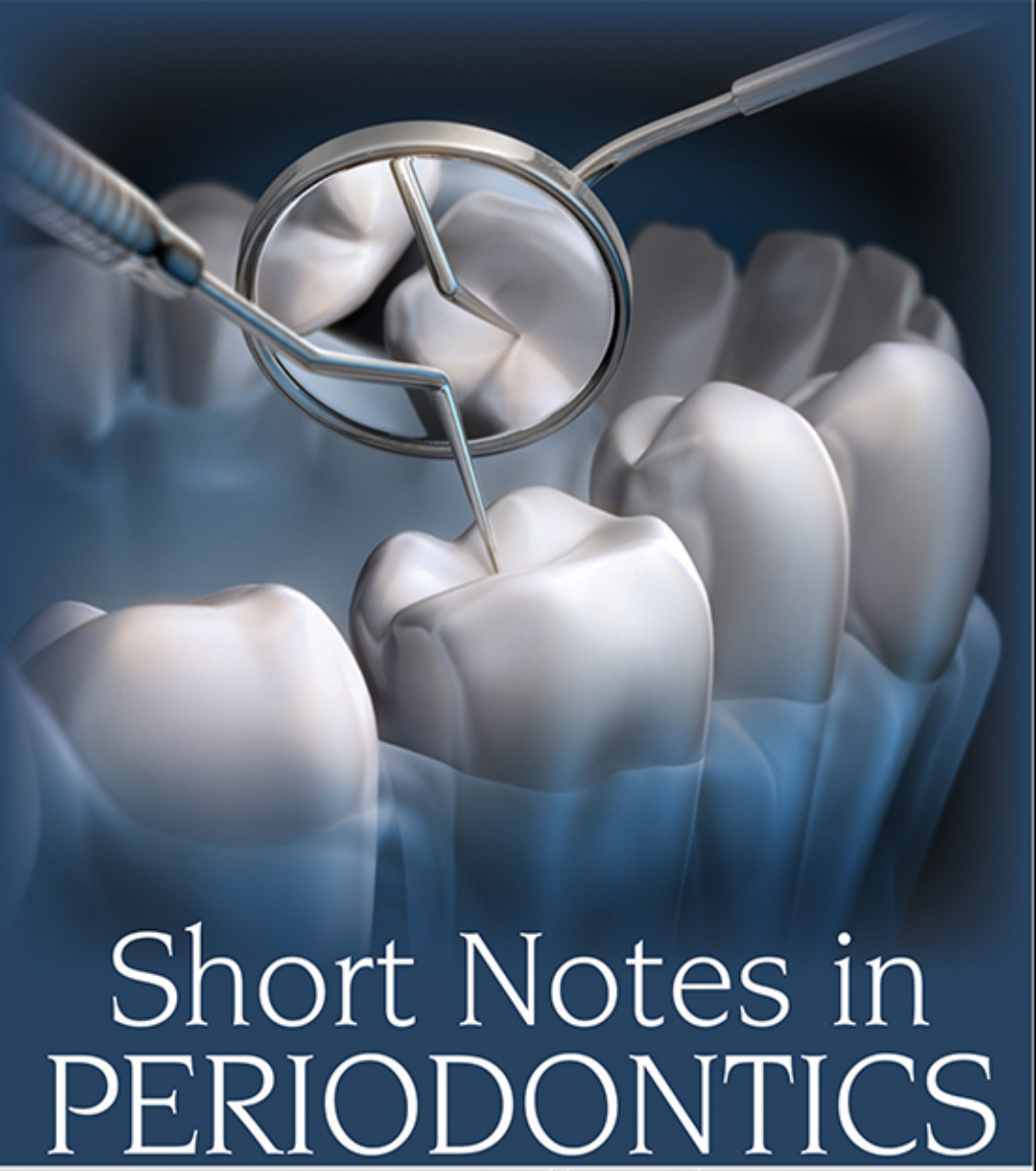


Short Notes in PERIODONTICS

A Handbook

PL Ravishankar
L Chandrasekhar

Foreword
AR Pradeep

JAYPEE

22. Widow's Peak 45
23. Stress-periodontium 46
24. Prostaglandins 46
25. Mast Cells 46
26. Complement 47
27. Smoking and the Periodontium 48
28. Red Complex 49

4. Periodontal Pathology 50

1. GCF—Definition, Function, Clinical Features and Methods of Collection 50
2. Role of Saliva in Oral Health 51
3. Definition, Causes and Management of Gingival Bleeding 52
4. Definition, Etiology and Classification of Gingival Recession 53
5. Stillman's Cleft 55
6. McCall's Festoon 55
7. Stages of Gingivitis 55
8. Classification of Gingival Enlargement 56
9. Drug-induced Gingival Enlargement 57
10. Idiopathic Gingival Enlargement 58
11. Gingival Abscess 59
12. Acute Necrotizing Ulcerative Gingivitis (ANUG) 59
13. Primary Herpetic Gingivostomatitis 60
14. Pericoronitis 61
15. Classification and Definition of Periodontal Pocket 62
16. Distinguishing Features of Suprabony and Intrabony Pocket 64
17. Lipping 64
18. Radius of Action 66
19. Vertical (or) Angular Defects 66
20. Osseous Crater 67
21. Reverse Architecture 68
22. Trauma from Occlusion 68
23. Aphthous Ulcer 71
24. Pulpo-periodontal Lesions 72
25. Periodontal Cyst 73
26. Periodontal Abscess 73

27. Differences between Periodontal Abscess and Periapical Abscess 74
28. Wasting Diseases of Teeth 74
29. Root Surface Changes in Periodontal Pocket 76
30. Palatogingival Groove 77
31. Atypical Gingivitis 78
32. Pregnancy Gingivitis 78
33. Static Occlusal Prematurities 80
34. Bone Factor Concept 80
35. Focal Infection 81
36. Desquamative Gingivitis 81
37. Pathological Tooth Migration 83
38. Tooth Mobility 84
39. Bruxism 84
40. Necrotizing Ulcerative Periodontitis (NUP) 85
41. Halitosis (Oral Malodor) 86
42. Diabetes Mellitus 88
43. Chediak-Higashi Syndrome 88
44. Papillon-Lefevre Syndrome 89
45. Gingiva in Leukemia 91

5. Diagnosis, Prognosis and Treatment Plan 93

1. Periodontal Disease Activity 93
2. Sounding of Probing/Transgingival Probing 93
3. Bana Test (Benzoyl-DL Arginine-Naphthylamide) 93
4. Treatment Plan in Periodontitis 94
5. Advantages of Radiographs in Periodontitis 95
6. Radiographic Features of Periodontitis 95
7. Night Guard 96
8. Classify Periodontal Probes 96
9. Prognosis of Teeth with Furcation Involvement 97
10. Halimeter 98
11. DNA Probe 98

6. Nonsurgical Therapy 99

1. Management of Bleeding 99
2. Chlorhexidine 100
3. Periochip 100
4. Dentifrice 101
5. Polishing Instruments 102

6. Gum Stimulator (Stim-U-Dent) 102
7. Coronoplasty 103
8. Methods for Correction of Occlusal Prematurities 103
9. Desensitizing Agents 104
10. Sharpening of Periodontal Instruments 104
11. Naber's Probe 105
12. Characteristics of an Ideal Tooth Brush 106
13. Root Planing 106
14. Local Drug Delivery System 107
15. Gracey Curettes 108
16. Difference between Scaler and Curette 109
17. Difference between Gracey and Universal Curettes 109
18. Principles of Ultrasonic Scaler 110
19. Plaque Control 111
20. Interdental Cleansing Aids 111
21. Disclosing Agent 112
22. Tetracyclines in Periodontitis 113
23. Probiotics 114
24. Langer Curette and its Uses 115
25. Perioscope 115
26. Periotron 115
27. Periostat 116
28. Periotemp 116
29. Perio-Aid 116

7. Surgical Periodontal Therapy 117

1. Suture Materials used in Periodontal Surgery 117
2. Biopsy 118
3. Curettage 119
4. ENAP 121
5. Periodontal Surgical Instruments 121
6. Surgical Curettes and Sickles 122
7. Osseous Surgery and Osseous Surgical Procedures 122
8. Difference between Ostectomy and Osteoplasty 123
9. Classification of Bony Architecture 123
10. Definitive and Compromised Osseous Reshaping 124
11. Indications for Resective Osseous Surgery 124
12. Steps in Resective Osseous Surgery 124
13. Re-constructive Osseous Surgery 125
14. Enamel Matrix Proteins 126

15. Root Conditioners 126
16. Regeneration, Repair and New Attachment and Re-attachment 127
17. Hemophilia and Periodontal Surgery 128
18. Pocket Elimination and Pocket Maintenance 128
19. Microbiological Tests used in Periodontal Diseases 129
20. DNA Probe 130
21. Laboratory Aids used in Diagnosis of Periodontal Diseases 130
22. Finger Rests 131
23. Effects of Faulty Dentistry 132
24. Orthopantomogram 132
25. Cyanoacrylates 133
26. Classification of Bone Graft Materials 133
27. Sources of Autogenous Bone Grafts 134
28. Osseous Coagulum and Bone Blend 134
29. Autogenous Bone Graft 135
30. Non-bone Graft Material/Alloplast 136
31. Bone Swaging 137
32. Bone Allografts 137
33. Xenografts 137
34. Alloplasts 138
35. Bioactive Glass 138
36. Indications for Bone Grafting in Periodontics 138
37. GTR and Classify GTR Membranes 139
38. Classification of Flaps 139
39. Osteoblasts 140
40. Periodontal Dressings (Periodontal Packs) 141
41. Angular Bony Defects 142
42. Hemisection 142
43. Radisection or Root Resection 143
44. Hydroxyapatite 143
45. Grade 2 Furcation (cul-de-sac) 144
46. Vestibuloplasty 144
47. Free Gingival Autografts 145
48. Healing of Free Gingival Graft 145
49. Glickman Classification (Furcation Involvement) 145
50. Retrograde Periodontitis 146
51. Mucogingival Surgery 147
52. Mucogingival Surgical Techniques 147

53. Procedures for Root Coverage 147
54. Periodontal Plastic Surgery and Describe the Areas of Application in Periodontics 148
55. 'Rationale' or Objectives of Periodontal Plastic Surgery 148
56. Techniques used to Widen the Zone of Attached Gingiva 149
57. Advantages of Subgingival Connective Tissue Graft over the Free Gingival Autograft 149
58. Define Frenectomy 149
59. Guided Tissue Regeneration (GTR) 150

8. Oral Implantology 151

1. Implants and Classification 151
2. Implant Complications 151
3. Peri-implantitis 152
4. Osseointegration 153
5. Early Tissue Respone to Osseointegrated Implants 155
6. Osseointegration from a Mechanical and Biological View Point 156
7. Osseointegration in the Clinical Reality 157

9. Supportive Periodontal Therapy 158

1. Supportive Periodontal Therapy (SPT) 158
2. Importance of Maintenance Phase 158
3. Maintenance Recall Procedures 159

2 CHAPTER Classification and Epidemiology of Periodontal Diseases

1. CLASSIFICATION OF PERIODONTAL DISEASES

The ADA/AAP Case Types

I. Gingivitis

II. Early Periodontitis

Progression of gingival inflammation into the marginal bone, resulting in mild bone loss and mild-to-moderate pocket formation; usually no increased tooth mobility.

III. Moderate Periodontitis

A more advanced state of the above condition; the increased destruction of the periodontal attachment apparatus is manifested by moderate to deep pockets, moderate to severe bone loss and tooth mobility.

IV. Advanced Periodontitis

Further progression of periodontitis with generalized deep pockets and/or frank loss of gingival tissue, severe bone loss and marked tooth mobility patterns.

V. Refractory Periodontitis

Periodontitis which does not respond to conventional therapy or which recurs soon after treatment. Many cases appear to be associated with smoking.

2. CLASSIFICATION OF PERIODONTITIS

According to AAP International Workshop for classification of periodontal diseases, 1999, the periodontitis can be subclassified into the following three major types based on clinical, radiographical, historical and laboratory characteristics.

JAYPEE BROTHERS

3. CHRONIC PERIODONTITIS

Following characteristics are common in patients with chronic periodontitis:

a. Prevalent in adults but can occur in children.
b. Amount of destruction consistent with local factors.
c. Slow to moderate rate of progression with possible periods of rapid progression.
d. Possible modified by or associated with systemic diseases, local factors and environmental factors.

It can be further classified as:

- Localized form: <30% of sites involved.
- Generalized form: >30% sites involved.
- Slight: 1 to 2 mm of clinical attachment loss.
- Moderate: 3 to 4 mm of clinical attachment loss.
- Severe: ≥ 5 mm of clinical attachment loss.

4. AGGRESSIVE PERIODONTITIS

Following characteristics are common:

a. Rapid attachment loss and bone destruction.
b. Amount of microbial deposits inconsistent with disease severity.
c. Familial aggregation of diseased individuals.

It can be subclassified as:

- Localized form:
  i. Circumpubertal onset of disease
  ii. Localized first molar or incisor disease with proximal attachment loss on at least two permanent teeth, one of which is first molar.
- Generalized form:
  i. Usually affecting persons under 30 years of age.
  ii. Generalized proximal attachment loss affecting at least three teeth other than first molars and incisors.
  iii. Pronounced episodic nature of periodontal destruction.

5. PERIODONTITIS AS A MANIFESTATION OF SYSTEMIC DISEASE

Periodontitis may be observed as a manifestation of following systemic diseases:

- Hematological disorders
  i. Acquired neutropenia

JAYPEE BROTHERS

ii. Leukemia's
iii. Others
- Genetic disorders
  i. Downs syndrome
  ii. Cohen syndrome
  iii. Others
- **Not otherwise specified.**

6. DEFINE INDEX AND ITS IDEAL REQUISITES

Definition: An index has been defined as numerical value describing the relative status of population on a graduated scale with definite upper and lower limits, which is designed to permit and facilitate comparison with other populations classified by the same criteria and methods (Russel AL).

Ideal requisites of an index:
1. *Clarity, simplicity and objectivity:* The criteria for the index should be clear and unambiguous, with mutually exclusive categories.
2. *Validity*: It should measure what is intended to measure, so it corresponds to the clinical stages of the disease under study at each point.
3. *Reliability*: The index should measure consistently at different times and under variety of conditions.
4. *Quantifiability*: The index should be amenable to statistical analysis, so that status of a group can be expressed by number that corresponds to a relative position on a scale from zero to upper limit.
5. *Sensitivity*: Index should be able to detect small shifts, in either direction in a group condition.
6. *Acceptability*: The index should not be painful or demeaning to the subject.

7. ORAL HYGIENE INDEX SIMPLIFIED

It was developed in 1964 by John C Greene and Jack R Vermillion. *Tooth and surfaces to be examined*:

Tooth	*Surface*	*Substitution*
16	Buccal	17, 18
11	Labial	21
26	Buccal	27, 28
36	Lingual	37, 38
31	Labial	41
46	Lingual	47, 48

JAYPEE BROTHERS

If a designated tooth is

1. Not a fully erupted permanent tooth, or
2. Has a full crown restoration, or
3. Has a surface reduced in height by caries or trauma then substitution is made as mentioned above.

Debris index-simplified (Fig. 2.1):

Score Criteria

0 No debris or stain present.

1 Soft debris covering not more than one-third of the tooth surface, or presence of extrinsic stains without other debris regardless of the surface area covered.

2 Soft debris covering more than one-third, but not more than two-thirds of the exposed tooth surface.

3 Soft debris covering more than two-thirds of the exposed tooth surface.

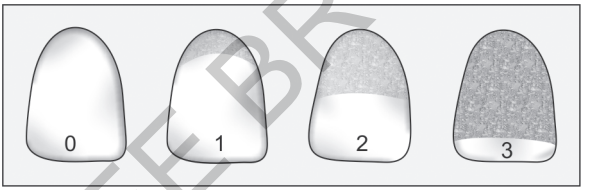


Fig. 2.1: Debris index

Calculus index - simplified (Fig. 2.2):

Score Criteria

0 No calculus present.

1 Supragingival calculus covering not more than one-third of the exposed tooth surface.

2 Supragingival calculus covering more than one-third but not more than two-thirds of exposed tooth surface or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth or both.

3 Supragingival calculus covering more than two-thirds of exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of tooth or both.

JAYPEE BROTHERS

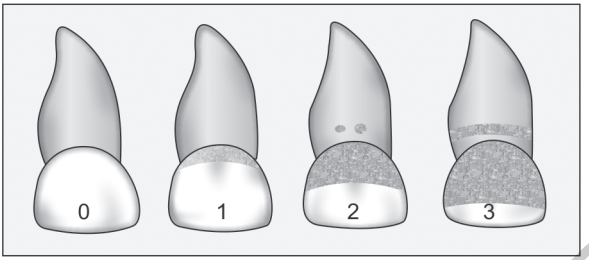


Fig. 2.2: Calculus index

Interpretations:

For DI-S or CI-S

Good	-	0.0 to 0.6
Fair	-	0.7 to 1.8
Poor	-	1.9 to 3.0

For OHI -S

Good	-	0.0 to 1.2
Fair	-	1.3 to 3.0
Poor	-	3.1 to 6.0

Debris index simplified: $\frac{\text{Total score}}{\text{Total number of examined buccal and lingual surfaces}}$

Calculus index simplified: $\frac{\text{Total score}}{\text{Total number of examined buccal and lingual surfaces}}$

Oral hygiene index simplified = Debris index simplified + Calculus index simplified

8. COMMUNITY PERIODONTAL INDEX OF TREATMENT NEEDS (CPITN)

Teeth to be scored:

Entire mouth is divided into six sextants:

17-14	13-23	24-27
47-44	43-33	34-37

JAYPEE BROTHERS

Third molars are not included except if they are functioning in the place of second molars.

For epidemiological surveys: For adults of 20 years or more the index teeth are:

17	16	11	26	27
47	46	31	36	37

Molars are examined in pairs and only one score, the highest is recorded. For young people of less than 19 years only six index teeth are used.

16	11	26
46	31	36

The second molars are excluded as the index teeth at these ages because of high frequency of false pockets.

For screening and monitoring purposes in dental practice:
All the teeth in the sextant are examined for adults over age 19 years. Only one score highest is recorded in each sextant.

Procedure

Score	*Criteria*
X	When only one tooth or no teeth are present in a sextant
0	No periodontal disease (Healthy periodontium)
1	Bleeding observed during or after probing
2	Calculus or other plaque retentive factors either seen or felt during probing
3	Pathological pocket 4–5 mm in depth
4	Pathological pocket 6 mm or more in depth

Classification of Treatment Needs (Fig. 2.3)

TN- 0 : A recording of code 0 or x for all six sextants indicates that there is no need for treatment

TN- 1 : Indicated for code 1. Need for improving the personal oral hygiene of that individual

TN- 2 : a. Code 2: Indicates the need for professional cleaning of teeth and removal of plaque retentive factors
b. Code 3: Oral hygiene and scaling will usually reduce the inflammation and reduce the depth of the pockets.

JAYPEE BROTHERS

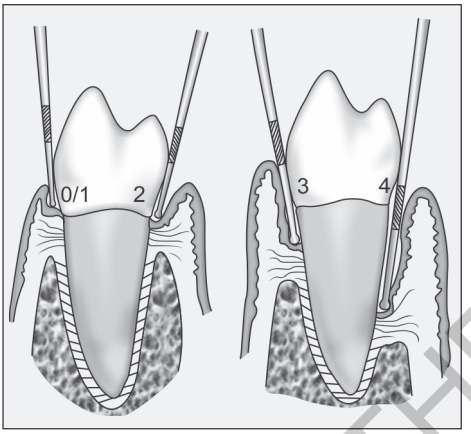


Fig. 2.3: Classification of treatment needs

TN- 3: A sextant scoring code 4 may or may not be successfully treated by means of scaling and efficient personal oral hygiene measures. Therefore this is assigned as "complex treatment" involving scaling, root planning and more complex surgical procedures.

CPITN – PROBE (Fig. 2.4)

Force of probing should not be more than 0.75N.
Probe should be moved in a "walking manner" along the gingival margin.

9. PLAQUE INDEX (SILNESS AND LOE INDEX)

Teeth to be scored: Scoring is done on:

Entire dentition (Whole mouth basis)

Or

Selected tooth (selected tooth basis)

Selected teeth include:

16	12	24
44	32	36

If anyone of the above teeth is missing, then scoring is done on all the teeth.

Only plaque on cervical third is evaluated

Surfaces examined are four gingival areas of the tooth, i.e., Distal-facial, facial, mesial-facial and lingual surfaces.

JAYPEE BROTHERS

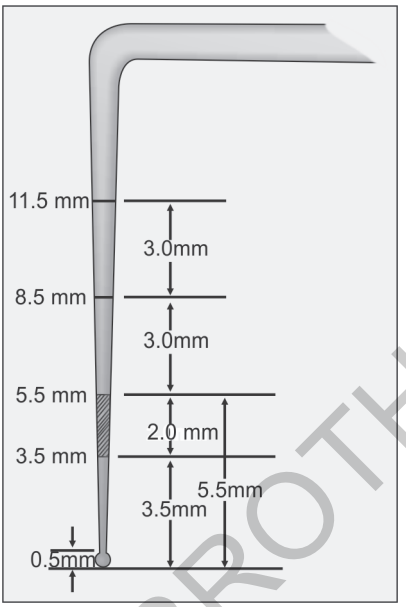


Fig. 2.4: CPITN probe

Procedure

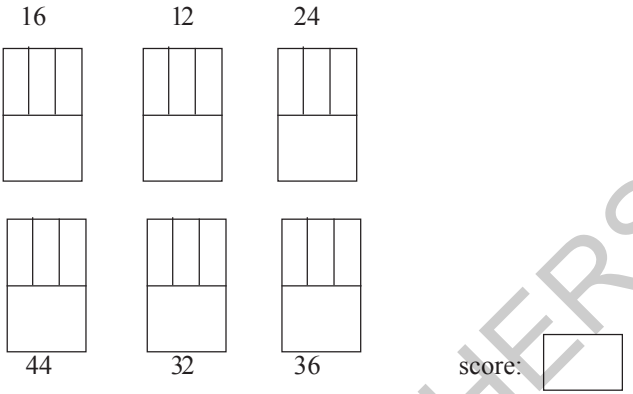
Score	*Criteria*
0	No plaque.
1	A film of plaque adhering to free gingival margin and adjacent area of tooth. Plaque may be recognized only by running a probe across the tooth surface.
2	Moderate accumulation of soft deposits within the gingival pocket, on the gingival margin, adjacent tooth surface which can be seen by the naked eye.
3	Abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin.

Calculation of Index

$$\text{Plaque index of a tooth} = \frac{\text{Total score of four surfaces}}{4}$$

$$\text{Plaque index of an individual} = \frac{\text{Addition of indices of all teeth}}{\text{Total no. of teeth examined}}$$

JAYPEE BROTHERS



Evaluation:	*Rating*	*Score*
	Excellent	0
	Good	0.1–0.9
	Fair	1.0–1.9
	Poor	2.0–3.0

10. PERIODONTAL INDEX (RUSSEL'S) 1956

Most widely used periodontal index in epidemiological surveys and records both reversible and irreversible changes brought by periodontal disease.

Teeth to be scored: All the gingival tissues circumscribing all the teeth are examined.

Procedure

Score	*Criteria for field studies*	*Additional radiographic criteria for clinical studies*
0	Negative. There is neither overt inflammation in investing tissues nor loss of function due to destruction of supporting tissues	Radiographic appearance is essentially normal
1	Mild gingivitis. An overt area of inflammation in the free gingiva does not circumscribe the tooth	
2	Gingivitis. Inflammation circumscribes the tooth, but no	

JAYPEE BROTHERS

	apparent break in epithelial attachment	
4	Used only when radiographs are available	There is early notch like resorption of alveolar crest
6	Gingivitis with pocket formation Epithelial attachment has been broken and there is a pocket. There is no interference with the masticatory function. The root tooth in the socket is firm in its socket and has not drifted.	There is horizontal bone loss involving the entire alveolar crest up to half of the length of normal root
8	Advanced destruction with loss of masticatory function. The tooth may be loose, may have drifted, may sound dull on percussion with metallic instrument, or may depressible in its socket.	There is advanced bone loss involving more than half of tooth root, or a definite infrabony pocket widening of the PDL. There may be root resorbtion.

Russel's rule: " When in doubt assign the lower score"

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

Calculation of the index:

$$\text{PI score per person} = \frac{\text{Sum of individual scores}}{\text{Number of teeth present}}$$

Interpretation:

Clinical condition	*Individual PI scores*
1. Clinically normal supportive tissues	0 to 0.2
2. Simple gingivitis	0.3 to 0.9
3. Beginning of destructive periodontal disease	1.0 to 1.9 (Reversible)
4. Established destructive periodontal disease	2.0 to 4.9 (Irreversible)
5. Terminal disease	5.0 to 8.0 (Irreversible)

JAYPEE BROTHERS

11. GINGIVAL INDEX (LOE & SILNESS INDEX)

It is an index used in measuring the severity and quantity of gingival inflammation.

Teeth to be scored: All the surfaces of all the teeth or selected teeth are used.

Selected teeth include:

16	12	24
44	32	36

Surfaces to be scored are: Facial, Mesial, Distal, Lingual

Procedure

Score	*Criteria*
0	Absence of inflammation
1	Mild inflammation: Slight change in color and slight edema, no bleeding on probing
2	Moderate inflammation: Redness, edema, glazing and bleeding on probing
3	Severe inflammation: Marked redness and edema, ulceration and tendency to spontaneous bleeding.

Calculation of the index: $\frac{\text{Total of all scores of all the teeth}}{\text{No. of teeth examined}}$

Interpretation:

Gingival scores	*Condition*
0.1–1.0	Mild gingivitis
1.1–2.0	Moderate gingivitis
2.1–3.0	Severe gingivitis

JAYPEE BROTHERS

Short Notes in PERIODONTICS: A Handbook

Salient Features

- Easy format of the book helps the undergraduate students for quick revision
- Offers concise and comprehensive coverage of most frequently asked questions
- Easy-to-understand text material with effective line diagrams
- This book will provide the students thorough confidence and support for their university examinations
- This book will guide the students in most frequently asked questions during examinations and will thoroughly prepare them for their challenges
- Clarity of presentation and simple lucid language, makes this book easy, time saving, handy and informative.



PL Ravishankar MDS completed his postgraduation (Periodontics) from prestigious Rajah Muthiah Dental College, Chidambaram, Tamil Nadu, India, in the year 1997. He has presented many papers in state and national level conferences and has many publications to his credit. He has written book titled *Dantha Vignanam*, in Telugu language, which contains dental diseases and their treatment methods. Currently, he is working as Professor and Head, Department of Periodontics, Sri Sai Dental College, Srikakulam, Andhra Pradesh, India.



L Chandrasekhar MDS completed his postgraduation from HKE Society's S Nijalingappa Institute of Dental Sciences, Gulbarga, Karnataka, India. Currently, he is working as Associate Professor, Department of Periodontics, Purvanchal Institute of Dental Sciences, Gorakhpur, Uttar Pradesh, India.

Shelving Recommendation
DENTISTRY

ISBN 978-93-5090-295-0

Available at all medical book stores
or buy directly from Jaypee Brothers through online shopping
at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com