

Classifications for Furcation Involvement

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ABSTRACT

Furcation involvement is the invasion of bifurcation and trifurcation of teeth by periodontal disease. Furcally-involved teeth present unique challenges to the success and prognosis of periodontal therapy. Anatomical and morphological complicating factors dictate modifications in treatment approaches used for managing these areas and also affect the maintenance. This paper reviews the classifications for furcation involvement.

Key words: Furcation involvement.

INTRODUCTION

A furcation is defined as “the anatomic area of a multirooted tooth where the roots diverge”, and furcation invasion refers to the “pathologic resorption of bone within a furcation” [1]

- Glickman (1950) Commonly occurring condition in which the bifurcation and trifurcation of multi-rooted teeth are denuded by periodontal disease.
- Prichard (1965) Bifurcation and trifurcation involvements are common periodontal lesions which occur as a result of gingival inflammation and bone resorption adjacent to and within the furcation of multi-rooted teeth.
- Goldman & Cohen (1968) Extension of pocket into the inter-radicular area of bone in multi-rooted teeth.

Classifications

1. Glickman [1953]

Grade I : Pocket formation into the flute, but intact interradicular bone (incipient).

Grade II: Loss of interradicular bone and pocket formation, but not extending through to the opposite side.

Grade III: Through-and-through lesion.

Grade IV: Through-and-through lesion with gingival recession, leading to a clearly visible furcation area. [2]

2. Goldman [1958]

Grade I: Incipient.

Grade II: Cul-de-sac.

Grade III: Through-and-through. [3]

3. Hamp et al [1975]

Degree I: Horizontal loss of periodontal tissue support less than 3 mm.

Degree II: Horizontal loss of support 3 mm, but not encompassing the total width of the furcation.

Degree III: Horizontal through-and-through destruction of the periodontal tissue in the furcation. [4]

4. Ramfjord & Ash (1979)

Class I: Beginning involvement. Tissue destruction, 2 mm (1/3 of tooth width) into the furcation.

Class II: Cul-de-sac. .2mm (.1/3 of tooth width), but not through-and-through.

Class III: Through-and-through involvement. [5]

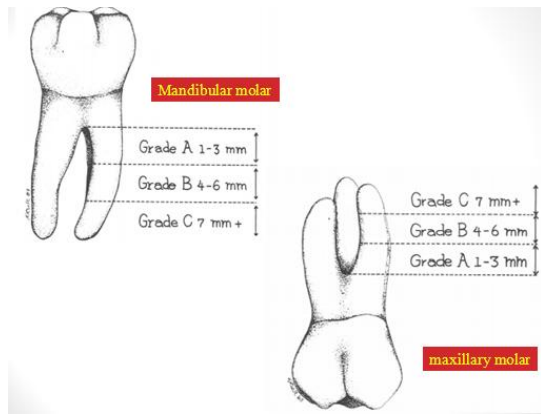
5. Tarnow & Fletcher (1984)

Sub-classification based on the degree of vertical involvement

Subclass A. 0–3 mm

Subclass B. 4–6 mm

Subclass C. >7 mm [6]



6. Eskow and Kapin

same subclasses as Tarnow & Fletcher (1984), but thirds instead of 3-mm units are used.

7. Fedi (1985)

combined the Glickman and Hamp classifications; same Glickman grades I through IV, but grade II furcations are subdivided into degree I (0.3 mm) or degree II (0.3 mm) [7]

8. Ricchetti (1982)

Class I: 1 mm of horizontal measurement; the root furrow.

Class Ia: 1–2 mm of horizontal invasion; earliest damage.

Class II: 2–4 mm of horizontal invasion.

Class IIa: 4–6 mm of horizontal invasion.

Class III: 6 mm of horizontal invasion. [8]

9. Staffileno's classification (1969)

Based on surface location, number of bony walls, degree of furcation exposure, as follows:

- Class I: Furcations with a soft tissue lesion extending to furcal level but with minor degree of osseous destruction.
- Class II: Furcations with a soft tissue lesion and variable degree of osseous destruction but not a through-and-through communication through the furca.
- Class II F: Furcations with osseous destruction from facial aspect only.
- Class II L: Furcations with osseous destruction from lingual aspect only.

- Class II M: Furcations with osseous destruction from mesial aspect only.
- Class II D: Furcations with osseous destruction from distal aspect only.
- Class III: Furcations with osseous destruction that present with through-and-through communication from buccal to lingual aspect or mesial to distal aspect. [9]

10. Easley and Drennan (1969)

- Class I: Incipient involvement, fluting coronal to furcation entrance is involved, no horizontal component.
- Class II : Divided further into Types 1 and 2
- Type 1: A definite horizontal loss of attachment into the furcation, but pattern of bone loss remains horizontal.
- Type 2: There is a buccal or lingual bony ledge and a definite vertical component to the furcation.
- Class III: Through-and-through loss of attachment into the furcation, and the pattern is horizontal in Type 1 and vertical in Type 2.

11. Goldman and Cohen (1980)

- Degree I: Involves furcation entrance.
- Degree II: Involvement extends under the roof of furcation but not through-and-through.
- Degree III: Through-and-through involvement.

12. Tal and Lemmer (1982)

The degree of severity of the furcation defects affecting each molar is assigned to one of four groups designated 1, 2, 3 and 4, referred to as furcation involvement index (FII) scores.

- Furcal rating 1: Depth of the furcation is 0 mm.
- Furcal rating 2: Depth of the furcation is 1 to 2 mm.
- Furcal rating 3: Depth of the furcation is 3 mm.
- Furcal rating 4: Depth of the furcation is 4 mm or more.

13. Grant et al. (1988)

- Class I: Involvement of the flute only.
- Class II: Involvement partially under the roof or dome.
- Class III: Through-and-through loss of furcation bone and attachment. ^[10]

14. Basaraba (1990)

- Class I: Initial/incipient furcation involvement.
- Class II: Partial/patent furcation involvement.
- Class III: Patent furcation involvement that communicates with 2nd or 3rd furcation opening; *i.e.* communicating furcation involvement.

15. Carnevale et al. (1997)

Modified Hamp *et al.* (1975) classification wherein the horizontal depth of furcation involvement is expressed in terms of 3 mm instead of thirds.

16. Nevins and Capetta (1998)

- Class I: Incipient or early loss of attachment.
- Class II: A deeper invasion and loss of attachment that does not extend to a complete invasion.
- Class III: Complete loss of periodontium extending from buccal surface to lingual surface. Diagnosed radiographically and clinically. ^[11]

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How to cite this article: Mani A, James R, Mani S. Classifications for furcation involvement. *Galore International Journal of Health Sciences & Research*. 2018; 3(1): 15-17.
