

Third Molar Video Seminars

Outlines Third Molar Management

INTRODUCTION: Evolution of treatment options! (18min.)

REFERENCES

Ash MM: Third molars as periodontal problems. Dental Clinics NA, Philadelphia, WB Saunders, p51

Hugoson A, Kugelberg CF. The prevalence of third molars in a Swedish population, an epidemiological study. Commun Dent Health 5:121, 1988.

Organization of the Seminar Series

Goal- Discuss 3rd molar management based on data from recent peer reviewed literature

Format- Recorded video seminars with participation of students and residents

Requires- Prior study of relevant recommended literature

Suggested- On site faculty available for discussion of the presented subject

Seminar Length- Each topic could be covered in less than 45 minutes

Faculty-

Raymond White DDS, PhD

Dalton L McMichael Distinguished Professor

UNC Oral and Maxillofacial Surgery

William Proffit DDS, PhD

Kenan Distinguished Professor

UNC Orthodontics

SEMINAR ONE:

The Biology! (40min.)

REFERENCES

White RP Jr, Proffit WR: Asymptomatic third molars: Evaluation and Management of asymptomatic third molars: Lack of symptoms does not equate to lack of pathology. Am J Orthodont Dentofac Orthoped 140:10, 2011

Background

Evidenced Based Decisions

3rd molar Diagnostic options

Biological Models

Caries

3rd molars follow pattern

Periodontal Inflammatory Disease

3rd molars are different

Objectives

Discuss how data/evidence from current literature can be incorporated into advice for patients

Relate biological models of caries and periodontal inflammatory disease to clinical findings

Describe possible clinical outcomes associated with retained 3rd molars

Evaluation Seminar One

1)Why have 3rd molar periodontal data not been collected in US population studies?

a-3rd molars have few periodontal problems

b-only symptomatic disease affecting 3rd molars important

c-expectation that 3rd molars cannot be assessed accurately

d-3rd molars missing more often than teeth more anterior

2)Based on the biological model why are lower 3rd molar teeth likely to be affected with chronic periodontal inflammatory disease?

a-3rd molars erupt after jaw growth complete

b-immune response to pathogens differs for 3rd molars as compared to teeth more anterior

c-3rd molars more likely to be completely covered as compared to other molars

d-gingival crevicular fluid unique to 3rd molars

3)Dental caries differs from periodontal inflammatory disease because

a-tissue destruction occurs by different mechanisms

b-only pathogenic bacteria are involved

c-individual's immune system responds differently in each of these chronic diseases

d-all of the above

SEMINAR TWO: Periodontal Inflammatory Disease Prevalence with Asymptomatic 3rd molars (34min.)

REFERENCES

Blakey GH, Marciani RD, Haug RH, Phillips C, Offenbacher S, Pabla T, White RP Jr: Periodontal pathology associated with asymptomatic third molars. J Oral Maxillofac Surg 60:1227, 2002

White RP Jr, Madianos PN, Offenbacher S, Phillips C, Blakey GH, Haug RH, Marciani RD: Microbial complexes detected in the second/third molar region in patients with asymptomatic third molars. J Oral Maxillofac Surg 60:1234, 2002

White RP Jr, Offenbacher S, Haug RH, Blakey GH, Phillips C: Inflammatory mediators and periodontitis in patients with asymptomatic third molars. J Oral Maxillofac Surg 60:1241, 2002

Nance PE, White RP Jr, Offenbacher S, Phillips C: Change in third molar angulation/position and periodontal pathology. J Oral Maxillofac Surg 64: 424, 2006

3rd Molar Periodontal inflammatory Disease

Asymptomatic 3rd molars and prevalence of periodontal inflammatory disease

Maxilla vs. mandible, position relative to occlusal plane, angulation

Prevalence of periodontal pathogens

Prevalence of GCF inflammatory mediators

Periodontal inflammatory disease: Prevalence/ Progression

3rd molar region

anterior to 3rd molar region

Objectives

Explain why prevalence periodontal inflammatory disease in young adults underestimated

Relate periodontal inflammatory disease progression to the biological model

Discuss how risk markers for periodontal disease explain disease progression

with asymptomatic 3rd molars

Evaluation Seminar Two

1) Anaerobic pathogens are commonly detected in the 3rd molar region in young adults because

a-pathogens are unique to 3rd molars

b-deeper probing depths exist around 3rd molars due to eruption after jaw growth complete

c-inflammatory mediators in the surrounding tissue facilitate pathogen colonization

d-access for routine oral home care is difficult

e-tobacco use is common in this age group

2) Periodontal inflammatory disease is more likely at mandibular 3rd molars

a-True

b-False

3) Periodontal inflammatory disease with deeper probing depths is more likely with 3rd molars below the occlusal plane

a-True

b-False

SEMINAR THREE:

Progression of 3rd Molar Periodontal Inflammatory Disease (32min.)

REFERENCES

Blakey GH, Jacks MT, Offenbacher S, Nance PE, Phillips C, Haug RH, White RP Jr: Progression of periodontal disease in the second/third molar region in patients with asymptomatic third molars. J Oral Maxillofac Surg 64:189, 2006

White RP Jr, Offenbacher S, Blakey GH, Haug RH, Jacks MT, Nance PE, Phillips C: Chronic oral inflammation and the progression of periodontal pathology in the third molar region. J Oral Maxillofac Surg 64:880, 2006

White RP Jr, Phillips C, Hull DJ, Offenbacher S, Blakey GH, Haug RH: Risk Markers for progression of periodontal pathology in the third molar and non-third molar regions in young adults. J Oral Maxillofac Surg 66:749, 2008

Blakey GH, Golden BA, White RP Jr, Offenbacher S, Phillips C, Haug RH: Changes over time in the periodontal status of young adults with no third molar periodontal pathology at enrollment. J Oral Maxillofac Surg 67: 2425, 2009

Progression of Periodontal Inflammatory Disease in young adults with asymptomatic 3rd molars

Periodontal inflammatory disease: Prevalence/ Progression

3rd molar region

anterior to 3rd molar region

Risk markers for progression of periodontal pathology in the third molar and non-third molar regions in young adults.

Changes over time if no 3rd molar pathology at enrollment.

Change in 3rd molar position/angulation over time

Objectives

Relate biofilm biology to periodontal inflammatory disease progression

Discuss evidence for periodontal inflammatory disease progression in the 3rd molar region and more anterior regions of the mouth

Weigh the risk markers for periodontal disease progression; which are more or less important

Evaluation Seminar Three

1) Progression of periodontal inflammatory disease from lower 3rd molars to teeth more anterior depends on

a-an immune response to periodontal pathogens at a local periodontal site

b-periodontal pathogens colonizing at more anterior periodontal sites

c-3rd molar probing depths

d-periodontal pathogen numbers at 3rd molar sites

e-all of the above

2) Periodontal probing depths in the 3rd molar region are predictors of periodontal progression

a-True

b-False

3) After jaw growth is complete, 3rd molars are likely to remain static in position; no change in angulation or eruption.

a-True

b-False

SEMINAR FOUR:

Symptomatic Third Molar Periodontal Inflammatory Disease (27min.)

REFERENCES

Gelesko S, Blakey GH, Partrick M, Hill DL, White RP Jr, Offenbacher S, Phillips C, Haug RH: Comparison of periodontal inflammatory disease in young adults with and without pericoronitis involving mandibular third molars. J Oral Maxillofac Surg 67:134, 2009

Tang D, Proffit WR, Phillips C, Koroluk L, White RP: Quality of Life Measures affect the decision to have Third Molars removed in subjects with mild pericoronitis symptoms. In Preparation 2013

Bradshaw S, Faulk J, Blakey G, Phillips C, Phero J, White R: Quality of Life Outcomes after third molar removal in subjects with minor symptoms of pericoronitis. J Oral Maxillofac Surg 70:2494, 2012

Slade GD, Foy SP, Shugars DA, Phillips C, White RP Jr: The impact of third molar symptoms, pain and swelling, on oral health related quality of life. J Oral Maxillofac Surg 62:1118, 2004

Symptomatic Periodontal Inflammatory Disease: 3rd molars and “pericoronitis”

Characteristics of Pericoronitis

Symptomatic vs. Asymptomatic 3rd molar periodontal inflammatory disease

Prevalence Periodontal inflammatory disease:

3rd molar region

anterior to 3rd molar region

Quality of Life with Symptomatic Periodontal Inflammatory Disease

Objectives

Relate 3rd molar symptoms to possible disease levels

Discuss 3rd molar symptoms and the impact on Quality of Life; Pain, Lifestyle, Oral Function

Are existing Clinical Guidelines for removal of symptomatic 3rd molars adequate? Evidence??

Evaluation Seminar Four

1)Why should pericoronitis be termed symptomatic periodontal inflammatory disease?

a-only young adults affected

b-disease affects majority of the adult population

c-disease is chronic with recurrent symptoms

d-Immune response to Gram positive bacteria in biofilm produce symptoms

2)Third molar symptom levels with periodontal inflammatory disease depend on

a- individual's immune response to pathogens in biofilm

b- length of time pathogenic bacteria have been colonized in the non-sheddable biofilm

c- individual's tolerance for pain

d-3rd molars reaching the occlusal plane

3)Pain levels are the only Quality of Life Impact of pericoronitis.

a-True

b-False

SEMINAR FIVE:

Third Molar Treatment Options and Outcomes (29min.)

REFERENCES

Fisher E, Blakey G, Offenbacher S, Phillips C, White R: Mechanical debridement of subgingival biofilm in subjects with asymptomatic third molars does not reduce deeper probing depths in the molar regions of the mouth. J Oral Maxillofac Surg 71:467, 2013

Blakey GH, Parker DW, Hull DJ, White RP Jr, Offenbacher S, Phillips C, Haug RH: The impact of removal of third molars on periodontal pathology. J Oral Maxillofac Surg 67:245, 2009

Dicus-Brookes C, Partrick M, Blakey G, Faulk J, Offenbacher S, Phillips C, White R: Removal of symptomatic third molars may improve periodontal status of remaining dentition. J Oral Maxillofac Surg 71:1639, 2013

DouganGD: Does the Trojan Horse have an Achilles heel? N Engl J Med 360:83, 2009

Third Molar Treatment Options and Outcomes

Asymptomatic

mechanical debridement outcomes

3rd molar removal clinical outcomes

Symptomatic

3rd molar removal clinical outcomes

Future treatment options

Objectives

Relate effectiveness of mechanical debridement of biofilm to recurrent 3rd molar periodontal pathology

Discuss why 3rd molar removal is the current treatment option

Discuss future options based on the biology of the disease

Evaluation Seminar Five

1) Mechanical debridement in the molar region is effective in removing almost all biofilm

a-for all periodontal probing depths

b-for periodontal probing depths greater than 4mm

c-for shallow periodontal probing depths

d-for aerobic pathogens

2) 3rd molar removal can improve the periodontal status of the 3rd molar region and anatomic regions more anterior in the mouth

a-True

b-False

3) Future options for treatment of periodontal pathology are promising based on

a-current antibiotic usage

b-eradication of pathogens in the biofilm

c-altering quorum sensing in the colonized biofilm

d-disrupting GCF flow

SEMINAR SIX:**Third Molar Occlusal Caries (27min.)****REFERENCES**

Shugars DA, Jacks TM, White RP Jr, Phillips C, Haug RH, Blakey GH: Occlusal caries in patients with asymptomatic third molars. J Oral Maxillofac Surg 62:973, 2004

Divaris K, Fisher EL, Shugars DA, White RP Jr: Risk factors for third molar occlusal caries: A longitudinal clinical investigation. J Oral Maxillofac Surg 70:1771, 2012

Garaas R, Fisher E, Wilson G, Phillips C, Shugars D, Blakey G, Marciani R, White R: Prevalence of third molars with caries experience or periodontal pathology in young adults. J Oral Maxillofac Surg 70:507, 2012

Fisher E, Garaas R, Blakey G, Offenbacher S, Shugars D, Phillips C, White R: Changes over time in the prevalence of caries experience or periodontal pathology on third molars in young adults. J Oral Maxillofac Surg 70:1016, 2012

Third Molar Occlusal Caries

Biological model

Prevalence Estimate

Changes over time

Unique to 3rd molars or Associated with Caries 1st/2nd molars

Objectives

Relate 3rd molar caries prevalence to biological model of disease

Discuss 3rd molar caries

Relationship to caries prevalence 1st/2nd molars

Changes over time in disease incidence

Evaluation Seminar Six

1) Caries is unique to 3rd molars

a-True

b-False

2) 3rd molar Caries prevalence appears to increase as individuals age

a-age a proxy for time for disease development

b-if caries bacteria present condition may worsen over time

c-later eruption of 3rd molars equates to increased detection after third decade of age if caries detected on 1st/2nd molars

d-none of the above

e-all of the above

3) In healthy young adults with good oral health practices, 3rd molar caries prevalence is low.

a-True

b-False

SEMINAR SEVEN:**Third Molar Occlusal Caries and Periodontal Pathology in Clinical and Population Studies (38min.)****REFERENCES**

Garaas R, Moss K, Fisher E, Wilson G, Offenbacher S, Beck J, White R: Prevalence of third molars in middle-aged and older Americans with caries experience or periodontal pathology. J Oral Maxillofac Surg 69:463, 2011

Moss KL, Beck JD, Mauriello SM, Offenbacher S, White RP Jr: Third molar periodontal disease and caries in senior adults. J Oral Maxillofac Surg 65:103, 2007

Garaas R, Fisher E, Wilson G, Phillips C, Shugars D, Blakey G, Marciani R, White R: Prevalence of third molars with caries experience or periodontal pathology in young adults. J Oral Maxillofac Surg 70:507, 2012

Fisher E, Garaas R, Blakey G, Offenbacher S, Shugars D, Phillips C, White R: Changes over time in the prevalence of caries experience or periodontal pathology on third molars in young adults. J Oral Maxillofac Surg 70:1016, 2012

White R, Fisher E, Phillips C, Tucker M, Moss K, Offenbacher S: Visible third molars as a risk indicator for increased periodontal probing depths. J Oral Maxillofac Surg 69:92, 2011

Third Molar Occlusal Caries and Periodontal Pathology in Clinical and Population Studies

Prevalence of Pathology "Free" 3rd molars

Piedmont 65+ N=818

ARIC N=6,793

TMU/TMK

Enroll N=409, Follow-up 7 years N=179 (Excludes subjects who had 3rd molars removed)

Visible 3rd molar as a predictor of periodontal inflammatory disease

NHANES III N=5800+

ARIC N=6,793

OCAP N=1020

MOTOR N=1,798

Objectives

Discuss differences in 3rd molar caries and periodontal pathology among clinical/population studies

Relate NHANES US population data to 3rd molar data in other clinical/population studies

Discuss how outcomes could improve by designing studies differently

Include barriers to study completion in discussion

Evaluation Seminar Seven

1) Third molars are often removed in young adult which makes clinical/population studies difficult to design

- a-True
- b-False

2) Presence of 3rd molars may indicate the need for careful assessment of periodontal pathology because

- a-deeper periodontal probing depths often detected around visible 3rd molars
- b-anaerobic periodontal pathogens associated with deeper periodontal probing depths
- c-deeper periodontal probing depths reflect a greater surface area of the Biofilm Gingival Interface
- d-all of the above

3) Third molars should be assessed along with other teeth in clinical/population studies

- a-to offer an accurate assessment of disease levels among age cohorts
- b-to encourage retention of 3rd molars
- c-because prevalence of 3rd molar pathology is low compared to other molar teeth
- d-because radiographs may not be available to examiners
- e-none of the above

SEMINAR EIGHT:

Clinical and Quality of Life Outcomes after 3rd molar Removal (68min.)

Part One: Recovery “on average”. Part Two: Predicting delayed recovery

REFERENCES

White RP Jr, Shugars DA, Shafer DM, Laskin DM, Buckley MJ, Phillips C: Recovery after third molar surgery: Clinical and health related quality of life outcomes. J Oral Maxillofac Surg 61: 535, 2003

Phillips C, White RP Jr, Shugars DA, Zhou X: Risk factors associated with prolonged recovery and delayed clinical healing after third molar surgery. J Oral Maxillofac Surg 61:1436, 2003

Snyder M, Shugars DA, White RP Jr, Phillips C: The role of pain medication after third molar surgery on recovery for lifestyle and oral function. J Oral Maxillofac Surg 63:1130, 2005

Phillips C, Gelesko S, Proffit W, White R: Age and recovery from third molar surgery. Am J Orthodont Dentofac Orthoped 138:700e1, 2010

Ruvo A, Shugars DA, White RP Jr, Phillips C: Delayed clinical recovery and health related quality of life outcomes after third molar surgery. J Oral Maxillofac Surg 63:929, 2005

Clinical and Quality of Life Outcomes after 3rd molar Removal

Trial Design

Clinical Outcomes

Delayed Healing, Sensory Deficit

QOL Outcomes

Predictors Delayed Clinical/QOL Outcomes

Delayed Healing and QOL outcomes

Objectives

- Explain how Clinical and Quality of Life Outcomes after 3rd molar surgery were assessed
- Explain how to Predict Delayed Clinical and Quality of Life Outcomes after 3rd molar surgery
- Discuss how Delay in Recovery for Quality of Life Outcomes results from Delayed Clinical Outcomes

Evaluation Seminar Eight

1)Quality of Life Outcomes have become equally as important as Clinical Outcomes because

a-patient expectations

b-ability to collect quantitative data

c- ability to analyze data

d-a focus on outcomes in health care

e- all of the above

2)Young adult females may recover differently than males after procedures

a-True

b-False

3)Delayed clinical recovery after 3rd molar surgery does not affect Quality of Life recovery.

a-True

b-False

SEMINAR NINE:

Interventions to Improve Outcomes after 3rd Molar Removal (43min.)

REFERENCES

Snyder M, Shugars DA, White RP Jr, Phillips C: The role of pain medication after third molar surgery on recovery for lifestyle and oral function. J Oral Maxillofac Surg 63:1130, 2005

Gelesko S, Long L, Faulk J, Phillips C, Dicus C, White R: Cryotherapy and topical Minocycline as adjunctive measures to control pain after third molar surgery, An exploratory study. J Oral Maxillofac Surg 69:e324, 2011

Foy SP, Shugars DA, Phillips C, Marciani RD, Conrad SM, White RP Jr: Outcomes following third molar surgery with intravenous antibiotics in patients at risk for delayed recovery. J Oral Maxillofac Surg 62:15, 2004

Stavropoulos MF, Shugars DA, Phillips C, Conrad SM, Fleuchaus PT, White RP Jr: The impact of topical minocycline with third molar surgery on clinical recovery and health related quality of life outcomes. J Oral Maxillofac Surg 64:1059, 2006

Tiwana PS, Foy SP, Shugars DA, Marciani RD, Conrad SM, Phillips C, White RP Jr: The impact of intravenous corticosteroids with third molar surgery in patients at high risk for delayed Health Related Quality of Life and clinical recovery. J Oral Maxillofac Surg 63:55, 2005

Interventions to improve outcomes after 3rd molar removal

Role of pain medications in Recovery

Recovery with: Cold Therapy, Topical Minocycline, IV Antibiotics, Corticosteroids

Objectives

Discuss pro and con of at least two adjunctive measures to improve Quality of Life and Clinical Recovery
Propose a plan for a Multi-center Clinical Study for assessing adjunctive measures to improve Quality of Life and Clinical Recovery

Evaluation Seminar Nine

1) Cold therapy can be effective in moderating the worst pain levels after 3rd molar surgery

- a-True
- b-False

2) IV antibiotics presurgery can reduce the incidence of delayed clinical healing by

- a-diffusion into oral tissues
- b-incorporation into the blood clot following tooth removal
- c-altering the oral flora
- d-levels of antibiotic in saliva
- e-none of the above

3) Corticosteroid administration presurgery usually delays post surgery clinical healing

- a-True
- b-False

SEMINAR TEN:**Translation: From Clinical Research to Care of Patients (44min.)****REFERENCES**

Sackett: Evidence based medicine: what it is and what it isn't. BMJ 312:71, 1996

Eddy: Evidence based medicine: a unified approach. Health Aff (Millwood) 24:9, 2005

Westfall et al: Practice-based research—"Blue Highways" on the NIH roadmap. JAMA 297:403. 2007

Schulz et al: CONSORT Statement: Updated guidelines for reporting parallel group randomized trials. Ann Int Med 152:726, 2010

Von Elm et al: The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. J Clin Epi 61:344, 2008

Translation: From Clinical Research to Care of Patients

Planning clinical studies

Developing a research protocol

Disseminating results effectively

Objectives

Explain how clinical problems are solved with data

Propose a plan to integrate new clinical research data in advice to patients

Explain why biological models are useful in conducting clinical research

Evaluation Seminar Nine

1) Investigators can be assured that changes will be adopted clinically if data are published in peer reviewed journals

a-True

b-False

2) Research data are most effectively adopted in clinical practice after

a-publication in specialty journals

b-presentation at annual meetings of clinicians

c-presentations in local communities by respected opinion leaders

d-promotion by NIH

e-evaluation by consensus panels

3) The time frame from publication of research data to adoption in clinical practice is relatively short as measured in months

a-True

b-False