

TREATMENT OF PERIODONTAL ABSCESS

**In Adult Patients Presenting For
Dental Care in The Oral Health Services**

Ministry Of Health

Malaysia

2003

A NATIONAL CLINICAL GUIDELINE

Contents

Guideline development group

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1. Introduction

	Reference
<p>Periodontal abscess is a common emergency in the dental clinic.</p> <p>In 1998, a total of 69,201 (2.4%) cases of dental abscesses from a total of 2,893, 300 patients were seen in the Government dental clinic.</p> <p>A further 325 cases (6.2%) were in the Periodontic Specialist Clinic.</p> <p>Often it is difficult to differentiate the cause of an abscess, as it may be pulpal or periodontal in origin. These conditions have to be promptly managed, failure of which could lead to loss of teeth and danger of cellulitis in susceptible patients.</p>	<p>PG207 HMIS, 1998</p> <p>PG212, HMIS 1998</p>

Reference

Laporan Tahunan 1998, Sistem Maklumat Pengurusan Kesihatan Pergigian, Kementerian Kesihatan Malaysia

2. Definition

	Reference	Evidence level
<p>i. Gingival Abscess A localized, purulent infection that involves the marginal gingiva or the interdental papilla.</p> <p>ii. Periodontal Abscess A localized purulent infection within the tissue adjacent to the periodontal pocket that may lead to the destruction of periodontal ligaments and alveolar bone.</p> <p>iii. Pericoronal Abscess A localized purulent infection within the tissue surrounding the crown of a partially erupted tooth.</p>	Consensus report, 1999	III

Reference

1. Consensus report: Abscesses of the periodontium
Ann. Periodontol pg. 83, Vol. 4. no. 1. Dec. 1999

3. Etiology

The etiology of periodontal abscess is at times difficult to determine basically due to the size of the abscess, the possible condition that can result in a purulent infection and the vast number of potentially infective microbiota present. Usually upon examination the etiological factor, exogenous such as a fish bone or endogenous such as calculus embedded into soft tissue during scaling, is no longer present or cannot be detected at site of abscess.

	Reference	Evidence level
i. Tortuous periodontal pockets especially associated with furcation defects. These can eventually become isolated and can favour formation of an abscess	Carranza 1990 Pg. 259-265	III
ii. Closure of margins of periodontal pockets may lead to extension of the infection into the surrounding tissue due to the pressure of the suppuration in side the closed pocket. Fibrin secretions, leading to the local accumulation of pus may favor the closure of gingival margin to the tooth surface.	DeWitt et al 1985	II-2
iii. Changes in composition of the microflora, bacterial virulence or in host defenses could also make the pocket lumen inefficient to drain the increased suppuration.	Kareha et al 1981	III

1. Carranza FJ (1990). *Glickman's Clinical Periodontology*. 7th edition. Philadelphia: WB, Saunders Company.
2. Dewitt GV, Cobb CM & Killoy WJ (1985) The acute periodontal abscess: microbial penetration of tissue wall. *Int. J Periodontics & Restorative Dentistry* 1;39:51

3. Kareha MJ, Rosenberg Es & DeHaven H (1981). Therapeutic considerations in the management of a periodontal abscess with an intrabony defect. *Journal of Clinical Periodontology* 8; 375-386.

iv. Impaction of foreign bodies, such as a toothbrush bristle, food (such as fish bone) into the gingival tissue.	Kareha et al 1981	III
v. After procedures like scaling, where calculus is dislodged and pushed into the soft tissue. It may also be due to inadequate scaling which will allow calculus to remain in the deepest pocket area, while the resolution of the inflammation at the coronal pocket area will occlude the normal drainage, and entrapment of the subgingival flora in the deepest part of the pocket then cause abscess formation.	Dello Russo 1985	III
vi. Treatment with systemic antibiotics without subgingival debridement in patients with advanced periodontitis leads to a change in the composition of the subgingival microbiota, leading to superinfection and abscess formation.	Helovuo et al 1993	III

4. Dello Russo MM (1985). The post-prophylaxis periodontal abscess: etiology and treatment. *International Journal of Periodontics and Restorative Dentistry* 1; 29-37.

5. Helovuo H, Hakkarainen K & Paunio K (1993). Changes in the prevalence of subgingival enteric rods, staphylococci and yeasts after treatment with penicillin and erythromycin. *Oral Microbiology and Immunology* 8; 75-79.

6. Kareha MJ, Rosenberg Es & DeHaven H (1981). Therapeutic considerations in the management of a periodontal abscess with an intrabony defect. *Journal of Clinical Periodontology* 8; 375-386.

vii. As a consequence of perforation of the lateral wall of a tooth by an endodontic instrument during root canal therapy.	Caranza 1990 Pg 259-265	III
viii. Possible local predisposing factors for periodontal abscess formation:		
<ul style="list-style-type: none"> • External root resorption 	Yusof & Ghazali 1989	III
<ul style="list-style-type: none"> • Invaginated tooth 	Chen et al 1990	III
<ul style="list-style-type: none"> • Cracked tooth 	Goose 1981	III
<ul style="list-style-type: none"> • Local factors affecting morphology of roots such as cemental tears 	Ishikawa et al 1996	III

7. Chen RJ, Yang JF & Chao TC (1990). Invaginated tooth associated with periodontal abscess. *Oral Surgery Oral Medicine Oral Pathology* 69; 659.
8. Goose DH (1981). Cracked tooth syndrome. *British Dental Journal* 150; 224-225.
9. Ishikawa L, Oda S, Havashi I & Arakawa S (1996). Cervical cemental tear in older patients with adult periodontitis. Case reports. *J Periodontol* 67,15-20
10. Yusof VZ & Ghazali MN (1989). Multiple external root resorption. *Journal of the American Dental Association* 118; 453-455.

4. Microbiology of periodontal abscess

	Reference	Evidence level
Purulent oral infections are polymicrobial and usually caused by endogenous bacteria. However, very few studies have investigated the specific microbiota of periodontal abscesses.	Tabaqhali 1988	III
About 60% of cultured bacteria were strict anaerobes.	Topoll et al 1990	II-3
Most frequent type of bacteria was gram-negative anaerobic rods and gram-positive facultative cocci. In general, gram-negatives predominated over gram-positive and rods over cocci.	Newman & Sims 1979	II-3
Reports showed that high percentage of abscesses harbour lactamase-producing bacteria	Lewis et al 1995	II-3

11. Newman MG & Sims TN (1979). The predominant cultivable microbiota of the periodontal abscess *Journal of Periodontology* 50; 350-354.
12. Tabaqhali S (1988). Anaerobic infections in the head and neck region. *Scandinavian Journal of Infectious Diseases* 57; 24-34.
13. Topoll HH, Lange DE & Muller RF (1990). Multiple periodontal abscesses after systemic antibiotic therapy. *Journal of Clinical Periodontology* 17; 268-272.

14. Lewis MAO, Parkhurst CL, Douglas CW, martin MV, Absi EG, Bishpo PA, Jons SA. (1995). Prevalence of penicillin resistant bacteria in acute suppurative oral infection. *Journal of Antimicrobial Chemotherapy* 35, 785-791.

Culture studies of periodontal abscesses have revealed high prevalence of the following bacteria:		
Porphyromonas gingivalis-55-100%	Newman & Sims 1979,	II-3
Prevotella intermedia- 25-100%	Topoll et al 1990.	II-3
Fusobacterium nucleatum -44-65%	Hafstrom et al 1994	II-3
Actinobacillus actinomycetemcomitans-25%	Hafstrom et al 1994,	II-3
Camphylobacter rectus- 80%		
Prevotella melaninogenica-22%	Newman & Sims 1979,	II-3

15. Hafstrom CA, Wikstrom MB, Renvert SN & Dahlen GG (1994). Effect of treatment on some periodontopathogens and their antibody levels in periodontal abscesses. *Journal of Periodontology* 65; 1022-1028

16. Topoll HH, Lange DE & Muller RF (1990). Multiple periodontal abscesses after systemic antibiotic therapy. *Journal of Clinical Periodontology* 17; 268-272.

17. Newman MG & Sims TN (1979). The predominant cultivable microbiota of the periodontal abscess *Journal of Periodontology* 50; 350-354.

5. Examination

	Reference	Evidence Level
<p>a. Complaint –Chief complaint History of complaint.</p> <p>Severity of pain and distress will differentiate an acute from a chronic abscess</p>		
<p>b. Relevant medical and dental history-</p> <p>i. Whether patient is under the care of a physician or dentist</p> <p>ii. Presently on any medication or has any <u>medical</u> condition that may affect the periodontal diagnosis or treatment any previous <u>dental</u> treatment that may effect diagnosis or treatment plan</p>	<p>Carranza 1996 Pg:344-345</p>	<p>III</p>
<p>iv. Smoking history is important because heavy smokers have more severe periodontal disease and do not respond very well to treatment</p>	<p>Bergstrom 1989</p>	<p>II</p>

References

1. Carranza FA, JR; Newman MG: Clinical Periodontology edn. 8, Philadelphia 1996, WB Saunders, Pg: 344-345.

2. Bergstrom J. Cigarette -smoking as risk factor in chronic periodontal disease.
Community Dent Oral Epidemiol 1989; 17:245-247.

6. Clinical features

	References	Evidence level
<p>a. General</p> <p>Healthy or unhealthy: features that may indicate on- going systemic diseases, competency of immune system, extremes of age, distress, fatigue</p> <p>NB -Presence of systemic toxicity e.g. Increase in body temperature and malaise</p>	<p>Carranza 1996,Pg: 344</p> <p>Dimitroulis 1996, Chapter 8</p>	<p>III</p> <p>III</p>
<p>b. Extra Oral features</p> <p>Symmetry of face, swelling, redness, fluctuant, sinus, trismus and examination of cervical lymph nodes.</p>	<p>Carranza 1996,Pg: 348</p> <p>Dimitroulis 1996, Chapter 8</p>	<p>III</p> <p>III</p>

References

6. Carranza FA, JR; Newman MG: Clinical Periodontology edn. 8, Philadelphia 1996, WB Saunders, Pg: 344.
7. Carranza FA, JR; Newman MG: Clinical Periodontology edn. 8, Philadelphia 1996, WB Saunders, Pg: 348.
8. Dimitroulis 1997. A synopsis of Minor Oral Surgery. edn 1, Reed education & Professional Publishing .

<p>c. Intra Oral Features:</p> <p>Include:</p> <p>Examination of the oral mucosa and dentition</p> <ol style="list-style-type: none"> i. gingival swelling, redness and tenderness. ii. suppuration either spontaneous , on pressure or from sinus. iii. mobility, elevation and tooth tender to percussion . <p>Evaluation of the status of the oral hygiene</p> <p>Examination of the periodontium including periodontal screening</p>	<p>Carranza 1996 Pg:348-357 and Ainamo 1982</p>	<p>III II-3</p>
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Reference

9. Carranza FA, JR; Newman MG: Clinical Periodontology edn. 8, Philadelphia 1996, WB Saunders, Pg: 348-357.

10. Ainamo J, Barmes D, Beagrie G, et al. Development of the World Health Organization (WHO) Community Periodontal Index of Treatment Needs (CPITN).

Int Dent J 32:281, 1982.

7. Investigation

<p>Radiographs</p> <p>Intra oral radiographs, include periapical and vertical bite-wing views, are used to assess marginal bone loss and perapical condition of the tooth involved.</p> <p>Gutta percha point placed through sinus might locate the source of the abscess.</p> <p>Dental radiographs (periapicals, bitewings and OPG) could be used for a general survey of marginal bone loss of the whole dentition</p>	<p>Wilson1992 Pg:26-27, 47-49</p> <p>Gutman 1998 Pg:13</p>	<p>III</p> <p>III</p>
<p>Pulp vitality test</p> <p>Thermal or electrical tests could be used to assess the vitality of the tooth</p>	<p>Jacobsen 1998</p>	<p>III</p>
<p>Microbial test</p> <p>Sample of pus from the sinus, abscess or expressed from the gingival sulcus could be sent for culture and sensitivity test</p>	<p>Pg:10-11</p> <p>Wilson 1992 Pg:44-46</p>	<p>III</p> <p>III</p>
<p>Others</p> <p>Assessment of diabetic status through random blood glucose, fasting blood glucose or glycosylated haemoglobin level, if indicated.</p>	<p>Wilson 1992 Pg:282-283</p>	<p>III</p>

References

11. Wilson TG, Kornman KS, Newman MG. Advances in Periodontics. Quintessence Publishing Co, Inc 1992..
12. Gutman JL, Dumsha TC, Lovdahl PE, Hovland EJ. Proble solving in endodontics - Prevention, identification and management. Mosby Year Book, 1998.
13. Jacobsen P. Restorative Dentistry- an integrated approach. Wright, 1998.

8. Diagnosis/Differential Diagnosis

	Reference	Evidence level
<p>Diagnosis of periodontal abscess involves history taking, clinical and radiological findings.</p> <p>Acute periodontal abscess presents as a sudden onset of pain on biting and a deep throbbing pain in a tooth in which the patient has been tending to clench. The gingiva becomes red, swollen and tender. In the early stages there is no fluctuation or pus discharge. Associated lymph nodes enlargement maybe present.</p> <p>In the chronic stages, a nasty taste and spontaneous bleeding may accompany discomfort. The adjacent tooth is tender to bite on and is sometimes slightly mobile.</p> <p>Pus may be present and discharged from the gingival crevice or from a sinus in the mucosa overlying the affected root. The pain is then reduced and the abscess appears as a red, shiny and tender swelling over the alveolus.</p>	<p>Manson 2000 Pg:335-337</p>	<p>III</p>

14. Manson JD, Eley BM. Outline of Periodontics. 4th edn. Wright 2000. Pg 335-337.

Periodontal abscess		
Common clinical features of periodontal abscess		
✓ Presence of generalized periodontal disease with pocketing and bone loss.	Smith & Davies,1986 Pg 176-177	II-3
✓ Tooth is usually vital		
✓ Overlying gingival erythematous, tender and swollen.		
✓ Painful at times	Hafstrom et al 1994	II-3
✓ Pus discharge via periodontal pocket or sinus opening	Herrera	
✓ Possible cervical lymphadenopathy	2000	II-3

15. Smith RG, Davies RM (1986). Acute lateral periodontal abscess.

British Dental Journal 161:176

16. Herrera D, Roldan S, Gonzales I, Saaz M: The Periodontal abscess (I). Clinical and Microbiological findings. *J. Clin. Periodontol 2000;27:392*

17. Hafstrom CA, Wikstrom MB, Renvert SN & Dahlen GG. *J. Periodontal 1994;65:1022-1028*

<u>Differential diagnosis</u>		
<ul style="list-style-type: none"> • Gingival abscess <ul style="list-style-type: none"> History of recent trauma Localised to the gingiva No periodontal pocketing • Periapical abscess <ul style="list-style-type: none"> Located over root apex Non-vital tooth.,heavily restored or large filling Large caries with pulpal involvement. History of sensitivity to hot and cold No sign / symptoms of periodontal diseases. Periapical radiolucency • Perio-endo lesion <ul style="list-style-type: none"> Severe periodontal disease which may involve the furcation Severe bone loss close to apex causing pulpal infection Non-vital tooth which is sound or minimally restored • Endo-perio lesion <ul style="list-style-type: none"> Pulp infection spreading via lateral canals into periodontal pockets. Tooth usually non-vital with periapical radiolucency. Localised deep pocketing 	<p>Carranza 1996 Pg:234-235</p> <p>Manson 2000 Pg:335-337</p> <p>Simon 1972 Pg:202</p> <p>Manson 2000 Pg:335-337</p>	<p>III</p> <p>III</p> <p>III</p> <p>III</p>

18. Carranza FA, JR; Newman MG: Clinical Periodontology 8 th edn., Philadelphia

1996, WB Saunders, Pg: 234-235.

19. Manson JD, Eley BM. Outline of Periodontics. 4th edn. Wright 2000. Pg 335-337.

20. Simon JH, Glick DH, Frank AL (1972). The relationship of Endodontic / periodontic lesions. *J. Periodontol* 43, Pg 202.

<ul style="list-style-type: none"> • Cracked tooth Syndrome <ul style="list-style-type: none"> History of pain on mastication Crack line noted on the crown. Vital tooth Pain upon release after biting on cotton roll, rubber disc or tooth sleuth No relief of pain after endodontic treatment 	<p>Gutman 1998 Pg:213-215</p>	<p>III</p>
<ul style="list-style-type: none"> • Root fracture <ul style="list-style-type: none"> Heavily restored Non-vital tooth with mobility Post crown with threaded post Possible fracture line and halo radiolucency around the root in a periapical radiographs Localised deep pocketing, normally one site only Might need an open flap exploration to confirm diagnosis 	<p>Gutman 1998 PG:210-212</p> <p>Harty 1982 Pg:257-260</p>	<p>III</p> <p>III</p>

21. Gutman JL, Dumsha TC, Lovdahl PE, Hovland EJ. Problem solving in endodontics - Prevention, identification and management. Mosby Year Book, 1998.

22. Harty FJ. Endodontics in clinical practice. 2 edn. John Wright & Sons Ltd. 1982. Pg 257-260.

9. Treatment

	Reference	Evidence level
<p>9a. Treatment of periodontal abscess does not differ substantially from other odontogenic infections. The principles of management of simple dental infections are as follows:</p> <ol style="list-style-type: none">1. Local measures<ol style="list-style-type: none">a. Drainageb. Maintain drainagec. Eliminate cause2. Systemic measures- in conjunction with local measures <p>9b. The management of a patient with periodontal abscess can be divided into three stages:</p> <ol style="list-style-type: none">1. Immediate management2. Initial management3. Definitive therapy	Dimitroulis 1997	III

1. Dimitroulis 1997. A synopsis of minor oral surgery. Reed education & Professional publication Ltd. Chapter 8 (Odontogenic infections)

9b. 1. IMMEDIATE MANAGEMENT		
i. In life-threatening infections, hospitalization, supportive therapy together with antimicrobial therapy will be necessary.	Dimitroulis 1997	III
ii. Depending on the severity of the infection and local signs /symptoms, the clinical examination, investigations and initial therapy can be delayed.		
iii. In non-life threatening conditions systemic measures such as oral analgesics and antimicrobial chemotherapy will be sufficient to eliminate:	Lewis & MacFarlane 1986	III
<ul style="list-style-type: none"> • Systemic symptoms • Severe trismus (surgical access is difficult) • Diffuse spreading infection (facial cellulites) 	Dimitroulis 1997	III
iv. Antibiotics are prescribed empirically before microbiological analysis and antibiotic sensitivity of pus and tissue specimen.	Dimitroulis 1997	III
v. The empirical regimens are dependent on the severity of the infection. The common antibiotics used are Phenoxymethylepenicillin 250 -500 mg qid 5/7 Amoxycillin 250 - 500 mg tds 5-7 days Metronidazole 200 - 400 mg tds 5-7 days If allergic to penicillin Erythromycin 250 –500 mg qid 5-7 days Doxycyline 100mg bd 7-14 days Clindamycin 150-300 mg qid 5-7 days	Dimitroulis 1997	III

1. Dimitroulis 1997. A synopsis of minor oral surgery. *Reed education & Professional publication Ltd. Chapter 8 (Odontogenic infections)*
2. Lewis MAO, MacFarlane TW. Short –course high-dosage amoxycillin in the treatment of acute dentoalveolar abscess

<u>9b. 2. INITIAL THERAPY</u>			
Prescribed for management of			
<ul style="list-style-type: none"> • Acute abscess without systemic toxicity • Residual lesion after treatment of systemic toxicity • Chronic periodontal abscess 			
Initial therapy comprises			
i.	Irrigation of abscessed pocket with saline or antiseptics	Ahl et al 1986	III
ii.	When present, removal of foreign bodies	Abrams & Kopczyk 1983	III
iii.	Drainage through sulcus with a probe or light scaling of tooth surface	Ammons 1996	III
iv.	Compression and debridement of soft tissue wall	Ammons 1996	III
v.	Oral hygiene instructions		

1. Ahl DR, Hilgeman JL & Snyder JD (1986). Periodontal emergencies. *Dental Clinics of North America* 30, 459-472
2. Ammons KJ (1996). Lesion in the oral mucous membranes. Acute lesions of the periodontium. In : Fundamentals of Periodontics. Eds. Wilson T & Korman K. pp. 435-440. Singapore: Quintessence.
3. Abrams H & Kopezyk RA (1983). Gingival sequela from a retained piece of dental floss. *Journal of the American Dental Association* 106, 57-78.

v. Review after 24-48 hours, a week later the definitive treatment should be carried out	Ammons 1996	III
Alternative Treatments		
• Extraction of teeth with poor prognosis	Ammons 1996	III
Guidelines for assessing prognosis		
Poor / Hopeless prognosis:	Schwartz & Lamster 1995	III
- Horizontal mobility more than 1mm.		
- Class II-III furcation involvement of a molar.		
- Probing depth > 8 mm.		
- Poor response to therapy.		
- More than 40% alveolar bone loss.		
• Basic treatment (incision, drainage and debridement) with systemic antibiotics	Smith & Davies 1986	II-3
• Gingivectomy or flap surgery with systemic antibiotics or local antibiotics (tetracycline)	Quteish- Taani 1996	III

4. Ammons KJ (1996). Lesion in the oral mucous membranes. Acute lesions of the periodontium. In : Fundamentals of Periodontics. Eds. Wilson T & Korman K. pp. 435-440. Singapore: Quintessence.
5. Smith RG & Davies RM (1986). Acute lateral periodontal abscesses. *British dental Journal* 161:176
6. Outeish Taani Ds (1996). An effective treatment for chronic periodontal abscesses *Quintessence International Volume 27, No. 10, pp. 697-699*
7. Schwartz M, Lamster IB (1995). Clinical guide to periodontics. WB Saunders pp.

Systemic antibiotics recommended		
<ul style="list-style-type: none"> • Phenoxymethyl penicillin 250-500mg qid 7 – 10 days 	Smith &	II-3
<ul style="list-style-type: none"> • Amoxicillin/ Augmentin 250- 500 tds 7- 10 days 	Davies 1986	
<ul style="list-style-type: none"> • Metronidazole 250mg tds 7 –10 days 	Herrera et al	II-1
(Can be combined with amoxicillin. The use of metronidazole is contraindicated: In pregnant patients/ consumption of alcohol)	2000	
	Schwartz &	
	Lamster	III
	1995	
<ul style="list-style-type: none"> • Tetracycline HCL 250mg qid 7-14 days 		
<ul style="list-style-type: none"> • Doxycycline 100mg bd 7-14 days(the use of tetracycline is contraindicated in pregnant patients & children below 10 yrs) 		

8. Herrera D, Roldan S, O'Connor A, Sanz M: The periodontal abscess (II). Short-term clinical and microbiological efficacy of 2 systemic antibiotics regimes .*J Clin Periodontal* 2000;27: 395-404.
9. Smith RG & Davies RM (1986). Acute lateral periodontal abscesses. *British Dental Journal* 161:176
10. Schwartz M, Lamster IB (1995). Clinical guide to Periodontics. WB Saunders Chapter. 20.

<p><u>9b. 3 .DEFINITIVE TREATMENT</u></p> <p>Treatment following reassessment after initial therapy, to restore, function, aesthetics & to enable patient to maintain health of periodontium.</p> <p>Definitive periodontal treatment according to treatment needs of the patient (in accordance to CPITN Index)</p>	<p>Ainamo et al 1978</p>	<p>II-2</p>
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11. Ainamo J, Barmes D, Beagrie G, Cutress T, Martin J, Sardo-Infirri j. WHO Index for Treatment Needs. *International Dental Journal* Vol. 32, no. 3. pp.281-291

Flow Chart For Management Of Periodontal Abscess

