cumulative Percent
0	13	43.3	43.3	43.3
Valid 1	12	40.0	40.0	83.3
2	5	16.7	16.7	100.0
Total	30	100.0	100.0	

Fenestration- Right Mandible

	Frequency	Percent	Valid Percent	Cumulative Percent
0	13	43.3	43.3	43.3
Valid 1	11	36.7	36.7	80.0
2	6	20.0	20.0	100.0
Total	30	100.0	100.0	

Fenestration- Left Maxilla

	Frequency	Percent	Valid Percent	Cumulative Percent
0	16	53.3	53.3	53.3
Valid 1	8	26.7	26.7	80.0
2	4	13.3	13.3	93.3
3	2	6.7	6.7	100.0
Total	30	100.0	100.0	

Fenestration- Left Mandible

	Frequency	Percent	Valid Percent	Cumulative Percent
0	19	63.3	63.3	63.3
Valid 1	10	33.3	33.3	96.7
3	1	3.3	3.3	100.0
Total	30	100.0	100.0	

Dehiscence- Right Maxilla

	Frequency	Percent	Valid Percent	Cumulative Percent
0	7	23.3	23.3	23.3
Valid 1	6	20.0	20.0	43.3
2	5	16.7	16.7	60.0
3	4	13.3	13.3	73.3
4	8	26.7	26.7	100.0
Total	30	100.0	100.0	

Dehiscence- Right Mandible

	Frequency	Percent	Valid Percent	Cumulative Percent
0	6	20.0	20.0	20.0
Valid 1	16	53.3	53.3	73.3
2	6	20.0	20.0	93.3
3	2	6.7	6.7	100.0
Total	30	100.0	100.0	

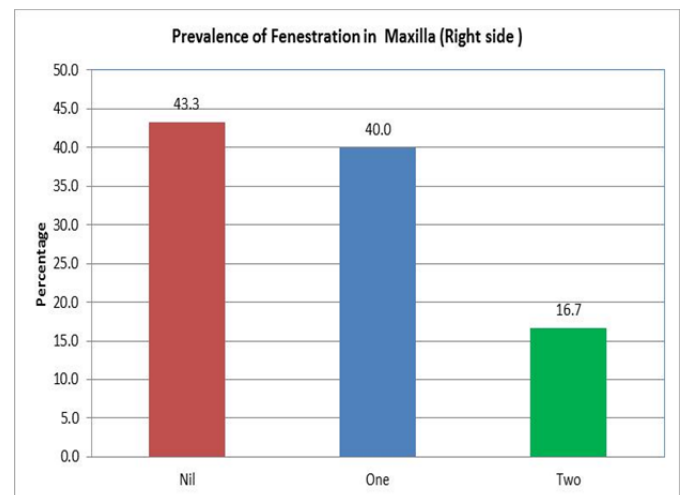
Dehiscence- Left Maxilla

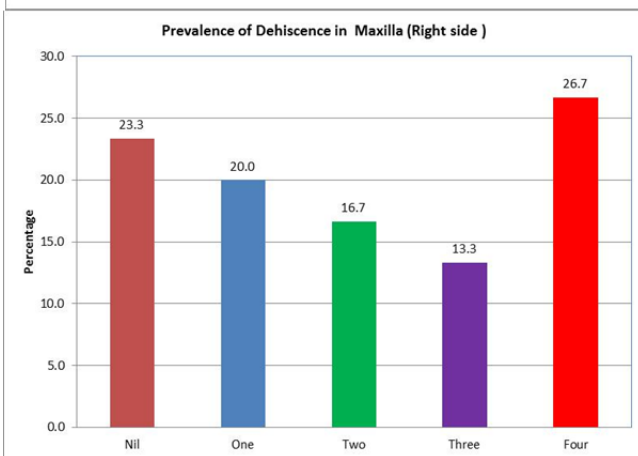
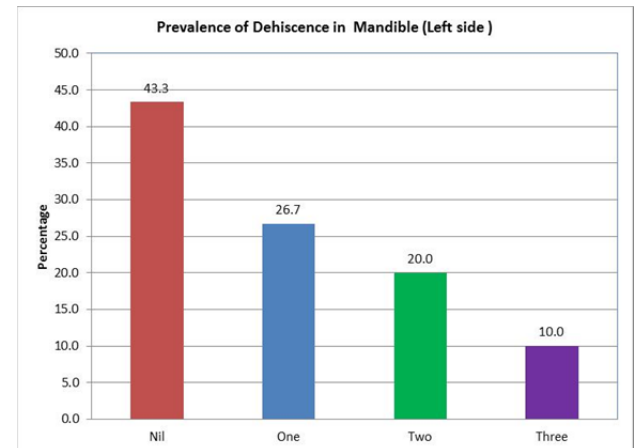
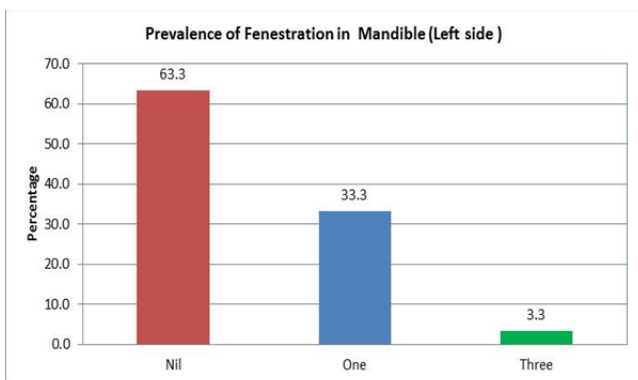
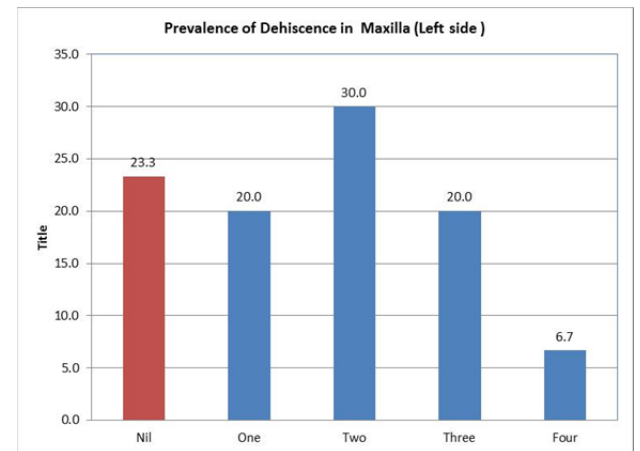
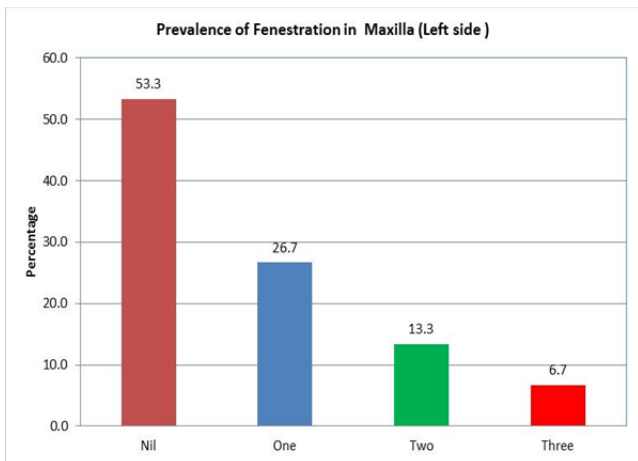
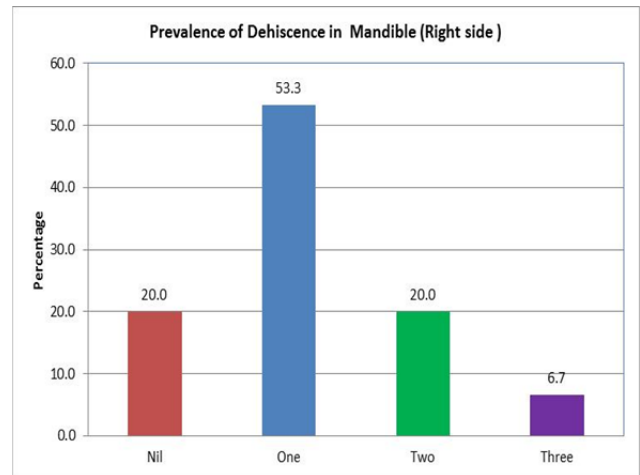
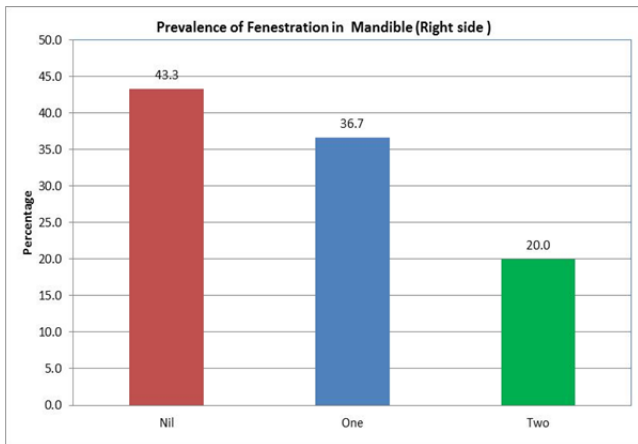
	Frequency	Percent	Valid Percent	Cumulative Percent
0	7	23.3	23.3	23.3
Valid 1	6	20.0	20.0	43.3
2	9	30.0	30.0	73.3
3	6	20.0	20.0	93.3
4	2	6.7	6.7	100.0
Total	30	100.0	100.0	

Dehiscence- Left Mandible

	Frequency	Percent	Valid Percent	Cumulative Percent
0	13	43.3	43.3	43.3
Valid 1	8	26.7	26.7	70.0
2	6	20.0	20.0	90.0
3	3	10.0	10.0	100.0
Total	30	100.0	100.0	

The above findings when represented in the form of graphs:





A number of 50 skulls showed alveolar defects, representing dehiscences in 90% of the investigated skulls whereas fenestrations were present in 82% of the investigated skulls.

With regard to implant placement, this study focuses on prevalence of fenestrations and dehiscences which will help the clinician design and manage implant treatment, in order to clinically correct the conditions and identify the principles of bone augmentation, so that endo-osseous implants can be properly placed.

CONCLUSION:

Canines and first premolars were the most common teeth that were associated with dehiscences and fenestrations. Dehiscences occurred more commonly than fenestrations. Both of them were present bilaterally in most of the skulls. The potential of developing fenestrations and dehiscences must be carefully evaluated through oral surgery procedures as their undiagnosed or unexpected presence may complicate periodontal surgical procedures or require changes in implant placement protocols.

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