CLINICAL PRACTICE GUIDELINES

MOH/K/GIG/1.17(GU)

ORAL HEALTH DIVISION
MINISTRY OF HEALTH MALAYSIA

MANAGEMENT OF PERIODONTAL ABSCESS

(Second Edition)

December 2016

STATEMENT OF INTENT

These guidelines update and supplant the original guidelines developed in 2004 and are based on the best available contemporary evidence. They are intended as a guide for the best clinical practice in the management of periodontal abscess presently. However, it must be noted that adherence to these guidelines do not necessarily lead to the best clinical outcome in individual patient care, as every health care provider is responsible for the management of his/her unique patient based on the clinical presentation and management options available locally.

REVIEW OF THE GUIDELINES

These guidelines were issued in December 2016 and will be reviewed in 2021 or earlier if important new evidence becomes available.

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http://www.moh.gov.my
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Also available as an app for Android and iOS platform: MyMaHTAS

TABLES OF CONTENTS

LEVELS OF EVIDENCE

LEVEL	STUDY DESIGN
I	Evidence obtained from at least one properly designed randomised controlled trial.
II-1	Evidence obtained from well-designed controlled trials without randomisation.
II-2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one centre or research group.
II-3	Evidence obtained from multiple time series studies, with or without intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence.
III	Opinions or respected authorities, based on clinical experience; descriptive studies and case reports; or reports of expert committees.

Source: Adapted from Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow CD, Teutsch SM, Atkins D. Current Methods of the U.S. Preventive Services Task Force: A Review of the Process. Am J Prev Med. 2001;20(suppl 3):21-35.

GRADES OF RECOMMENDATION

GRADE	STUDY DESIGN
A	At least one meta-analysis, systematic review or RCT or evidence rated as good or directly applicable to the target population.
B	Evidence from well conducted clinical trials, directly applicable to the target population and demonstrating overall consistency of results; or evidence extrapolated from meta-analysis, systematic reviews or RCT.
C	Evidence from expert committee reports, or opinions and/or clinical experiences of respected authorities; indicates absence of directly applicable clinical studies of good quality.

Source: Modified from the Scottish Intercollegiate Guidelines Network (SIGN 50). A guideline developer's handbook. Elliott House, 8 -10 Hillside Crescent Edinburgh EH7 5EA. Revised November 2011. ISBN 978 1 905813 25 4.

Note: The grades of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

GUIDELINES DEVELOPMENT AND OBJECTIVES

GUIDELINES DEVELOPMENT

The Development Group for these Clinical Practice Guidelines (CPG) consisted of Periodontists, Oral Medicine and Oral Pathology Specialist, Restorative Dental Specialist, Dental Public Health Specialists and general dentists. The Review Committee was actively involved in the development process of these guidelines.

The previous edition of the CPG on Management of Periodontal Abscess (2004) was used as the basis for the development of these guidelines.

The recommendations were adapted taking into consideration local practices.

Several improvements have been introduced in this edition. In addition to the general text and photographic updates, new and updated information has been included in the management such as use of antimicrobials, key messages and recommendations. Besides this, clinical audit indicators have also been identified for the purpose of monitoring and evaluating outcomes.

Evidences were retrieved from publications up to June 2016. Literature search was carried out using the following electronic databases: PUBMED/MEDLINE; Cochrane Database of Systemic Reviews (CDSR); ISI Web of Science; Health Technology Assessment (HTA) and full text journal articles via OVID search engine. In addition, the reference lists of all relevant articles retrieved were searched to identify further studies. The following free text terms or MeSH terms were used either singly or in combination to retrieve the articles: periodontal abscess, acute periodontal abscess, chronic periodontal abscess, multiple periodontal abscess, gingival abscess, pericoronal abscess, perio-endo lesions, periodontal probing, aetiology, microbiology, periodontal pathogens, oral hygiene, smoking, diabetes mellitus, tooth extractions, chemotherapeutic, antibiotics, treatment, debridement, photodynamic therapy and supportive periodontal therapy. Only literatures in English were retrieved.

There were 15 clinical questions which were assigned to members of the development group. The group members met a total of 11 times throughout the development of these guidelines. All retrieved literature were appraised by at least two members and presented in the form of evidence tables and discussed during group meetings. All statements and recommendations formulated were agreed upon by both the development group and review committee. This CPG is based on reference to the findings of randomized controlled trials, descriptive studies, clinical experiences, case reports and adapted according to local practices. However, when there was lack of evidence, recommendations were based on consensus of group members. Although ideally patients' views and preferences need to be considered in the development of CPGs, in this instance, it was not feasible.

The levels of evidence of the literature were graded using the modified version from the United States (U.S) / Canadian Preventive Services Task Force, while the grading of recommendations was based on the modified version of the Scottish Intercollegiate Guidelines Network (SIGN).

The draft was reviewed by a team of internal and external reviewers. It was made available on the websites of the Ministry of Health, Malaysia and Academy of Medicine, Malaysia for comments and feedbacks. Recommendations were presented to the Technical Advisory Committee for CPGs, and finally to the HTA and CPG Council, Ministry of Health, Malaysia for approval.

Clinical significance of periodontal abscess (PA):

i. This condition is rampant but has been under-recorded in Health Information & Management System (HIMS) data mainly due to diagnostic confusion.
ii. If left untreated, PA may lead to:
    - Tooth loss resulting in reduced oral function and impaired quality of life (QoL)
    - Financial implications in replacing missing teeth and oral functional rehabilitation
iii. Interlink between oral-systemic health (periodontal medicine) in periodontal conditions and systemic diseases, especially bidirectional relationship between diabetes mellitus and periodontitis.

Rationale for the development of the CPG:

i. To standardise the management of PA at all healthcare levels
ii. To appropriately manage PA and improve outcomes of periodontal therapy
iii. To ensure better prognosis of affected dentition and reduce morbidity

OBJECTIVE

To provide evidence-based guidance in the management of periodontal abscess.

SPECIFIC OBJECTIVES

i. To disseminate and reinforce knowledge on the management of periodontal abscess among healthcare professionals
ii. To guide in the appropriate management of periodontal abscess by healthcare professionals

CLINICAL QUESTIONS

The clinical questions addressed by these guidelines can be found in **Appendix 1.**

TARGET POPULATION

These guidelines are applicable to patients diagnosed with periodontal abscess.

TARGET GROUP/USER

This CPG is meant for all oral healthcare providers who provide clinical management of periodontal abscess which includes:

i. Dental students
ii. Dental officers
iii. General dental / medical practitioners
iv. Dental specialists
v. Allied health professionals

HEALTHCARE SETTINGS

Primary and specialist oral healthcare settings.

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REVIEW COMMITTEE

These guidelines were reviewed by a panel of independent reviewers from both public and private sectors who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence supporting the recommendations in this CPG. The following internal and external reviewers provided comments and feedback on the proposed draft:

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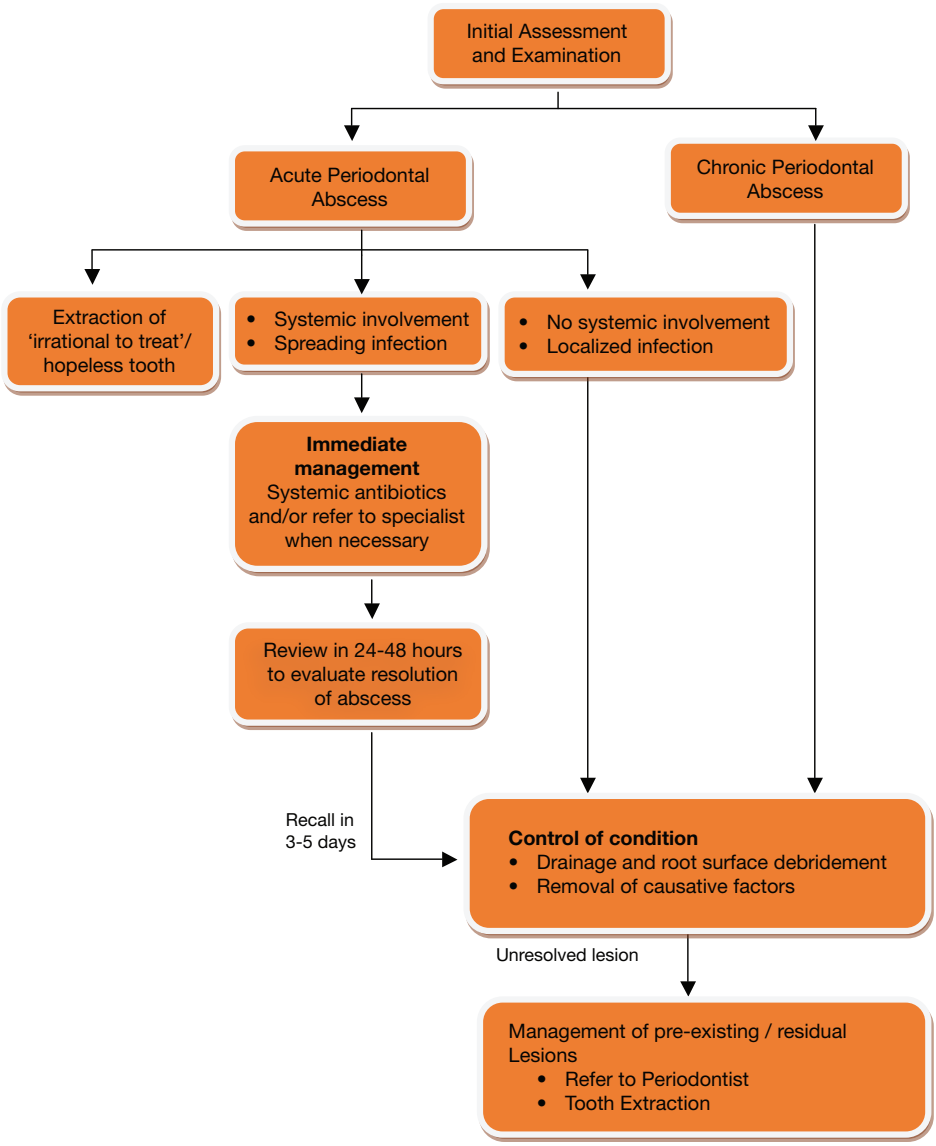
ALGORITHM FOR MANAGEMENT OF PERIODONTAL ABSCESS



LIST OF KEY MESSAGES AND RECOMMENDATIONS

Key Message 1
- History of a traumatic event e.g. impaction of foreign body into the periodontium is a clue to aid diagnosis of periodontal abscess.
- Current heavy smokers and poorly-controlled diabetics are more prone to severe periodontal disease with higher prevalence of periodontal abscess.

Key Message 2
- Presence of swelling, suppuration, deep periodontal pockets and bleeding on probing are the main clinical features of PA.

Key Message 3
- Mechanical debridement and drainage through the periodontal pocket without antibiotics is usually effective.
- Mechanical treatment of periodontal pocket is to debride the root surface using either a hand or ultrasonic scaler to facilitate drainage.
- Irrigation aims to remove debris and residual microorganisms.

Recommendation 1
- Detailed medical and dental history should be considered in diagnosing PA.

(Grade C)

Recommendation 2

A thorough subgingival scaling and root surface debridement should be carried out to treat abscesses in anatomically complex sites (e.g. furcation involvement or intrabony pockets).

(Grade C)

Recommendation 3
- Periodontal abscess with systemic spread which is life-threatening or not responding to oral antibiotics should be referred to hospital immediately.

(Grade C)
- For patients treated with antibiotics, drainage and debridement should be carried out within 5 days.

(Grade C – Development Group's consensus)

Recommendation 4
- Diabetic patients with acute symptoms should be given prompt treatment.
  25, Level III

(Grade C)
- Analgesics should be prescribed to alleviate pain.

(Grade C)

1. INTRODUCTION

Periodontal abscess (PA) is a common emergency in the dental clinic, being the third most prevalent emergency infection, after acute dento-alveolar abscesses and pericoronitis. [1-3, Level III]

According to the 1999 Classification of Periodontal Diseases and Conditions (AAP World workshop) [4, Level III] "Abscesses of the Periodontium" include gingival, periodontal and pericoronal abscess **(Table 1)**.

Table 1: Classification of periodontal diseases and conditions 1999

I: Gingival diseases A Dental plaque-induced gingival diseases B Non-plaque-induced gingival lesions II: Chronic periodontitis A Localized B Generalized (>30% of sites are involved) III: Aggressive periodontitis A Localized B Generalized (>30% of sites are involved) IV: Periodontitis as a manifestation of systemic diseases A Associated with hematological disorders B Associated with genetic disorders C Not otherwise specified V: Necrotizing periodontal diseases A Necrotizing ulcerative gingivitis B Necrotizing ulcerative periodontitis	VI: Abscesses of the periodontium A Gingival abscess B Periodontal abscess C Pericoronal abscess VII: Periodontitis associated with endodontic lesions A Combined periodontic–endodontic lesions VIII: Developmental or acquired deformities and conditions A Localized tooth-related factors that modify or predispose to plaque-induced gingival diseases /periodontitis B Mucogingival deformities and conditions around teeth C Mucogingival deformities and conditions on edentulous ridges D Occlusal trauma

Periodontal abscess, which can be acute or chronic, is defined as a lesion associated with periodontal breakdown occurring during a limited period of time with detectable clinical symptoms, including a localised accumulation of pus located within the gingival wall of the periodontal pocket. [1,2, Level III]

A gingival abscess is defined as a localised, painful, rapidly expanding lesion involving the marginal gingiva or interdental papilla sometimes in a previously disease-free area. [2, Level III]

A pericoronal abscess is a localized accumulation of pus within the overlying tissue surrounding the crown of an incompletely erupted tooth. [2, Level III]

Abscesses occur more often in molar sites representing more than 50% of cases, [6,49, Level III] probably because of the presence of furcation, and complex anatomy and root morphology. [2, Level III]

1.1 The Aetiology, Microbiology and Contributing Factors

An understanding of the aetiology of periodontal abscess is crucial to ensure successful outcomes. Periodontal abscess occurs mainly in periodontitis sites with deep pockets although it can develop in non-periodontitis sites.

Microorganisms are the cause for the periodontal abscess. The common microorganisms involved are: [5-7, Level III]

a) *Fusobacterium nucleatum*
b) *Porphyromonas gingivalis*
c) *Tannerella forsythia*
d) *Prevotella intermedia/nigrescens*
e) *Peptostreptococcus micros*

Lower prevalences were observed for:

a) *Prevotella melaninogenica*
b) *Campylobacter rectus*
c) *Aggregatibacter actinomycetemcomitans*

Similar proportions of facultative and strict anaerobes were found, of which a higher proportion were gram-positive facultative cocci, closely followed by gram-negative anaerobic rods. [1,7, Level III]

In periodontitis–affected sites, the mechanisms that may lead to abscess formation include: [2, Level III]

a) Exacerbation of a chronic lesion as a consequence of changes in the subgingival microbiota composition, with an increase in bacterial virulence, or a decrease in host defence. This is further aggravated by the existence of tortuous pockets, presence of furcation involvements and vertical defects, which may result in a reduced capacity to self-drain.

b) During the course of periodontal therapy:
   - post scaling and root debridement: [8, Level III]
     - o inadequate scaling may allow calculus to remain in deep pockets, whilst the healed marginal gingiva will occlude pocket drainage
     - o dislodged calculus fragments may be embedded into the surrounding tissues
   - post periodontal surgery: [9, Level II-2]
     - o associated with presence of foreign bodies, such as membranes for regenerative procedures or sutures
   - acute exacerbation during supportive periodontal (maintenance) phase [2, Level III]

c) Post-systemic antibiotic intake in pre-existing periodontitis without scaling/root debridement [10, Level II-3; 11, Level III]

d) Acute exacerbation of untreated periodontitis

Abscess can also occur in non-periodontitis/healthy sites, owing to: [2, Level III]

a) impaction of foreign bodies including orthodontic elastics, piece of dental floss, dislodged cemental tear, fragment of toothpick,[12,13, Level III] piece of finger nail,[14, Level III] fish bone and piece of popcorn kernel [11, Level III]
b) anatomical variations such as invaginated tooth,[15, Level III] enamel pearls / extensions and palatal groove [16, Level III]
c) alteration of the root surface by different factors such as perforation by endodontic instrument,[13, Level III] crack/fracture of the root, [38, Level II-1] cervical cemental tear [16, Level III] and external root resorptions

1.2 Pathogenesis of Periodontal Abscess

Invasion of bacteria into soft tissues surrounding the periodontal pocket will result in an inflammatory process through chemotactic factors released by the bacteria. Both lowered tissue resistance, and the virulence and number of bacteria will determine the course of this infection. The formation of an acute inflammatory infiltrate and encapsulation of bacterial mass will lead to extensive connective tissue destruction and pus formation. [17-18, Level III]

2. HISTORY TAKING

The diagnosis of periodontal abscess should be based on overall evaluation and interpretation of patient's symptom, together with the clinical and radiological signs found during the oral examination. [2, Level III]

2.1 Signs and Symptoms

Symptoms of periodontal abscess can range from moderate to severe pain (62%) to no pain (10%). [1,5,7, Level III] Periodontal abscess may be associated with intraoral swelling. The approximate duration of swelling in patients can be 1-4 days (40%), between 5-10 days (25%) and unknown in 15% of patients. [1, Level III] In acute lesions, swellings are more defined and localised. Other symptoms range from tenderness of gingiva to palpation, [7, Level III] tooth mobility, [1, Level III] and extrusion of teeth (23.3%). [5, Level III]

Acute periodontal abscess is a lesion that progresses dramatically in a short period to a crisis [19, Level III] with severe pain, distress, and often with complaint of tooth elevation as well as tenderness on biting. [20, Level III] A complaint of fever and discomfort due to regional lymphadenopathy indicates systemic spread of infection. [21, Level III]

Chronic periodontal abscess is usually asymptomatic and may be associated with sinus tract. [2, Level III]

Signs and symptoms of acute and chronic periodontal abscess [1, 22, Level III] are as in **Table 2**.

Table 2: Signs and Symptoms of Periodontal Abscess

Acute Periodontal Abscess	Chronic Periodontal Abscess
• Mild to severe discomfort • Localized red ovoid swelling • Periodontal pocket • Mobility • Tooth elevation in socket • Tenderness on percussion on biting • Exudation • Elevated temperature • Regional lymphadenopathy • Tenderness of the gingiva to palpation	• No pain or dull pain • Localised inflammatory lesion • Slight tooth elevation • Intermittent exudation • Fistulous tract often associated with a deep pocket • Usually without systemic involvement

2.2 Medical and Dental Histories

Thorough medical and dental history including medication is important in total patient management. [19, Level III] Detailed history of periodontitis experience and its treatment, particularly history of recent antibiotic therapy is also important. Thus, the following points have to be considered:

a) history of periodontitis [1, Level III]
b) history of a traumatic event e.g. impaction of foreign body into the periodontium [2, Level III]
c) presence of untreated periodontitis (incidence of 62%) [7, Level III]
d) current periodontal disease status [1, Level III]
e) recent scaling and root planing [1,5, Level III] (incidence of 14%) [7, Level III]
f) recent dental treatment (restorative/orthodontic/endodontic) [2, Level III]
g) recent systemic antibiotic therapy [2, Level III]
h) supportive periodontal (maintenance) phase (incidence of 7%) [7, Level III]
i) risk factors:
   - smoking status - heavy current smokers are more prone to severe periodontal disease and do not respond predictably to treatment [23, Level II-2]
   - diabetes mellitus - prevalence of periodontal abscess is higher in diabetics especially those with poor glycaemic control [20, 22, Level III]
   - others – genetically predispose to severe periodontitis (Syndromic and Non-Syndromic Periodontitis) [24, Level III]

Development of periodontal abscess in periodontitis may occur as an acute exacerbation of an untreated periodontitis, during active periodontal therapy and supportive periodontal (maintenance) phase. [7, Level III]

Key Message 1

- History of a traumatic event e.g. impaction of foreign body into the periodontium is a clue to aid diagnosis of periodontal abscess.
- Current heavy smokers and poorly-controlled diabetics are more prone to severe periodontal disease with higher prevalence of periodontal abscess.

Recommendation 1

- Detailed medical and dental history should be considered in diagnosing PA.

(Grade C)

3. CLINICAL FEATURES

3.1 Systemic Manifestation or Involvement

Systemic involvement has been reported in some severe cases of periodontal abscess which include:

a) fever
b) malaise
c) regional lymphadenopathy (10% of patients)
d) leucocytosis can be detected in approximately 1/3 of patients. [6,7,26,27, Level III]
e) features that may indicate on-going systemic diseases, in particular compromised immune system [28, Level III]

3.2 Clinical Features

a) Extra oral

Periodontal abscess may be associated with:

- diffuse and tender extra oral swelling with 40% reporting that the swelling had occurred 1–4 days before; 25% between 5–10 days; 20% between 15–30 days; and 15% did not know. [6, 26, 28, 29, Level III]
- trismus [29, Level III]
- large fluctuant area, [30, Level III] redness and sinus [6, 7, 26, 28, 29 Level III]

b) Intra oral

Most prominent signs are: [6, Level III]

- ovoid elevation in the gingiva along the lateral part of the root [2, 29, Level III]
- swelling (93%), oedema (84%) and redness (75%) [29, Level III]
- bleeding on probing in 100% of abscesses

- suppuration in 66% of cases either spontaneously or on pressure from gingival sulcus or sinus
- deep probing depths at sites with severe periodontal destruction (62.1% with pockets deeper than 6 mm)
- tooth mobility in 79.0% of cases [5-7, 26, 29-30, Level III]
- possible tenderness to palpation [29, Level III]
- tooth may be tender to percussion

Figure 1: Clinical features of Periodontal Abscesses

(Courtesy: Dr Norhani, Dr Izrawatie)

Key Message 2

- Presence of swelling, suppuration, deep periodontal pockets and bleeding on probing are the main clinical features of PA.

4. INVESTIGATIONS

4.1 Radiographs

Periapicals and OPG are commonly used for assessment. [31, 32, Level III] In presence of sinus, gutta percha point can be placed through the opening to locate the origin of the sinus tract.

The radiographic examination of periodontal abscess may reveal a normal appearance, widening of periodontal ligament (PDL) spaces or some degree of radiographic bone loss of the tooth involved in cases with pre-existing periodontal pocket. [2, 5, Level III]

4.2 Pulp Sensibility Test

Pulp sensibility test (formerly known as pulp vitality test) could be used to assess the vitality of the tooth. [33, Level III] Teeth with primary periodontal infection tend to respond positively to pulp sensibility test such as thermal test and electric pulp test. [34, Level III]

4.3 Microbial Test

Samples of pus from the sinus, abscess or gingival sulcus could be sent for culture and sensitivity test. [5, 32, Level III] Culture studies have provided a substantial body of information about the bacterial aetiology and the species involved. [35, Level III]

4.4 Others

Glycaemic level of patients can be assessed through random blood glucose, fasting blood glucose or glycosylated haemoglobin (HbA1c) level, if indicated to identify undetected diabetics and to assess glycaemic control in diabetics. [32, Level III]

5. DIAGNOSIS

The diagnosis of periodontal abscess should be based on overall evaluation which include the relevant medical and dental histories along with clinical and radiological findings during the examination. [2, Level III]

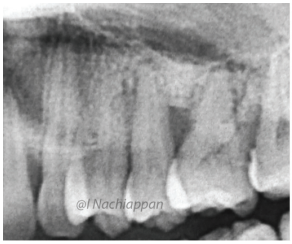
Possible differential considerations include:

- Gingival abscess;
- Periodontal abscess;
- Periapical abscess;
- Perio-endo lesion;
- Endo-perio lesion;
- Cracked tooth syndrome; and
- Vertical root fracture.

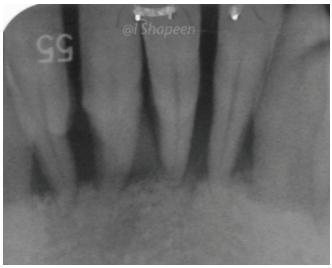
The characteristics and clinical / radiographic findings of the above lesions for differential diagnosis are given in **Table 3**.

Table 3: Differential Diagnosis and Characteristics of Periodontal Diseases

Differential Diagnosis	Characteristics and Clinical / Radiographic Findings
1. Gingival Abscess 2, level III	• Localized purulent infection involving marginal gingiva • History of recent trauma • Localized to the gingiva • **NO** periodontal pocketing e.g.: Case 1 *(Courtesy: Dr Khamiza Zainal Abidin)*  *Gingival abscess on buccal aspect of 21*  *IOPa radiograph did not show any significant findings.* e.g.: Case 2 *(Courtesy: Dr Norhani Abd Rani)*  *Gingival abscess in drug-induced gingival enlargement case*

2. Periodontal Abscess 2, 5-7, 26, 29-32, level III	Most prominent clinical signs are: • ovoid elevation in the gingiva along the lateral part of the root • swelling, oedema, redness and bleeding on probing • suppuration either spontaneously or on pressure from gingival sulcus or sinus • deep probing depth at sites with severe periodontal destruction • tooth mobility • possible tenderness to palpation, and tooth may be tender to percussion
	The radiographic examination: may reveal a normal appearance, widening of periodontal ligament (PDL) spaces or some degree of radiographic bone loss of the tooth involved in cases with pre-existing periodontal pocket. e.g.: Case 1 *(Courtesy: Dr Norhani Abd Rani)*  *Redness, swelling and deep periodontal pocket (9mm) on mesial of 41. IOPa radiograph indicating horizontal bone loss* e.g.: Case 2 *(Courtesy: Datin Dr Indra a/p Nachiapan)*  *Redness and swelling on palatal surfaces of 25 and 26, with mobility and deep pockets*  *OPG radiograph revealed widening of PDL space of teeth 25 and 26. Bone loss >½ of root length, with furcation involvement*

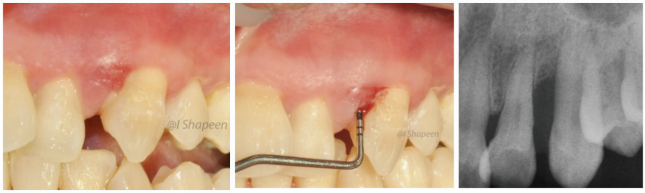
e.g.: Case 3 *(Courtesy: Dr Izrawatie Shapeen)*



Generalized swelling of gingival tissue with suppuration especially on mandibular region

IOPa radiograph showed severe bone loss to root tips

e.g.: Case 4 *(Courtesy: Dr Izrawatie Shapeen)*



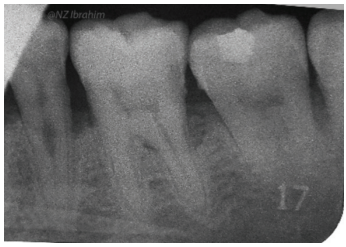
Redness, swelling and deep periodontal pocket (9mm) on mesial of 23. IOPa radiograph revealed radiolucency at mesial of the tooth indicating bone loss

e.g.: Case 5
(Courtesy: Dr Izrawatie Shapeen)

Redness at marginal margin, swelling and suppuration at palatal surface of 11

e.g.: Case 6
(Courtesy: Dr Izrawatie Shapeen)

Swelling and redness of gingival tissue

	e.g.: Case 7 *(Courtesy: Dr Nor Ziana Ibrahim)*   *Swelling of gingival tissue on buccal aspect of 36 and 37* *IOPa radiograph showed bone loss around the teeth* e.g.: Case 8 *(Courtesy: Dr Izrawatie Shapeen)*   *Swelling, deep pockets and suppuration in drug-induced gingival enlargement case*
3. Periapical Abscess 2, level III	• Formation of purulent exudate involving dental pulp and tissues surrounding apex of tooth • Located over root apex • Non-vital tooth • Heavily restored or large filling • Large caries with pulpal involvement • History of sensitivity to hot or cold food • NO sign / symptoms of periodontal disease • Periapical radiolucency on intraoral radiographs e.g.: Case 1 *(Courtesy: Dr Nor Ziana Ibrahim)*   *Presence of sinus tract on buccal aspect of 46, traced with gutta percha*(GP).

e.g.: Case 2 *(Courtesy: Dr Izrawatie Shapeen)*


Presence of sinus tract on labial surface of 21, traced with gutta percha (GP)*, without presence of deep pocket*

IOPa radiograph revealed gp traced to the apical radiolucency of 22

e.g.: Case 3 *(Courtesy: Dr Nor Ziana Ibrahim)*


Presence of sinus tract on labial surface between 16 and 17, traced by gutta percha, without presence of deep pocket

IOPa radiograph revealed gp traced adjacent to the periapical radiolucency of 16

4. Perio-Endo Lesion [37, level III] / Endo –Perio Lesion [37, level III] / Combined Lesions

Perio-Endo :

- Severe periodontal disease with deep pocketing which may involve the furcation
- Severe bone loss up to the apex causing pulpal infection
- Non-vital tooth which is sound or minimally restored
- Presence of narrow deep pocket

Endo-Perio:

- Pulp infection spreading via lateral canals into periodontal pockets
- Tooth usually non-vital with periapical radiolucency
- Localized deep pocketing

e.g.: Case 1 *(Courtesy: Dr Izrawatie Shapeen)*


Deep pocket, bleeding on probing (BOP)*, suppuration on non-vital 33.*

IOPa radiograph revealed radiolucency at middle portion of the root extending towards apical

<table>
<tr>
<td></td>
<td>
e.g.: Case 2 (Courtesy: Dr Izrawatie Shapeen)



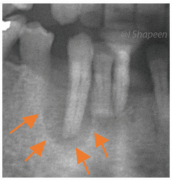
Swelling and abscess on distal aspect of 36.

IOPa radiograph revealed bone loss involving furcation

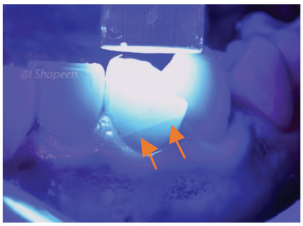
e.g.: Case 3 (Courtesy: Dr Izrawatie Shapeen)

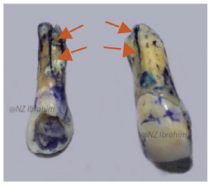
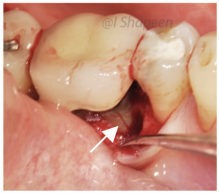


Presence of deep pocket, BOP, and suppuration on distal of non-vital 43


OPG radiograph revealed periapical radiolucency extending to the whole root length
</td>
</tr>
<tr>
<td>5. Cracked Tooth Syndrome
38, Level III</td>
<td>
• History of pain on mastication
• Crack line noted on the crown
• Possibility of trauma
• Vital tooth
• Pain upon release after biting on cotton roll, rubber disc or tooth slooth. Pain relief after placement of orthodontic band
• No relief of pain after root canal treatment

e.g.: Case 1 (Courtesy: Dr Izrawatie Shapeen)



Crack line on 32 only visible under UV light (arrow)
</td>
</tr>
</table>

6. Vertical Root Fracture 39, level III	• Heavily restored tooth • Non-vital tooth with mobility • Post crown with threaded post • Deep osseous defect (deep probing) alongside the suspected fracture for long-standing fracture • Localized narrow deep pocketing, normally one site only • Possible fracture line and halo radiolucency around the root in periapical radiographs ('J-shaped' image) • Might need an open flap exploration to confirm diagnosis e.g.: Case 1 *(Courtesy: Dr Nor Ziana Ibrahim)*  *Presence of abscess on labial surfaces on 12 & 11*  *IOPa radiograph revealed radiolucencies on apical region of 12 & 11*  *Vertical fracture lines were visible on the root surfaces* e.g.: Case 2 *(Courtesy: Dr Izrawatie Shapeen)*  *IOPa radiograph revealed periapical radiolucency of mesial root 46*  *Deep pocket, BOP and suppuration on mesiolingual surface of mesial root. Upon full thickness flap elevation, fracture line was visible*  *Vertical fracture line on mesiolingual surface of mesial root*

6. TREATMENT

Treatment of periodontal abscess does not differ substantially from other odontogenic abscesses. It should include two distinct phases. [2, Level III]

a) Control of the acute condition to arrest tissue destruction and alleviate the symptoms.
b) Management of pre-existing and/or residual lesion, especially in patients with periodontitis.

6.1 Control of Acute Condition:

a) Drainage and debridement with/without antimicrobials (systemic or local)

This includes drainage (by means of scaling of the pocket or through an incision) and root surface debridement followed by irrigation with normal saline/antiseptics.[1, Level III] If the abscess is associated with a foreign-body impaction, the foreign body must be removed. [1, 39, Level III]

Key Message 3

- Mechanical debridement and drainage through the periodontal pocket without antibiotics is usually effective.
- Mechanical treatment of periodontal pocket is to debride the root surface using either a hand or ultrasonic scaler to facilitate drainage.
- Irrigation aims to remove debris and residual microorganisms.

Recommendation 2

A thorough subgingival scaling and root surface debridement should be carried out to treat abscesses in anatomically complex sites (e.g. furcation involvement or intrabony pockets).

(Grade C)

b) Alleviation of pain

Analgesics should be prescribed to relieve pain. The selection of analgesic depends on the patient's history, allergy profile, and the level of discomfort. Options include a non-steroidal anti-inflammatory drug (NSAID) and/or an opioid analgesic.[52, Level II]

c) Antimicrobials

Drainage and debridement with an adjunctive antimicrobial should be considered if there is systemic involvement. [2, 40, 41, 43, Level III] Use of systemic antimicrobials [2, Level III] as the sole treatment may **ONLY** be recommended if:

- there is a need for premedication.
- the infection is not well localised.
- adequate drainage cannot be achieved.

Indications for systemic antimicrobials are as follows: [42, 44-47, Level III]

- Patients with deep pockets, progressive or 'active' disease, or specific microbiological profile.
- Situations where there is local spread.
- Systemic involvement is present such as lymphadenopathy, fever or malaise or when the infection is not well localised.

The choice of antibiotics should be based on sound pharmacological and microbiological principles **(Appendix 2)**. [48, Level III] This antibiotic regime should be followed by debridement within 5 days.

Patients shall be reviewed after 24-48 hours to evaluate resolution of abscess. The definitive treatment should be carried out once the acute phase has resolved.

Recommendation 3

- Periodontal abscess with systemic spread which is life threatening or not responding to oral antibiotics should be referred to hospital immediately.

(Grade C)

- For patients treated with antibiotics, drainage and debridement should be carried out within 5 days.

(Grade C – Development Group's consensus)

6.2 Management of Pre-existing and/or Residual Lesions

Management of pre-existing and/or residual lesions are as follows:

- ✓ Refer to periodontist for appropriate non-surgical / surgical periodontal treatment
  Surgical therapy has been advocated mainly in abscesses associated with deep intrabony defects, furcation involvement, residual calculus and tooth anomalies where the resolution of the abscess can be achieved by surgical access [1, 2, 8 ,49 Level III]
- ✓ Tooth extraction
  If the tooth has a hopeless prognosis, or is irrational to treat, as a result of severe destruction of the periodontium, the tooth should be extracted. [2, 50 Level III] Indications for tooth extraction are:
  - Tooth with grade III mobility, and
  - Molars and bicuspids with Class III furcation involvement, and
  - Tooth with probing pocket depth more than 7 mm, and
  - Tooth with alveolar bone loss more than 65% [51, Level III]

Refer to **Appendix 3** on decision making process for tooth retention or extraction.

Recommendation 4

- Diabetic patients with acute symptoms should be given prompt treatment. [25, Level III]

(Grade C)

- Analgesics should be prescribed to alleviate pain.

(Grade C)

7. IMPLEMENTING THE GUIDELINES

It is important to standardise the management of periodontal abscess at all healthcare levels in Malaysia using an evidence-based CPG in order to manage it appropriately. Recognition of periodontal health and periodontal abscess by a clinician, the knowledge of what to do when a problem occurs, and the appropriate responses from the

health professional are major factors in management of periodontal abscess. This professional awareness is influenced by factors such as maintaining current understanding of the nature of periodontal abscess, the appropriate management, continuing professional education and an understanding of patient expectations.

As the outcomes of periodontal therapy is mostly dependent on the timely and appropriate management of the condition, it is important to disseminate the knowledge among healthcare providers, as well as to the public. This can be facilitated through the development of appropriate training modules and quick references.

Cost implications on management of periodontal abscess vary depending on several factors such as patient's expectations, compliance and medical conditions. Successful treatment outcomes would require active periodontal and supportive (maintenance) therapy; thus involving further cost. Periodontal abscess sometimes results in loss of teeth requiring rehabilitation. Appropriate management of periodontal abscess would ensure better prognosis of affected dentition.

7.1 Facilitating and Limiting Factors

Existing facilitators for application of the recommendations in the CPG include:

a) Wide dissemination of the CPG to healthcare professionals and teaching institutions via printed and electronic copies.
b) Continuing professional education on the management of periodontal abscess for healthcare professionals.
c) Adequate facilities at primary care level for detection and recognition of periodontal abscess.

Existing barriers for application of the recommendations of the CPG include:

a) Lack of understanding or limited knowledge of periodontal abscess.
b) Variation in treatment practice.
c) Constraints in clinical facilities.

7.2 Potential Resource Implications

To implement the CPG, there must be strong commitment to:

a) ensure widespread distribution of the CPG to healthcare professionals.
b) detect and recognise periodontal abscess by healthcare professionals.
c) reinforce training of healthcare professionals to ensure information is up to date.

7.3 Proposed Clinical Audit Indicators

To assist in the implementation of the CPG, the following are proposed as clinical audit indicators for quality management:

1. Percentage of teeth with periodontal abscesses that resulted in extraction within 6 months*	=	Number of teeth with periodontal abscesses that resulted in extraction within 6 months* / No. of teeth with periodontal abscesses at baseline	X 100
Standard: a) Specialist care = less than 5% b) Primary care = less than 20% Note: *excluding teeth with hopeless prognosis			

2. Percentage of teeth with periodontal abscesses that resulted in complete resolution with no recurrence after 6 months*	=	Number of teeth with periodontal abscesses that resulted in complete resolution with no recurrence after 6 months* / No. of teeth with periodontal abscesses at baseline	X 100
Standard: Specialist care = 70%			

Note: The six months* period was based on Development Group Consensus
Complete resolution: healing with no further sign and symptoms.

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Appendix 1

Clinical Questions: Management of Periodontal Abscess

Introduction

1. What is the definition of Periodontal Abscess (PA)?

Etiology and pathogenesis

1. What are the etiology, microbiology and contributing factors of PA?
2. What is the pathogenesis of PA?

Investigation and Diagnosis

1. What are the common complaints and symptoms of PA?
2. What are the relevant medical and dental histories of patients with PA?
3. Are there any systemic manifestations or involvement reported in patients with PA?
4. What are the clinical features of PA?
5. What are the investigations needed to diagnose PA?
6. What are the differential and definitive diagnoses of PA?

Treatment

1. How is the acute condition of PA controlled?
2. Is there any indication for systemic antimicrobials for patient with PA?
3. What are the effective and safe pharmacological treatments for PA?
4. When to review the presenting symptoms of PA?
5. What are the effective and safe treatments of residual / pre-existing lesions of PA?
6. What are the indications for tooth extraction in PA?

Appendix 2

Recommended Oral Antimicrobials

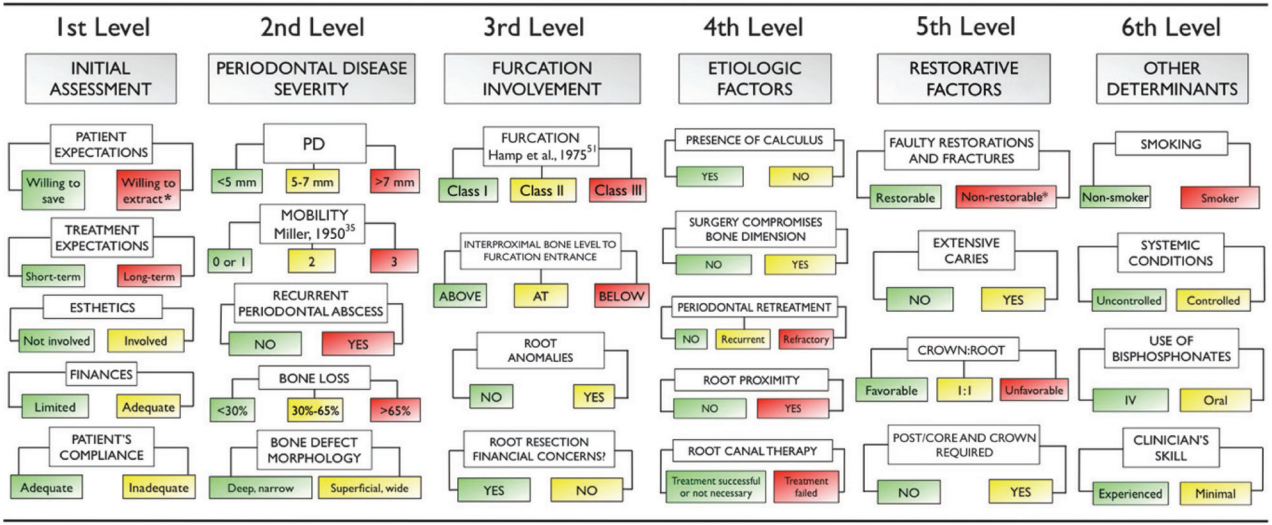
(As indicated in section 6.1c)

No.	Antibiotics	Dose	Duration	Note
Not allergic to Penicillin				
1.	Metronidazole	400mg PO q8h	5 or 7 days	1. Contraindicated for pregnant patients 2. Alcohol consumption is prohibited
2.	Amoxycillin	500 mg PO q8h	5 or 7 days	
3.	Amoxycillin and Metronidazole	500 mg PO q8h 200 mg PO q8h	5 or 7 days	For Aggressive Periodontitis: Amoxycillin 500 mg PO q8h and Metronidazole 400 mg PO q8h, 7 days (NAG 2015)
4.	Amoxycillin/ clavulanate (Augmentin)	500/125 mg PO q8h	5 or 7 days	Augmentin is only recommended for spreading infections and infections of fascial spaces (with/without systemic signs) (NAG 2015)
Allergic to Penicillin				
1.	Erythromycin	250 mg PO q6h	5 or 7 days	May increase levels of anticoagulants, antiepileptics, antipsychotics, anxiolytics/ hypnotics, cyclosporine, theophylline
2.	Clindamycin	150/300 mg PO q6h	5 or 7 days	
3.	Doxycycline	100 mg PO q12h	7,10 or 14 days	Caution in pregnant patients, breast-feeding women, and children under 12 years old
4.	Azithromycin	500 mg PO q24h	3 consecutive days	

Source: Herrera D et al 2002, Herrera D et al 2000, Bascones MA et al 2004; PV Patel 2011, NAG 2015

EXTRACTION VERSUS CONSERVATION

DECISION CHART



Source: Avilla Gustavo Avila,*Pablo Galindo-Moreno, Stephan Soehren, Carl E. Misch, Thiago Morelli, and Hom-Lay Wang. A novel decision-making process for tooth retention or extraction. J. Periodontol. 2009;80:476-491.

List of Abbreviation

1. PA : Periodontal Abscess
2. PO : Per Orem (Per Oral)
3. q6h : every 6 hours
4. q8h : every 8 hours
5. q12h : every 12 hours
6. q24h : every 24 hours

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- Technical Advisory Committee for CPG for their valuable input and feedback
- Dr Noor Hasmin bt Mokhtar for process involved in the publication
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