Multidsciplinary Dental Treatment Plan: periodontal therapy in support of restorative care

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Objectives

- At the end of this presentation the student will be able to:
  - Describe the clinical exam findings associated with a healthy periodontium that is ready for complex restorative (phase IV) care.
  - Define Supracrestal Tissue Attachment ("biologic width") and its importance in periodontal health
  - List and describe the indications for functional crown lengthening
  - List and describe indications for an esthetic crown lengthening
  - Describe the procedures necessary prior to referral for crown lengthening surgery.
  - Discuss the importance of Periodontal Phenotype (soft tissue biotype) and the indications for soft tissue grafting prior to dental restoration of teeth and dental implants
  - Define and describe "physiologic reshaping" as it relates to the treatment of periodontitis and complex tooth restoration
  - Discuss the proper sequencing of multidisciplinary care for a patient with complex dental care needs.

At the Initial Comprehensive Examination

- At the initial comprehensive oral examination determine
  - What initial phase 3 periodontal, endodontic, & restorative therapy is indicated
    - Oral hygiene instruction
    - Scaling and root planing
    - Occlusal adjustment
    - Caries control, direct restorations
  - Likely phase 4 surgical periodontal therapy that will be needed to treat chronic periodontitis or prepare the periodontium to restorative/prosthodontic care
  - Likely phase 4 restorative prosthdontic care
    - Full coverage restorations, prostheses
    - Removable prostheses
    - Endosseous Implants (much more about this in REST 714)

Periodontal Re-evaluation

- Disease control phase of care, Phase 3
  - Initial periodontal therapy: scaling and root planning
  - Oral hygiene instruction
  - Occlusal adjustment, if teeth have widened PDL or fremitus
  - Caries control/direct restorations
- Periodontal re-evaluation- is the patient's periodontium ready for the definitive phase, Phase 4 restorative and prosthodontic care?
  - What are that results of initial therapy?
  - Probing depths-3-4mm or less are maintainable
  - Is periodontal inflammation controlled?
    - color-pink vs red/magenta
    - contour-knife edge margins vs enlarged, "rolled" margins
    - consistency-firm vs edematous
    - bleeding on probing?
    - Plaque score 20% or less?

Periodontal Re-evaluation

- Periodontal re-evaluation- is the patient's periodontium ready for the definitive phase, Phase 4 restorative and prosthodontic care?
  - Have carious lesions/tooth preparation invaded the Supracrestal Tissue Attachment?
  - Are there uneven gingival margins?
  - Is there excessive gingival display, i.e., "gummy smile"?
  - Will full coverage restorations occur on teeth with a thin Periodontal Phenotype?
  - Does the patient have gingival recession?
    - Roots sensitive to cold?
    - Esthetic concerns?
    - Progressive recession?

Phase 4 Periodontal Surgery Care

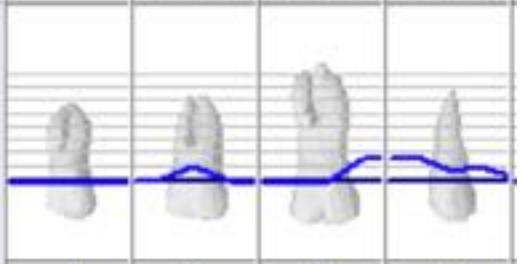
- Periodontal surgery to treat periodontitis
  - Primary goal-access to the root for debridement
  - Pocket depth reduction
    - Regenerative surgery- bone grafts, guided tissue regeneration, biologics
    - Resective surgery-osseous surgery
- Crown lengthening surgery
  - Functional- re-establish the Supracrestal Tissue Attachment
  - Esthetic- uneven gingival margins, excessive gingival display, short clinical crowns
- Soft tissue grafting
  - Root coverage of gingival recession
    - Esthetic concerns, root sensitivity, progressive recession
  - Improve Periodontal Phenotype- change from thin to thick
  - Soft tissue ridge augmentation- allow for ovate pontic and decrease "black triangles"

The Periodontium is the Foundation for any Dental Restoration or Prosthesis

This is the Key to Success!

- Without a healthy periodontium the patient's dental care will fail

Case Example Periodontal Therapy

PD		3	4	3	3	2	7	6	3	5
FGM-CEJ		-2	-1	-3	-3	-2	-3	-2	-1	-2
CAL		1	3	0	0	0	4	4	2	3
Furc Inv			1			1				
MG Inv	N		N			N			N	
Bleed/S			B	B	B	B	B	B	B	B
Mobil						1			1	
PLQ		1	1	1	1	1	1	1	1	1
Facial										
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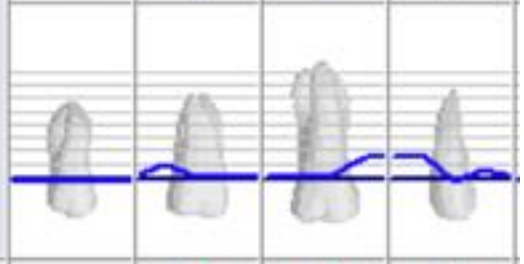
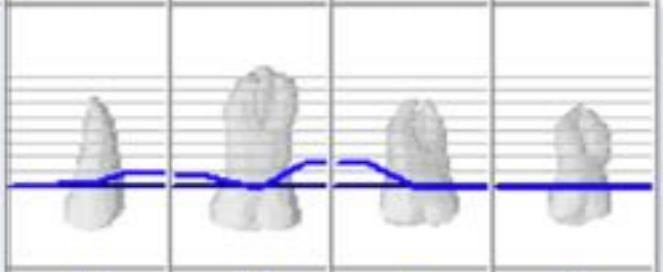
Lingual										
PLQ			1			1			1	
Bone Loss										
Bleed/S		B	B	B	B	B	B	B	B	B
MG Inv	N		N			N			N	
Furc Inv		1			1					
CAL		3	1	1	1	1	4	4	0	2
FGM-CEJ		-2	-2	-3	-3	-1	-3	-3		-2
PD		5	3	4	4	2	7	7		4

PD	5	2	6	5	2	7	7	2	7	7	2	7	7	3	6	5	2	3
FGM-CEJ	-3	-1	-3	-3	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-1	-2
CAL	2	1	3	2	0	5	5	0	5	5	0	5	5	1	4	3	1	1
Furc Inv																		
MG Inv		N			N			N			N			N			N	
Bleed/S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Mobil					1			2			1			1				
PLQ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Facial																		
			6			7			8			9			10			11
Lingual																		
PLQ		1			1			1			1			1			1	
Bone Loss																		
Bleed/S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
MG Inv		N			N			N			N			N			N	
Furc Inv																		
CAL	4	0	3	5	1	5	5	3	4	4	2	5	5	0	5	5	2	2
FGM-CEJ	-2	-2	-2	-2	-1	-2	-2	-2	-3	-3	-2	-2	-2	-2	-2		1	-2
PD	6	2	5	7	2	7	7	5	7	7	4	7	7	2	7	7	3	4

PD	3	2	5	5	2	7	7	2	3			
FGM-CEJ	-2	-1	-2	-3	-2	-3	-3	-2	-3			
CAL	1	1	3	2	0	4	4	0	0			
Furc Inv					1							
MG Inv		N			N			N			N	
Bleed/S	B	B	B	B	B	B	B	B	B			
Mobil		1										
PLQ	1	1	1	1	1	1	1	1	1			
Facial												
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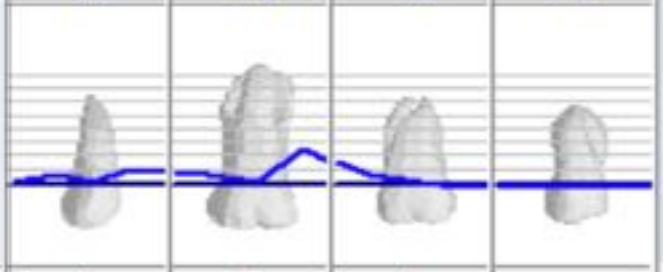
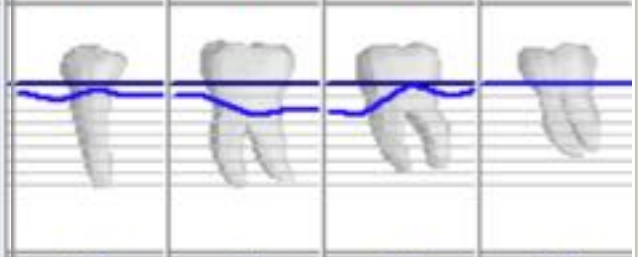
Lingual												
PLQ		1			1			1				
Bone Loss												
Bleed/S	B	B	B	B	B	B	B	B	B			
MG Inv		N			N			N			N	
Furc Inv						1						
CAL	2	1	3	2	1	6	2	1	0			
FGM-CEJ	-2	-1	-3	-2	-2	-2	-3	-3	-3			
PD	4	2	6	4	3	8	5	4	3			

PD	5	3	5	5	3	7	8	3	6	
FGM-CEJ	-2	-2	-3	-3	2	-3	-3	-3	-4	
CAL	3	1	2	2	5	4	5	0	2	
Furc Inv					1					
MG Inv		N			N			N		N
Bleed/S	B	B	B	B	B	B	B	B	B	
Bone Loss										
PLQ		1			1			1		
Lingual										
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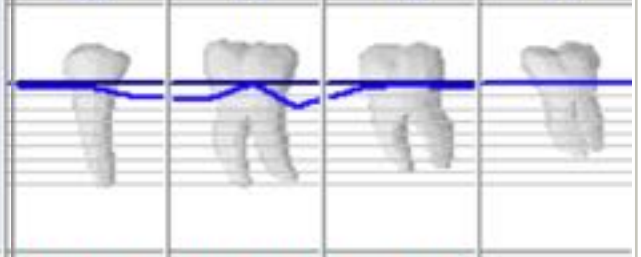
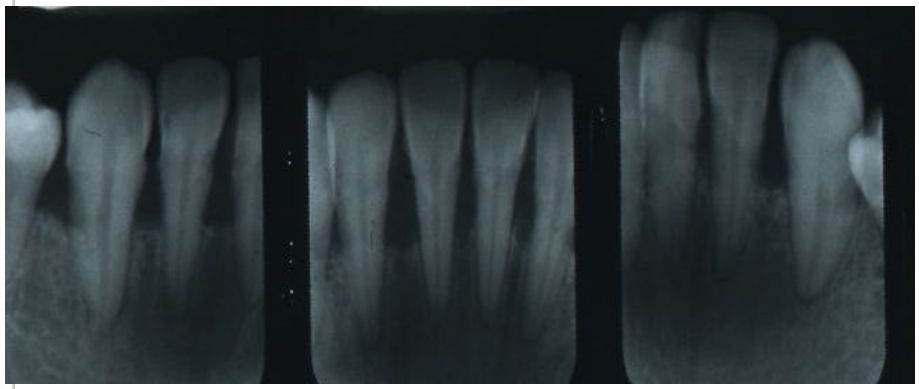
Facial										
PLQ	1	1	1	1	1	1	1	1	1	
Mobil		1								
Bleed/S	B	B	B	B	B	B	B	B	B	
MG Inv		N			N			N		N
Furc Inv					1					
CAL	1	1	2	3	0	4	1	0	1	
FGM-CEJ	-2	-1	-2	-2	-2	-1	-2	-2	-3	
PD	3	2	4	5	2	5	3	2	4	



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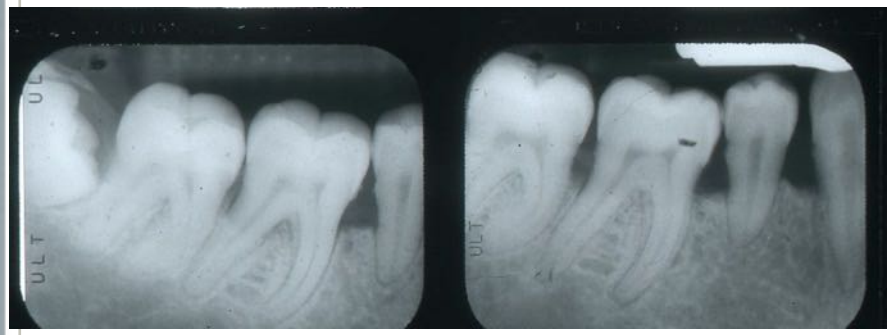
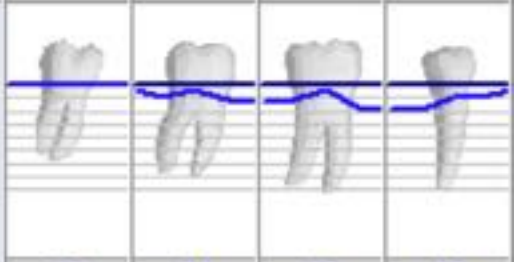
FGM-CEJ	-2	-2	-2	1	2	1	2	3	2	2	3	2	4	2	1	-2	-1	-2
CAL	3	1	3	7	5	7	7	6	8	6	6	7	9	5	5	2	2	4
Furc Inv																		
MG Inv		N			N			N			N			N			N	
Bleed/S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Bone Loss																		
PLQ		1			1			1			1			1			1	
Lingual																		
		27			26			25			24			23			22	
Facial																		
PLQ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mobil		1			1			1										
Bleed/S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
MG Inv		N			Y			Y			Y			Y			N	
Furc Inv																		
CAL	5	0	6	6	3	7	6	4	5	7	4	5	3	0	5	5	1	2
FGM-CEJ	-2	-2	-1	-1	0	0	0	2	1	1	2	0	-1	-2	-2	-2	-1	-2
PD	7	2	7	7	3	7	6	2	4	6	2	5	4	2	1			4



PD		5 3 5	5 3 6	6 3 4
FGM-CEJ		-3 -2 -2	-2 -2 -2	-2 -1 -2
CAL		2 1 3	3 1 4	4 2 2
Furc Inv		1	1	
MG Inv	N	N	N	N
Bleed/S		B B B	B B B	B B B
Bone Loss				
PLQ		1	1	1
Lingual				
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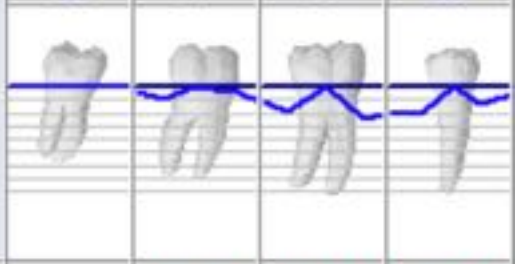
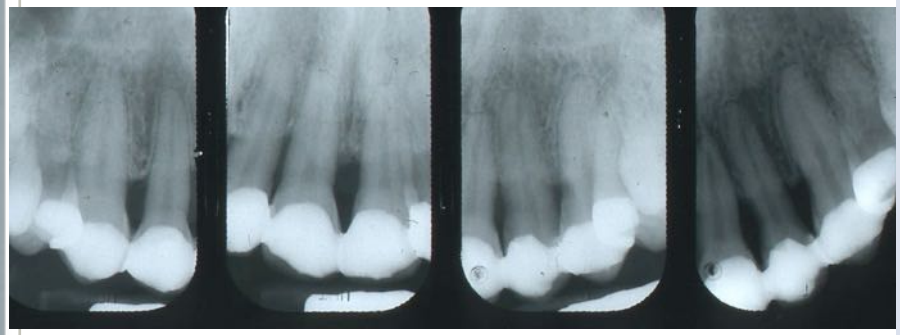
Facial				
PLQ		1 1 1	1 1 1	1 1 1
Mobil			1	1
Bleed/S		B B B	B B B	B B B
MG Inv	N	N	N	N
Furc Inv		1	1	
CAL		2 0 1	4 0 5	4 0 3
FGM-CEJ		-3 -3 -2	-2 -2 -2	-2 -2 -1
PD		5 3 3	6 2 7	6 2 4

After Periodontal Therapy

- Initial Therapy-scaling and root planing, oral hygiene instruction, occlusal adjustment
- Osseous surgery or flap debridement-posterior sextants
- Orthodontics-limited anterior only-cast resin-bonded cast fixed splint/retainer
- Periodontal maintenance

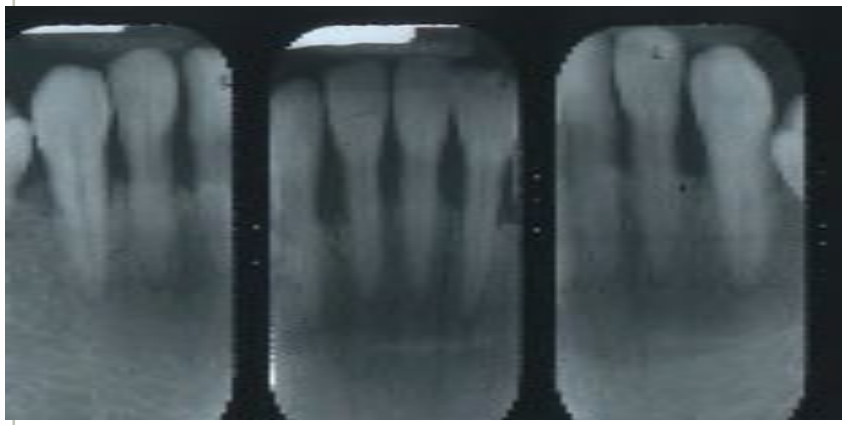
PD		3	2	4	4	2	3	3	2	3
FGM-CEJ		-2	-1	-3	-2	2	2	2	2	-2
CAL		1	1	1	2	4	5	5	4	1
Furc Inv						1				
MG Inv	N		N			N			N	
Bleed/S										
Mobil										
PLQ				1	1					
Facial										
	1		2			3			4	
Lingual										
PLQ			1			1			1	
Bone Loss										
Bleed/S							B			B
MG Inv	N		N			N			N	
Furc Inv					1					
CAL		2	4	1	2	4	2	2		1
FGM-CEJ		-2	1	-2	-2	1	-2			-2
PD		4	3	3	4	3	4	4	2	3

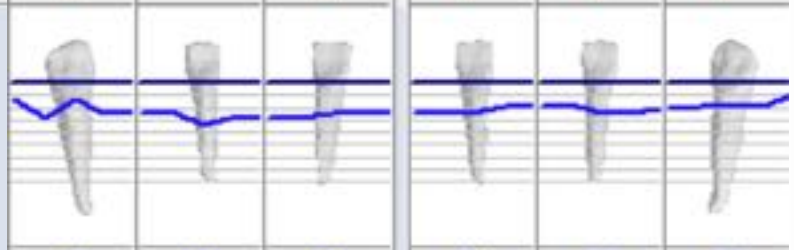
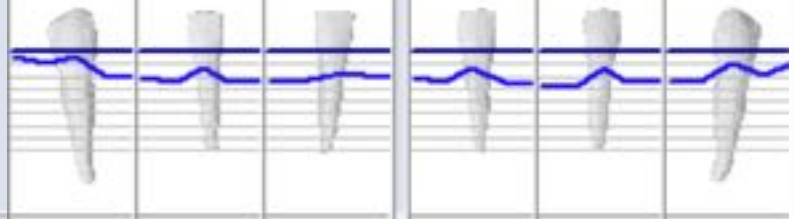


PD	4	1	3	3	2	2	3	1	4	3	2	3	3	2	3	4	1	3
FGM-CEJ	-2	-1	-1	-1	-1	1	0	-1	1	1	-1	0	0	0	0	-2	0	-3
CAL	2	0	2	2	1	3	3	0	5	4	1	3	3	2	3	2	1	0
Furc Inv																		
MG Inv		N			N			N			N			N			N	
Bleed/S									B	B								
Mobil																		
PLQ							1			1								
Facial																		
		6			7			8			9			10			11	
Lingual																		
PLQ		1			1			1			1			1			1	
Bone Loss																		
Bleed/S							B	B	B		B	B						
MG Inv		N			N			N			N			N			N	
Furc Inv																		
CAL	3	3	3	4	2	3	5	5	2	5	3	3	4	3	3	4	3	1
FGM-CEJ	0	0	0	1	1	1	1	2	1	2	2	1	2	2		1		-1
PD	3	3	3	3	1	2	4	3	1	3	1	2	2	1	2	3	2	2

FGM-CEJ	3	1	3	3	2	4	4	2	3			
CAL	-3	1	0	-1	1	-1	-1	0	-3			
Furc Inv	0	2	3	2	3	3	3	2	0			
MG Inv					1							
Bleed/S		N			N			N			N	
Mobil			B	B		B						
PLQ												
			1			1	1	1	1			
Facial												
		13			14			15			16	
Lingual												
PLQ		1			1			1				
Bone Loss												
Bleed/S			B	B		B						
MG Inv		N			N			N			N	
Furc Inv						1						
CAL	1	0	1	1	5	5	3	2	0			
FGM-CEJ	-2	-3	-2	-2	2	2	0	-1	-3			
PD	3	3	3	3	3	3	3	3	3			

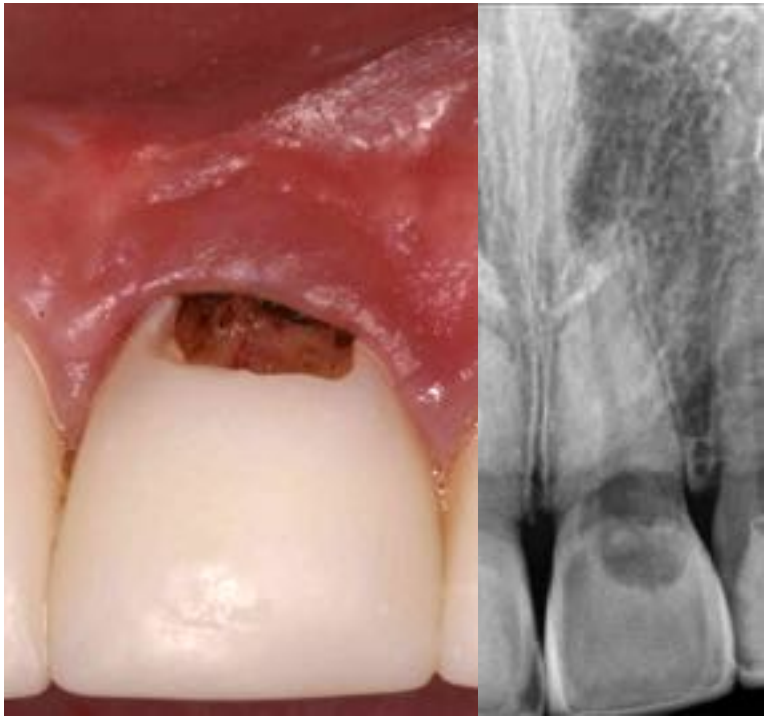
PD	3	3	4	4	3	5	5	3	4			
FGM-CEJ	-2	-1	-2	-1	1	-1	-2	-2	-4			
CAL	1	2	2	3	4	4	3	1	0			
Furc Inv					1							
MG Inv		N			N			N			N	
Bleed/S	B		B	B	B	B	B		B			
Bone Loss												
PLQ		1			1			1				
Lingual												
		20			19			18			17	
Facial												
PLQ						1	1					
Mobil		1										
Bleed/S						B	B					
MG Inv		N			N			N			N	
Furc Inv					1							
CAL	1	0	1	0	2	3	2	2	0			
FGM-CEJ	-2	-1	-2	-3	0	-2	-2	0	-3			
PD	3	1	3	3	2	5	4	2	3			



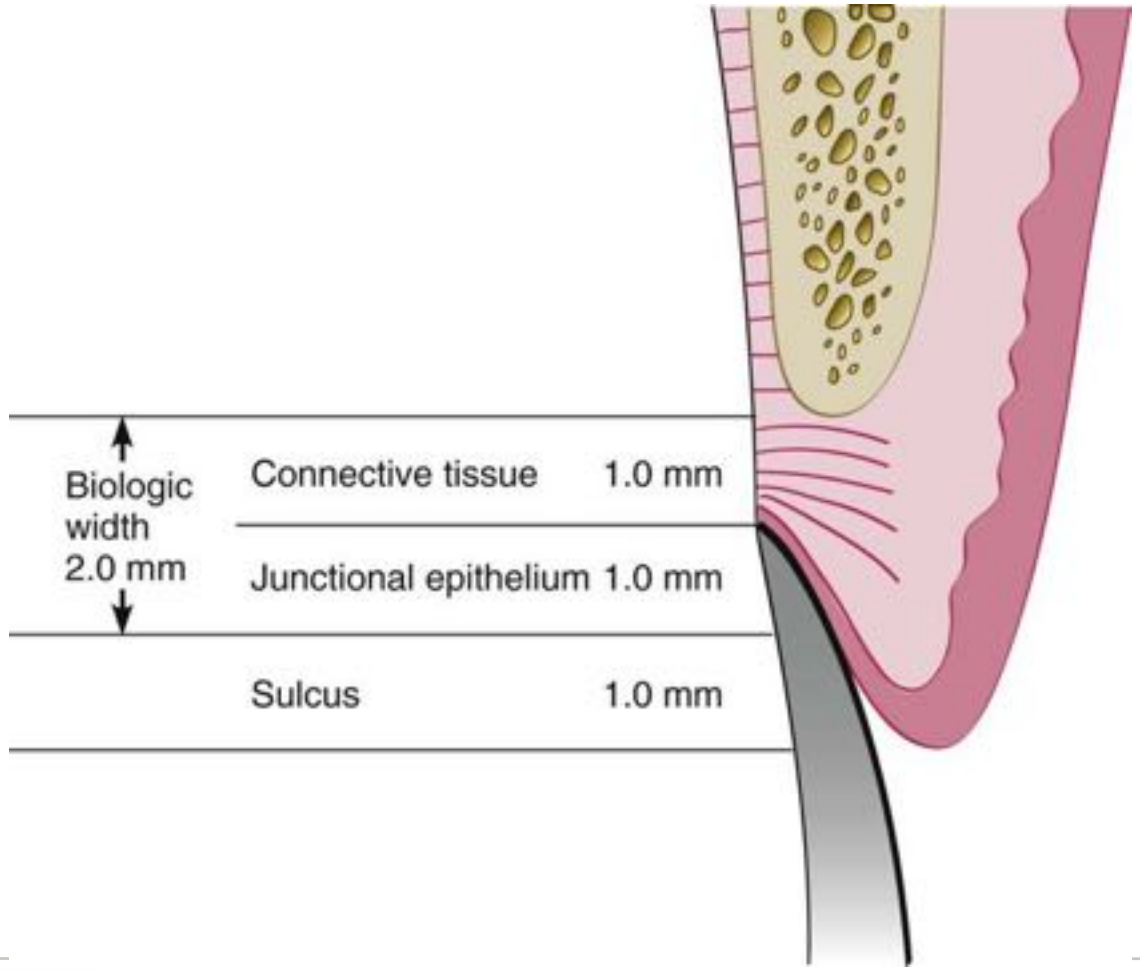
PD	4	2	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3
FGM-CEJ	2	1	2	2	4	3	3	3	2	2	2	1	1	2	2	1	2	1
CAL	6	3	5	5	7	6	6	5	5	5	5	4	4	5	5	4	4	4
Furc Inv																		
MG Inv		N			Y			Y			Y			Y			N	
Bleed/S					B										B	B		
Bone Loss																		
PLQ		1						1			1			1			1	
Lingual																		
	27			26			25			24			23			22		
Facial																		
PLQ									1	1								
Mobil					1			1			1							
Bleed/S									B	B								
MG Inv		Y			N			N			N			N			Y	
Furc Inv																		
CAL	2	1	4	5	3	5	5	4	4	5	3	5	6	3	5	5	2	4
FGM-CEJ	-2	-1	0	2	2	2	2	3	1	2	2	2	2	2	2	1	1	1
PD	4	2	4	3	1	3	3	1	3	3	1	3	4	1	3		1	3

PD		3	3	3	3	2	3	3 2 3
FGM-CEJ		-3	-2	-3	-3	0	-2	2 1 -3
CAL		0	1	0	0	2	1	5 3 0
Furc Inv			1			1		
MG Inv	N		N			N		N
Bleed/S			B	B			B	B
Bone Loss								
PLQ			1			1		1
Lingual								
	32		31			30		29
Facial								
PLQ				1			1	1
Mobil								1
Bleed/S				B				B
MG Inv	N		N			N		N
Furc Inv			1			1		
CAL		0	1	0	1	1	1	5 1
FGM-CEJ		-3	-2	-3	-2	-1	-2	-2
PD		3	3	3	3	2	3	3 3

Invasion of the Bioloic Width by Caries



Average Supracrestal Tissue Attachment



Ideal Preparation for Crown Lengthening Surgery

- All caries excavated
  - If this is not complete the periodontist will not know where the preparation will finish and therefore will not know how much additional length is needed
- Endodontics, if needed, completed
- Core restoration placed, tooth prepared, with well marginated provisional
  - Now the final margin is defined so it is easy to know how much additional crown length is needed

Ideal Preparation for Crown Lengthening Surgery

- Consider periodontal health of all teeth in quadrant, including tooth needing functional crown lengthening
  - Osseous surgery needed for periodontitis?
  - Physiologic reshaping or root resection needed to make a class II furcation more accessible/maintainable?
- If tooth is a maxillary anterior tooth
  - must consider if there is interest/need for esthetic crown lengthening of the adjacent teeth, if so this should be done at the same time
  - Must consider if forced eruption should be considered to decrease/eliminate ostectomy on adjacent teeth, prevent "black triangles"
- What is the soft tissue Periodontal Phenotype?
  - If thin, should it be grafted prior to restoration

Soft Tissue Periodontal Phenotype

Thick

Thin

“Black Triangle”

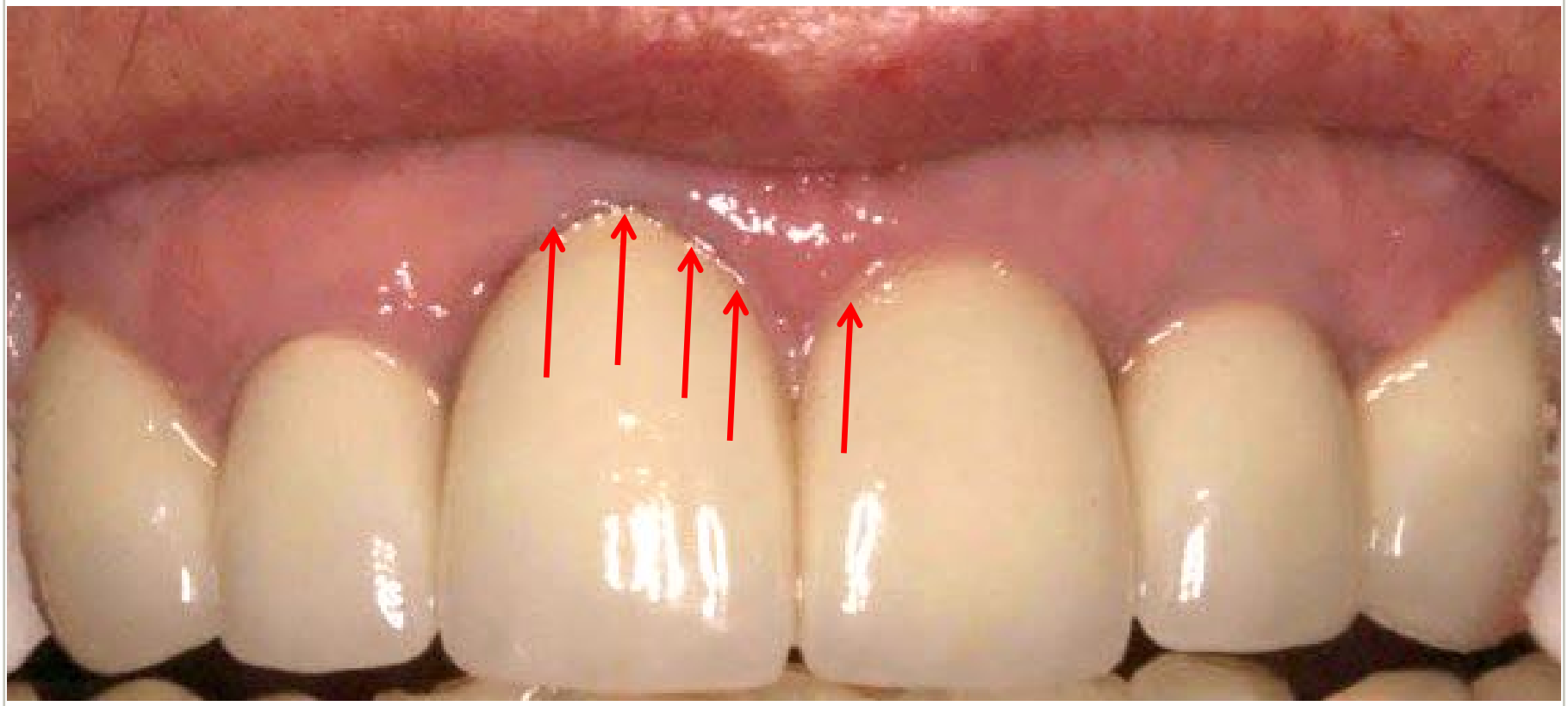
In the Clinic: “Does my patient need crown lengthening”??

- I often need to examine a patient’s tooth and answer this question in the clinic
- In the past 30 years, with one exception, the answer has always been:
  - Yes
  - No, it is not restorable
- Why not: “no it is not needed”?, What does this tell you?

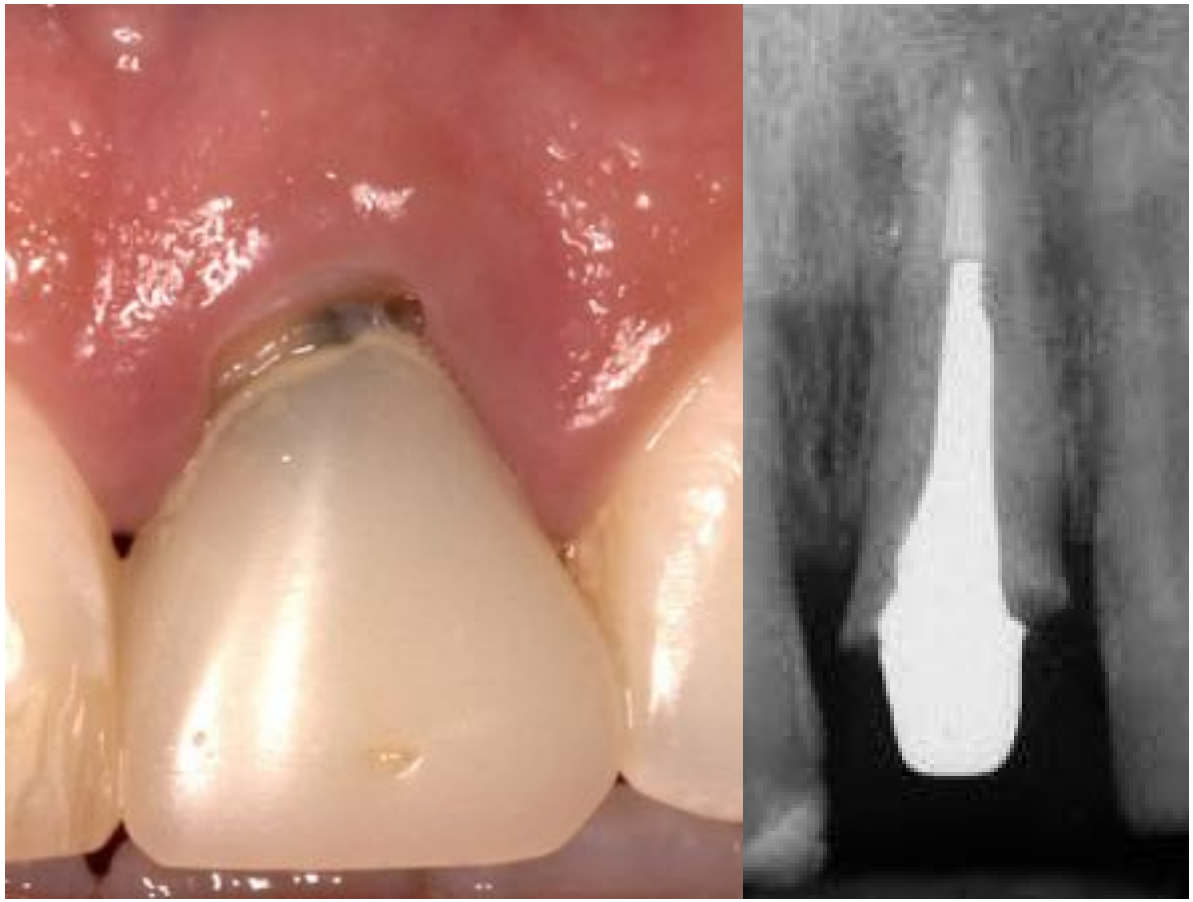
Why not: “no it is not needed”? What does this tell you?

- It indicates that there are likely many times that the Supracrestal Tissue Attachment is violated and the restoration is placed without the crown lengthening
- This makes the preparation and impression difficult to impossible- bleeding
- Unfortunately, rather than completing the needed surgery, an electrosurgery unit has been used to stop the bleeding to allow for an impression
  - The result is adding insult to injury
- This results in a periodontitis lesion or at least a chronically inflamed gingival tissue
  - If you have the crown lengthening completed the impression will be easier and the patient will have a periodontally healthy tooth

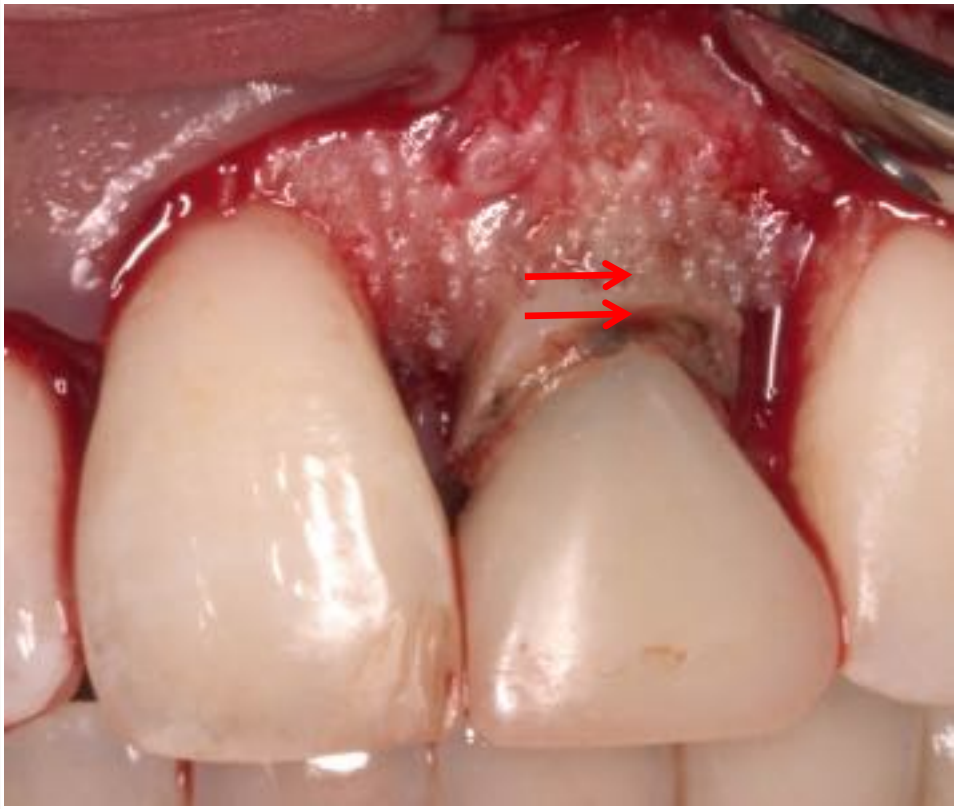
Restoration invading the Supracrestal Tissue Attachment

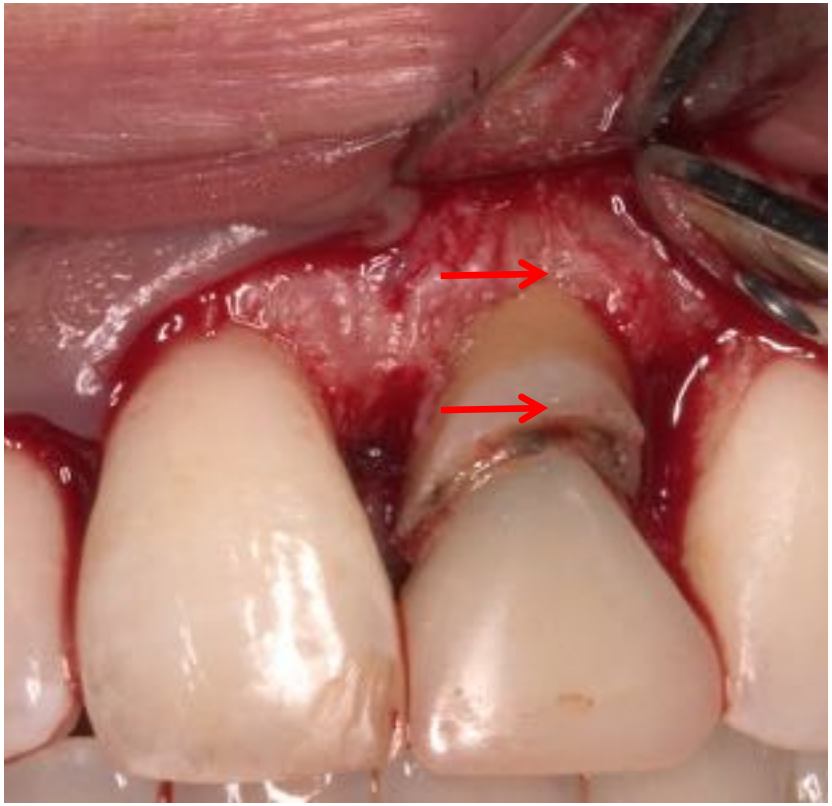


Functional Crown Lengthening



Flap Access, Ostectomy





Sutured with Apically Positioned Flap

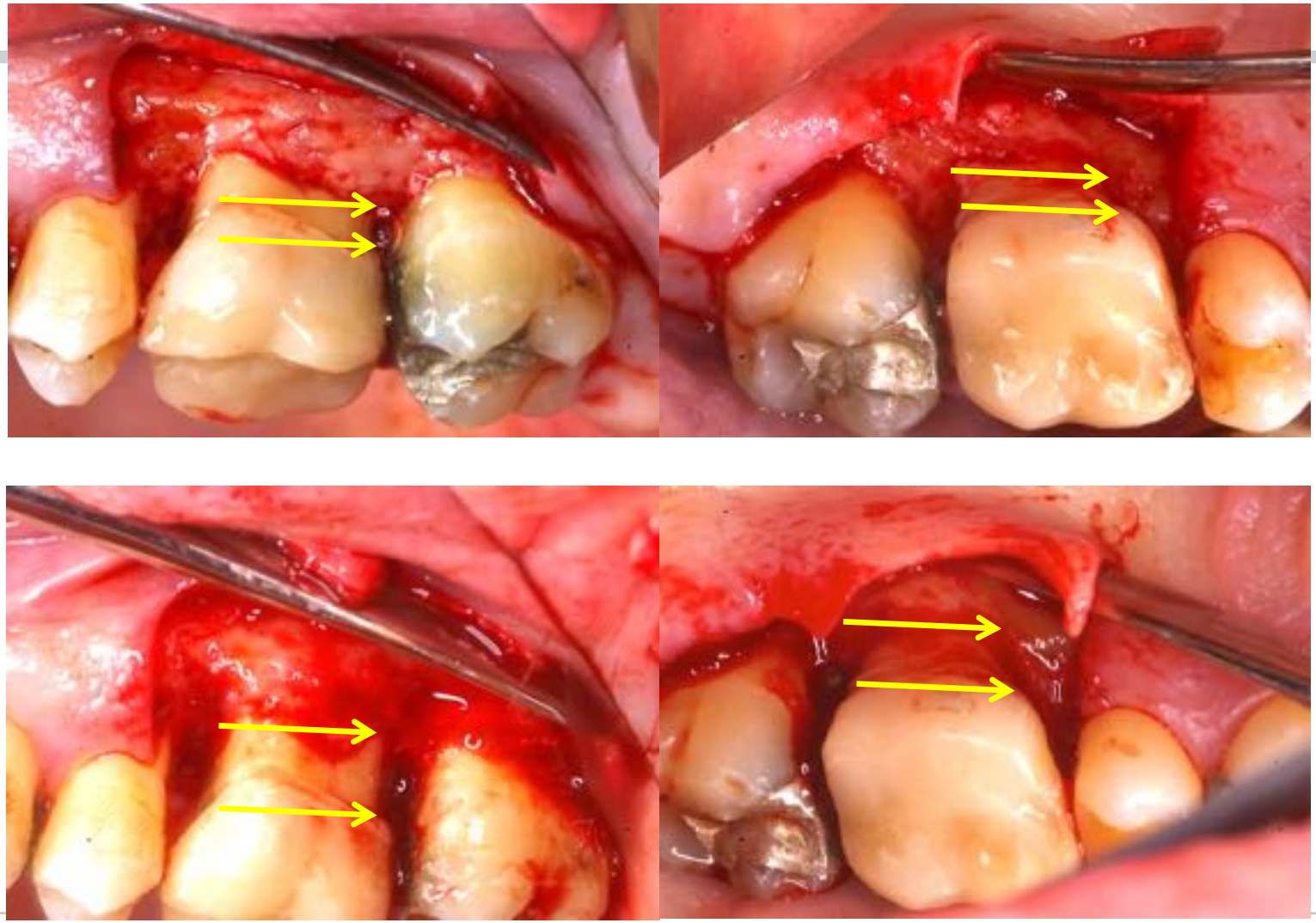
Two Week Post op

Final Restoration

Functional Crown Lengthening

Gingival Flap Access

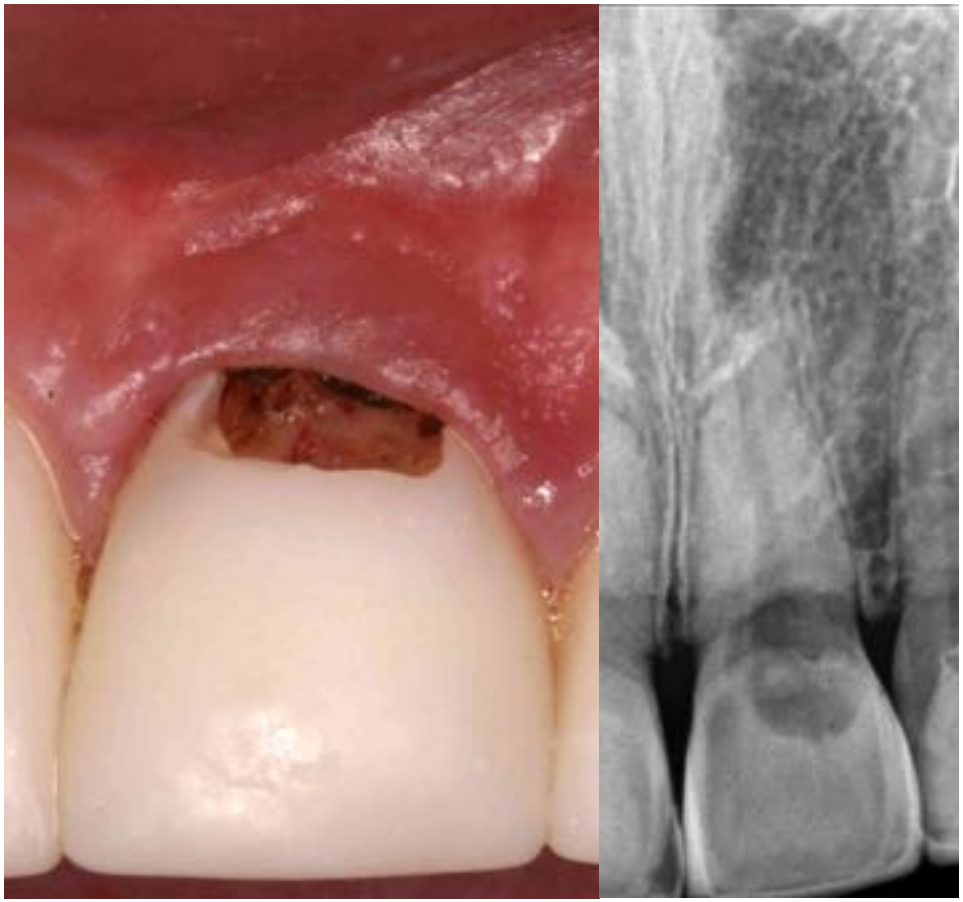
Ostectomy



Flap Closure

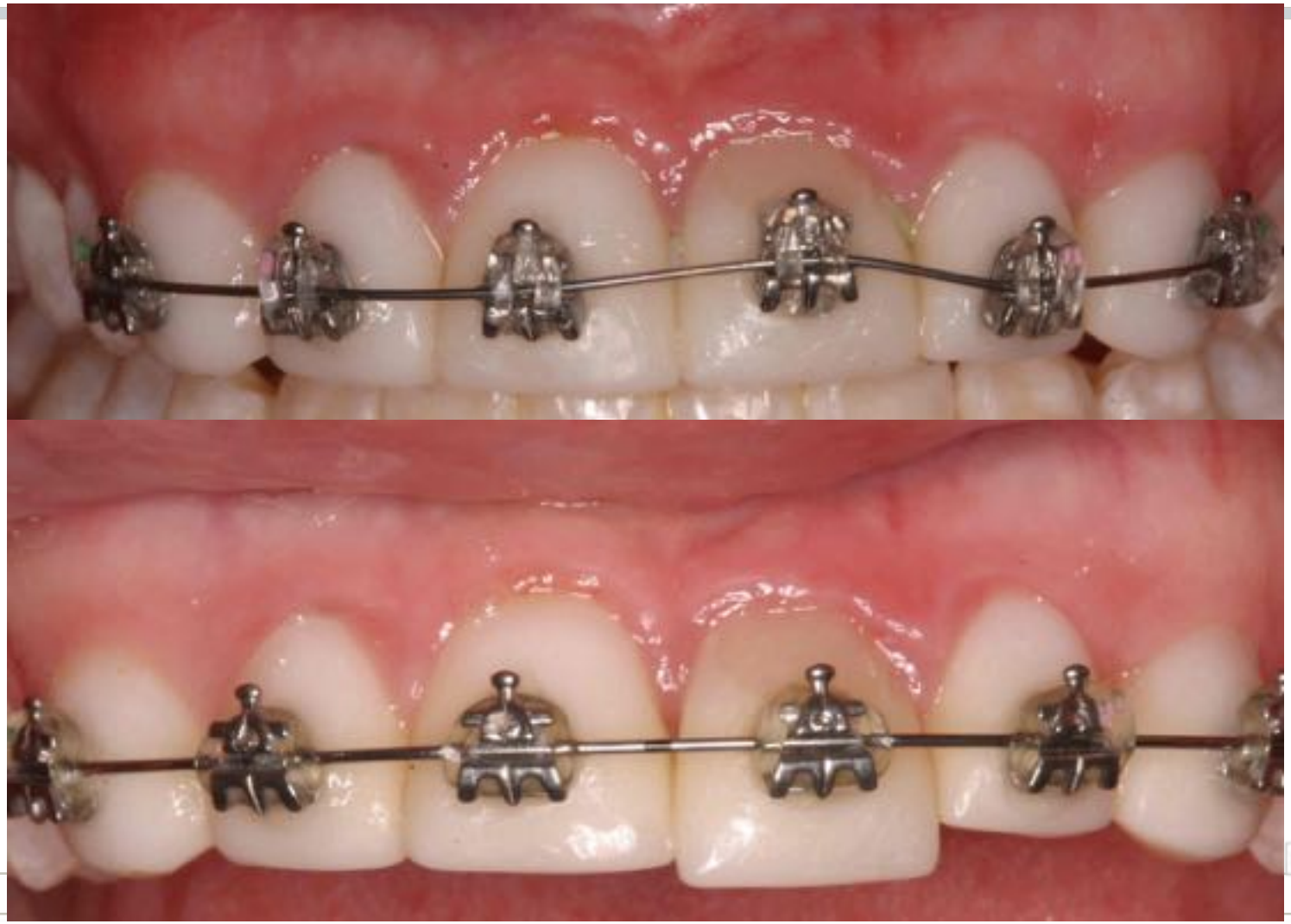
Six Week Healing

Forced Eruption & Functional Crown Lengthening

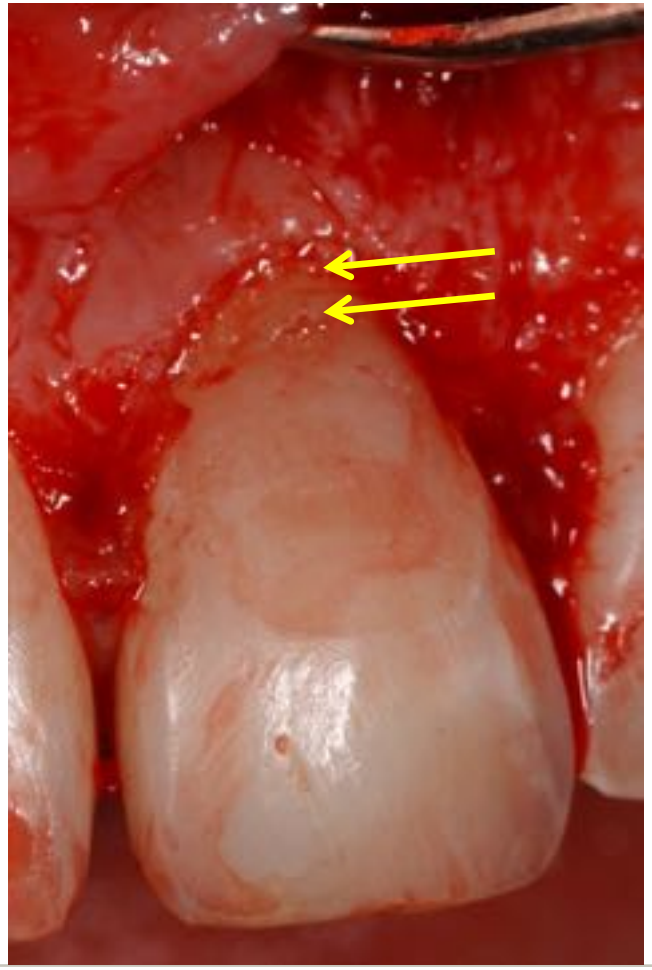


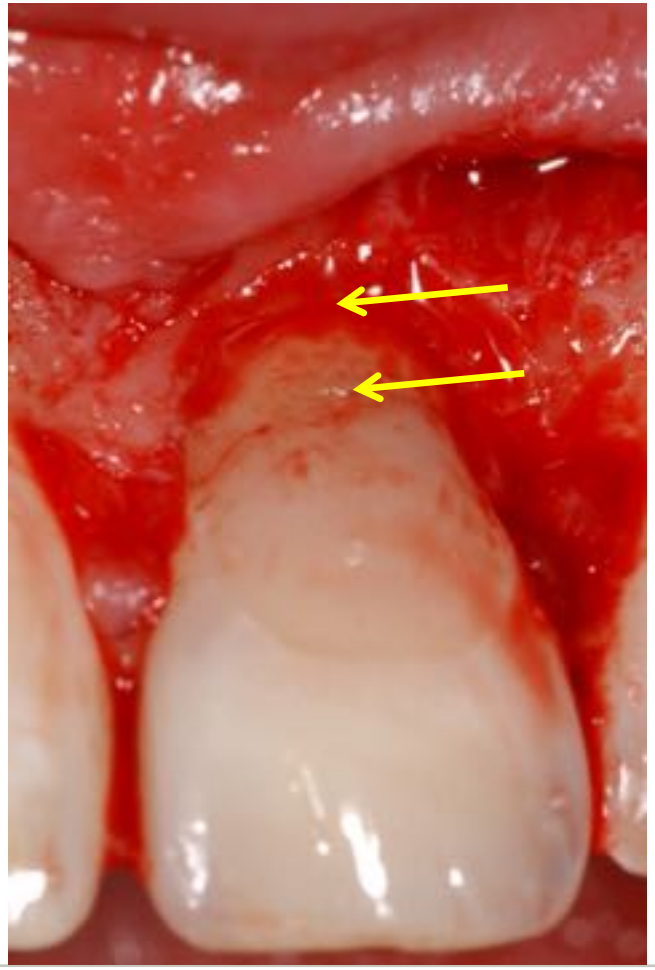
Gingival Flap Access & Caries Excavation

Forced Eruption

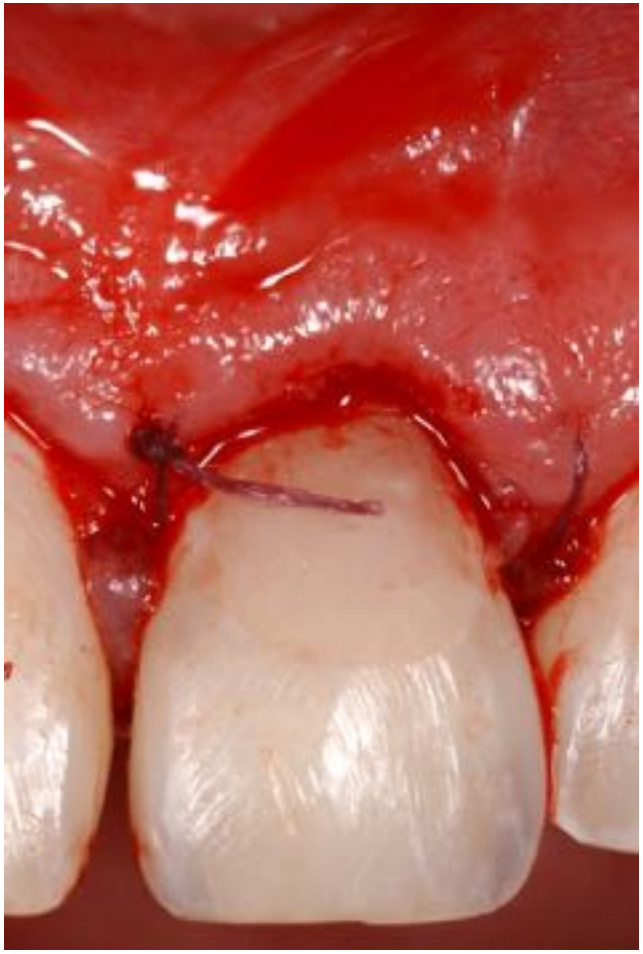


Crown Lengthening

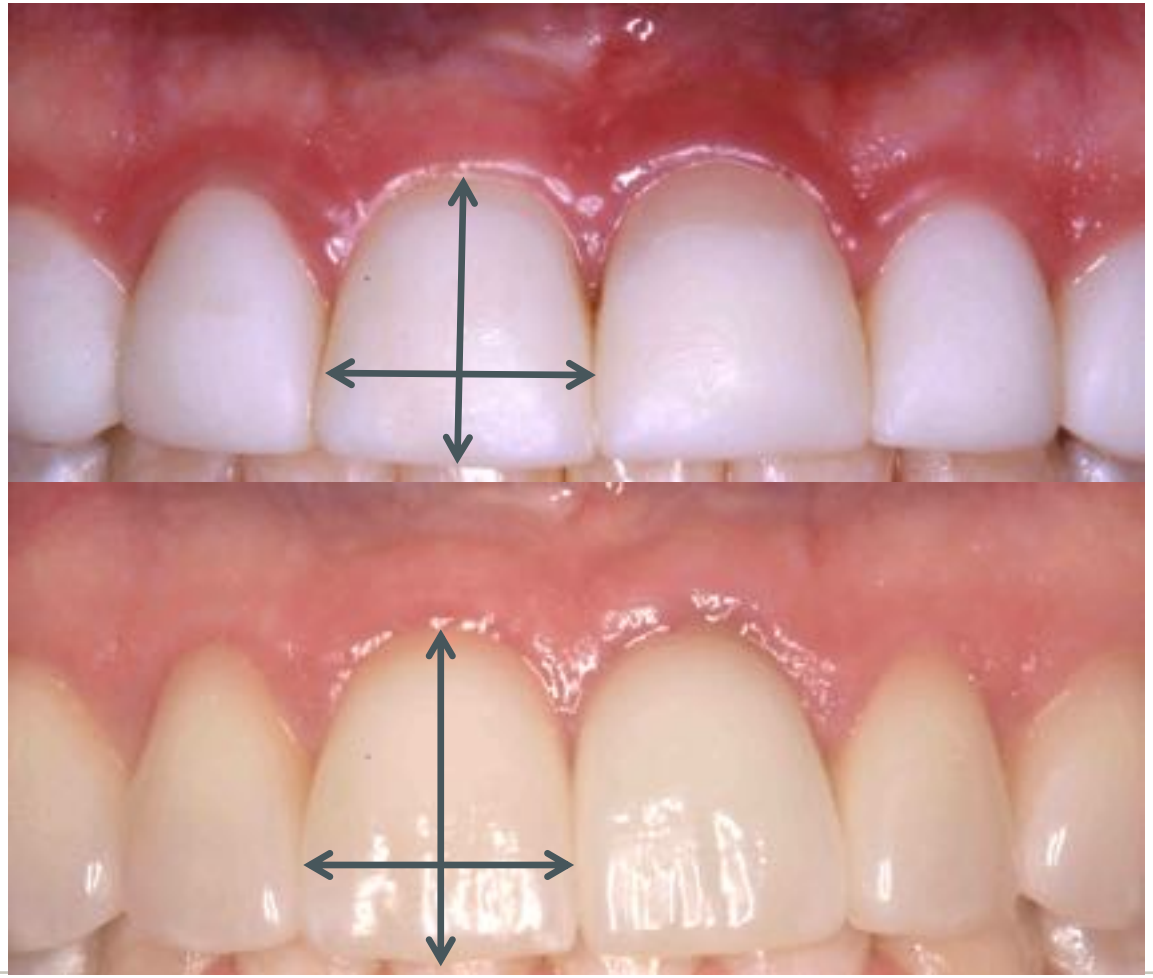




Crown Lengthening



Esthetic Crown Lengthening



Width 95% of height

Width 80% of height

Esthetic Crown Lengthening

- Indications for esthetic crown lengthening
  - Short clinical crowns
  - Uneven gingival margins
  - Excessive gingival display- “gummy smile”

Esthetic Crown Lengthening

- Short clinical crowns- Altered Passive Eruption

Esthetic Crown Lengthening

- Uneven gingival margins

Esthetic Crown Lengthening

- Excessive gingival display- “gummy smile”

Esthetic Crown Lengthening

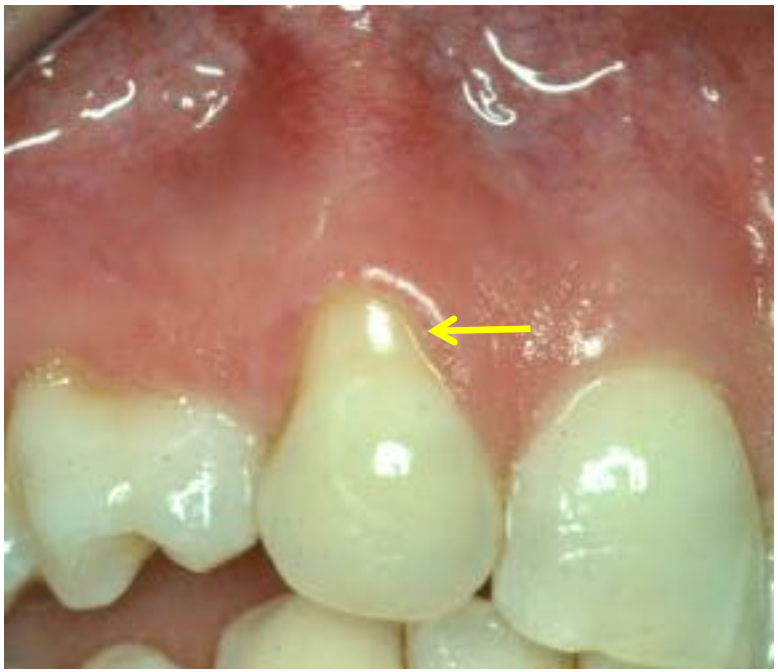
- Excessive gingival display- “gummy smile”

Before Surgery

After Surgery

Gingival Recession, Thin Periodontal Phenotype, Esthetic Concern, Root Sensitivity

- How should this be treated?
- What will happen if we place a class V restoration to address the patient's root sensitivity and the esthetic concerns?



Gingival Recession, Thin Periodontal Phenotype, Esthetic Concern, Root Sensitivity

- A restoration will almost certainly result in more gingival recession
- A soft tissue graft is the only solution to this problem
  - It covers the root and results in a thick Periodontal Phenotype

Gingival Recession, Thin Periodontal Phenotype, Esthetic Concern, Root Sensitivity

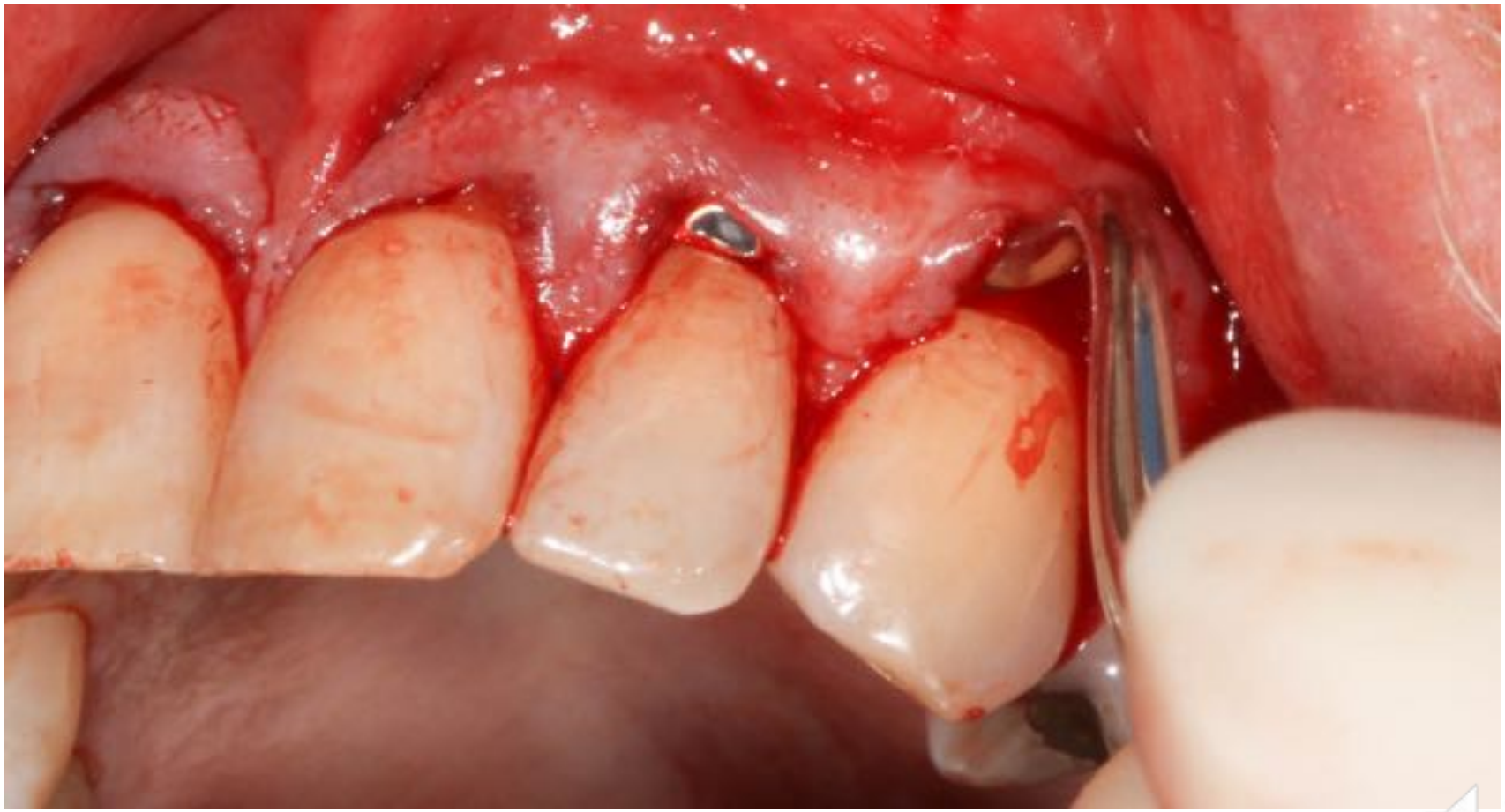
- A restoration will almost certainly result in more gingival recession

Connective Tissue Graft

Connective Tissue Graft

Soft Tissue Allograft

Soft Tissue Allograft



Soft Tissue Allograft

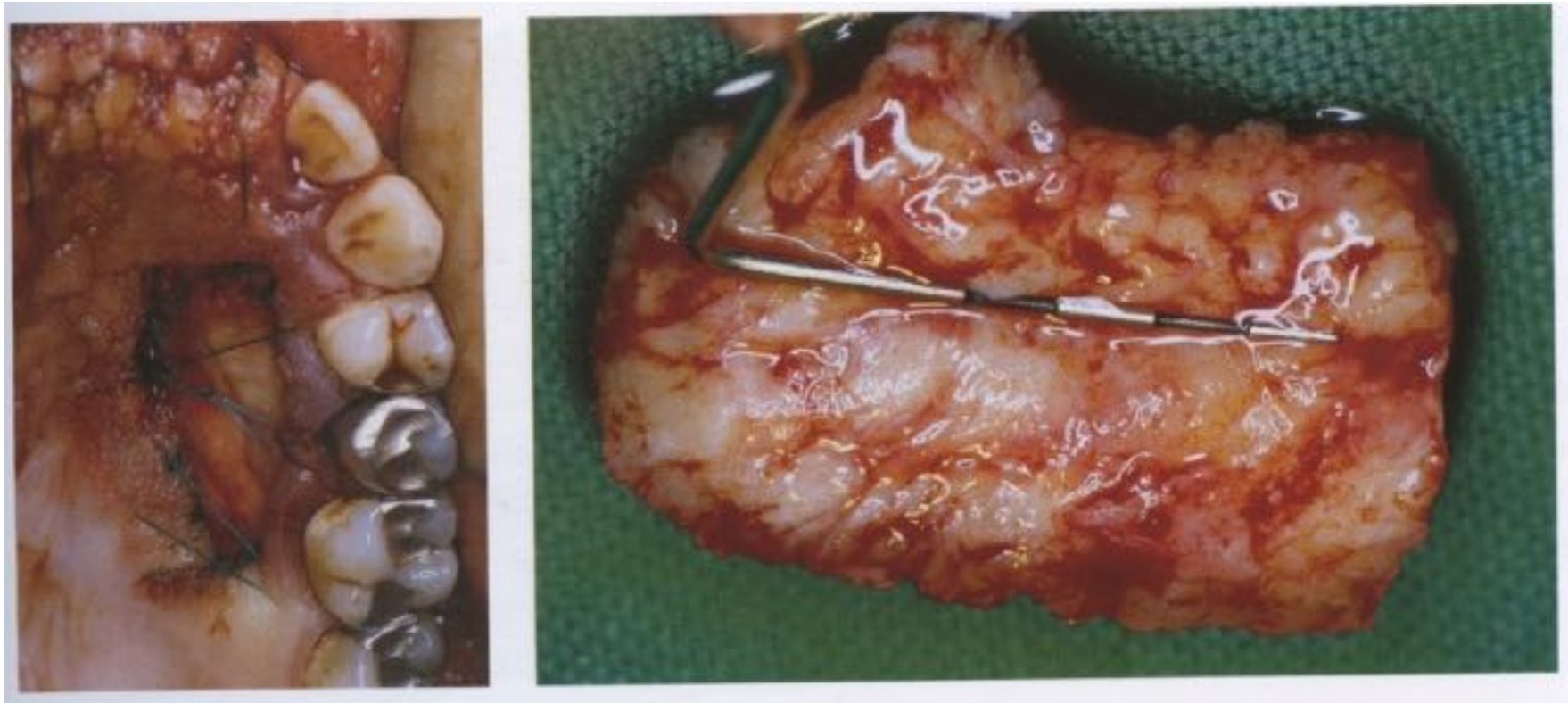
Soft Tissue Allograft

Soft Tissue Allograft

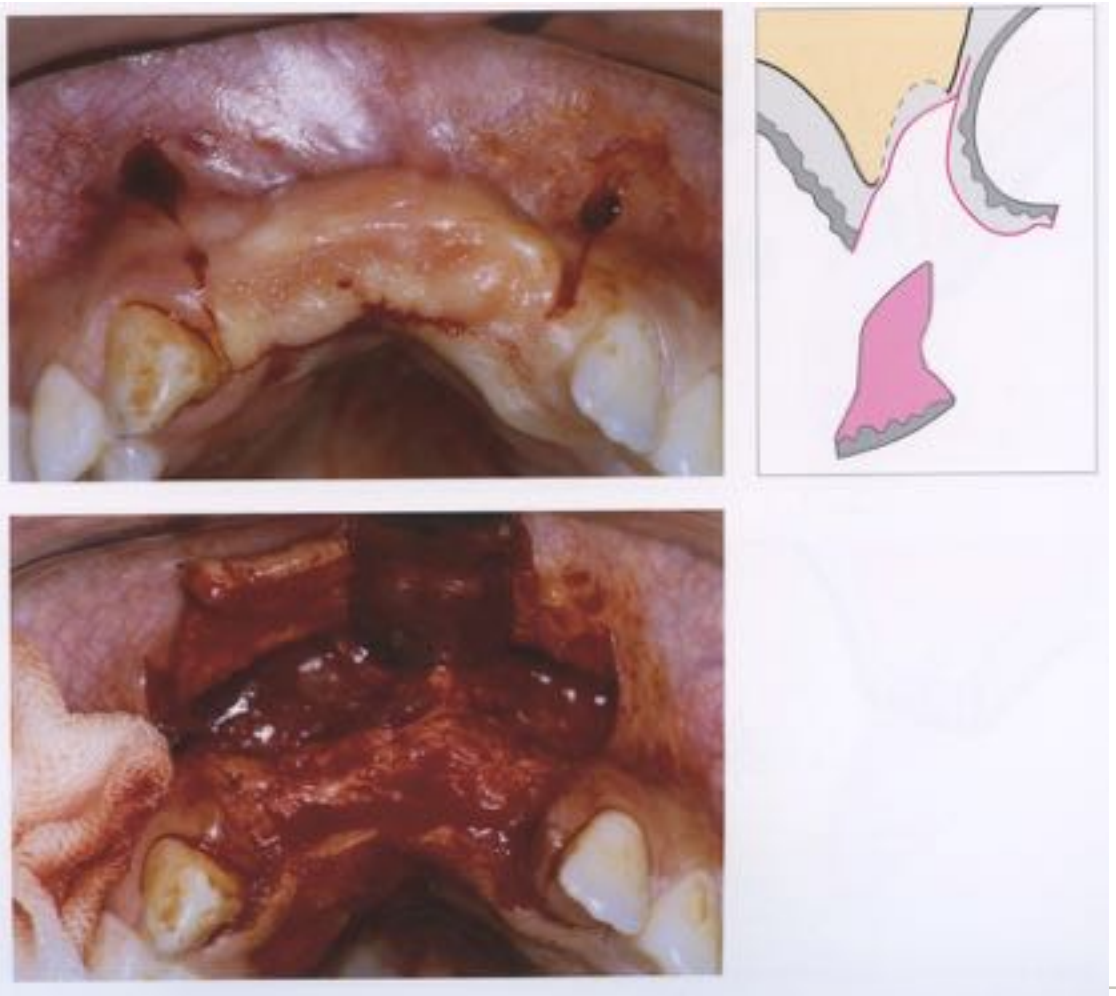
Connective Tissue Graft with an Ovate Pontic

Case from Periodontology, Rateitschak et al 3rd ed

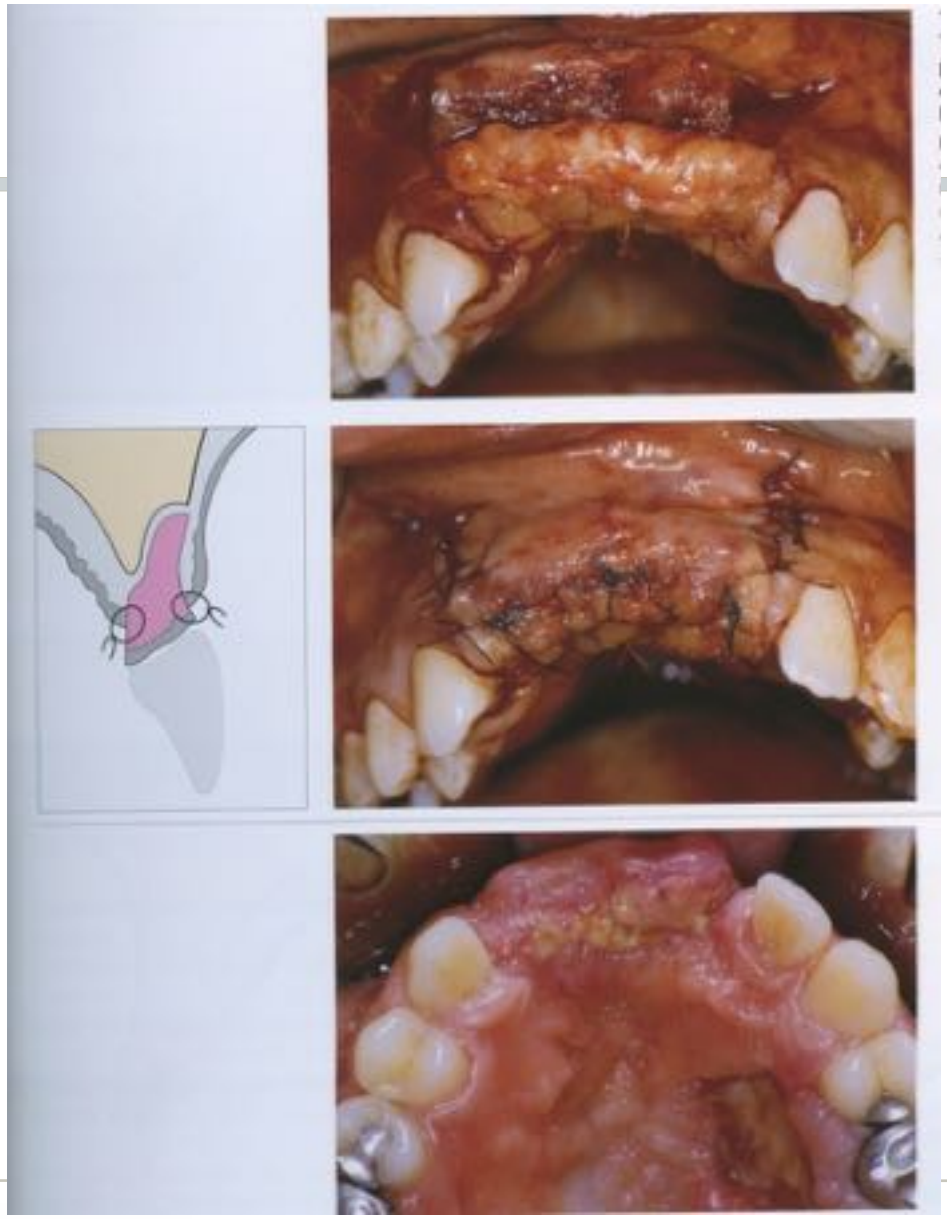
Connective Tissue Graft with an Ovate Pontic



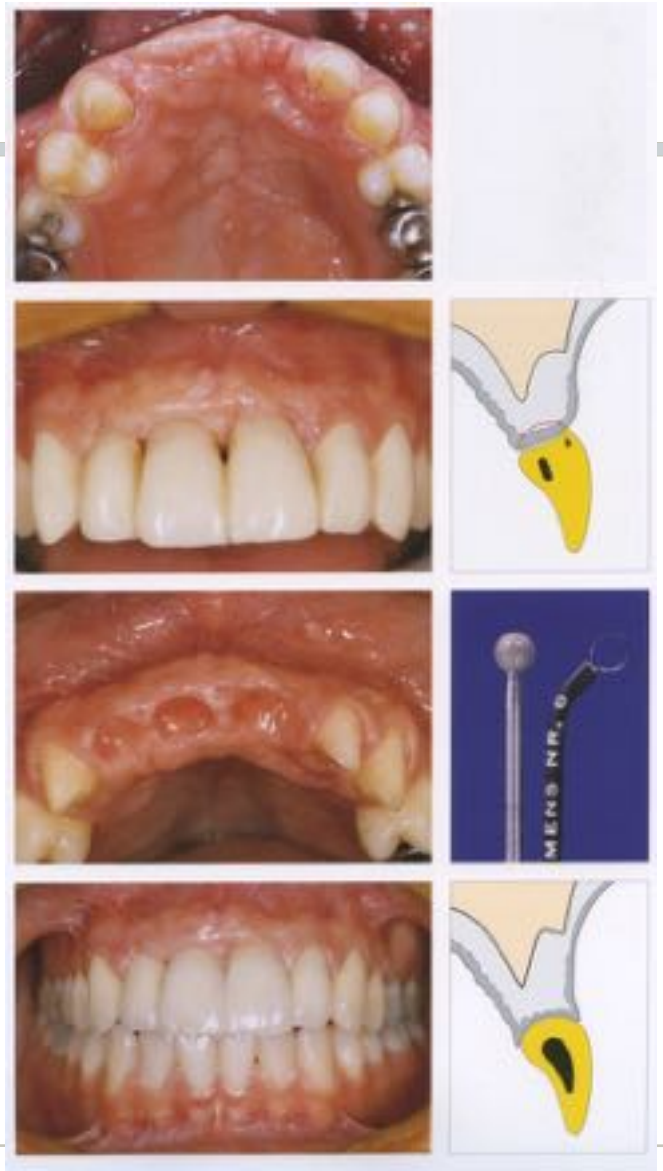
Connective Tissue Graft with an Ovate Pontic



Connective Tissue Graft with an Ovate Pontic



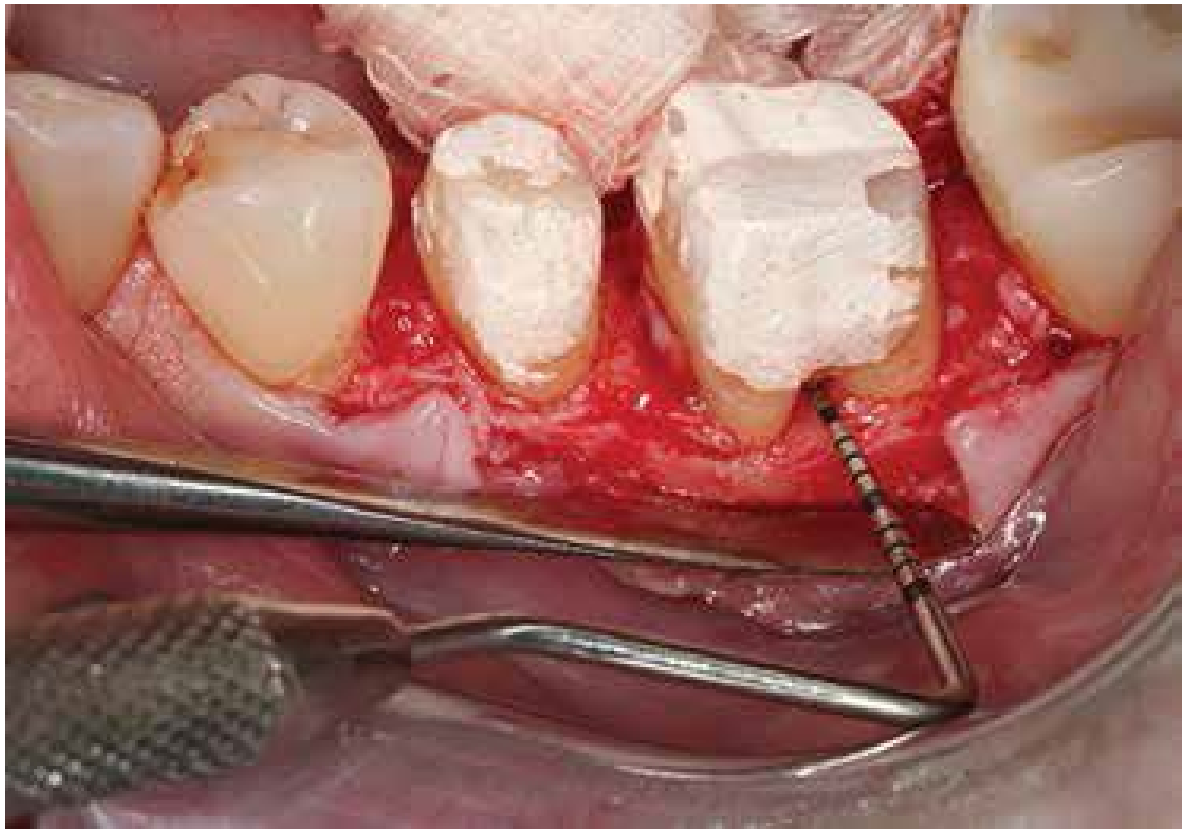
Connective Tissue Graft with an Ovate Pontic



Connective Tissue Graft with an Ovate Pontic

Physiologic Root Reshaping

- Class II furcation involvement



Case Dr. Daniel Melker

Physiologic Root Reshaping

Case Dr. Daniel Melker

Physiologic Root Reshaping

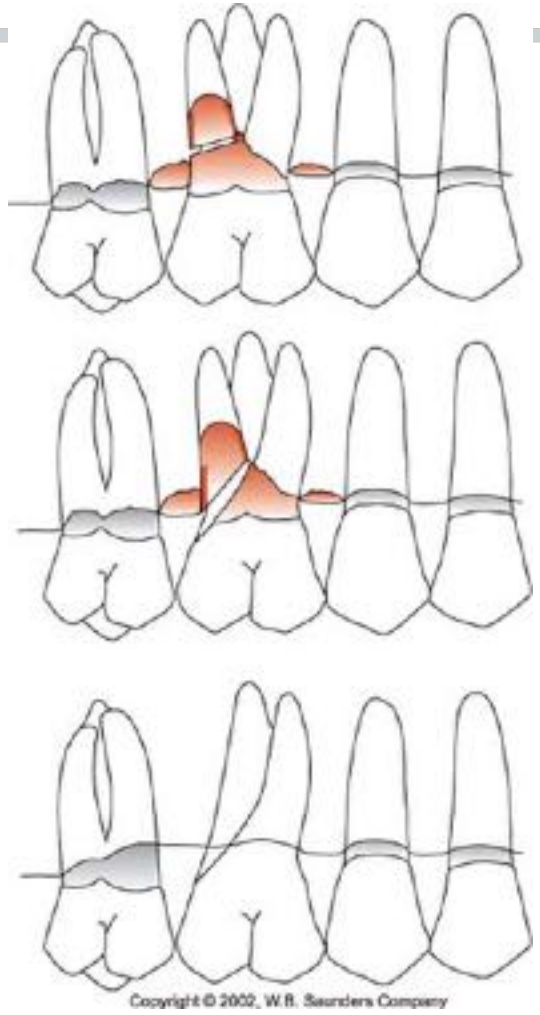
Case Dr. Daniel Melker

Physiologic Root Reshaping

No endodontics needed

Case Dr. Daniel Melker

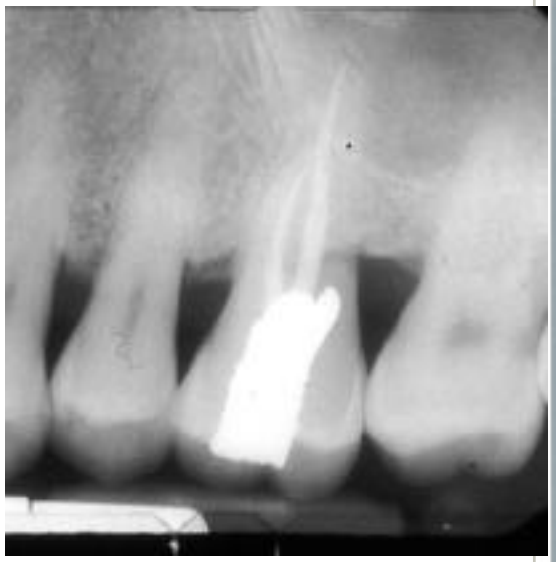
Root Resection



Root Resection

Root Resection

Root Resection



Proper Sequencing of Multidisciplinary Care

- Complete disease control phase (Phase III)
  - Periodontal therapy, re-evaluation
    - Inflammation controlled, maintainable probing depth (1-4mm), good plaque control
  - Carious lesions treated with direct restorations
- Preparation for reconstructive phase (Phase IV)
  - Functional or esthetic crown lengthening
  - Soft tissue grafting to cover gingival recession or improve soft tissue Periodontal Phenotype or edentulous ridge contour
  - Physiologic reshaping of teeth or root resection to make a class II furcation more accessible/maintainable

Questions??

Uh oh!

New Bass