



3. PHASE 1: URGENT AND DIAGNOSTIC

36 slides, about 1.5 hour

Treatment
Planning
Tutorial

Learning Objectives

- 1. Recognize Key Decision points in a treatment plan.
- 2. Give examples of what treatments go into Phase 1,2,3.
- 3. Be able to explain space infections, what influences their location, the sequence of treatment, and why Ludwig's Angina and Parapharyngeal space infections are a significant threat.
- 4. List when antibiotics are indicated and when they are not indicated.
- 5. List and clinically recognize the three treatment planning indications for considering an orthodontic evaluation. Recognize when a case is disease controlled for referral.
- Define how to determine restorability and list the sequence of restorative and endodontic treatment.

Data Collection → Tx Plan

We've developed a Problem and Diagnosis List, and have some sense for what kind of treatment this patient is interested in both tooth by tooth and overall.

Now we need to start to develop our Treatment Plan

Collect Data

- Radiographic Interpretation
- OM exam*
 - Make impressions

Develop Tx Plan

- Problem List
- Diagnosis List
- Develop Phase 1 Plan
- Develop Phase 2 Plan, alternates
- Develop Phase 3
 Plan, alternates

Phase 1, 2 Approval

- DXR appt*
 - Eval casts
 - Review charting, dental exam
 - Get pt signature on tx plan estimate

Phase 3
Simple
Approve at DXR*

Phase 3
Includes Fixed
Pros

After Phase 2 completed, approve with a Fixed Pros faculty member*

Phase 3 Tx Planning Board

If RPD planned, schedule for Tx Planning Board.* Exception: C/RPD, which is approved by Rem Pros faculty member

*=Pt present

Gray= work done between appts

Moving from Diagnosis to a Treatment Plan with Phases

MATCHING DIAGNOSES AND TREATMENTS
DEVELOPING PRIORITIES WITH PATIENT
WHAT GOES IN WHICH PHASE

Where do you *start*?

- What do you do with this list of problems and diagnoses and patient concerns and who knows what else?
- How do you get from a disorganized mess to an organized plan...a logical sequence that addresses all problems in the right order at that right time?
- When it's time to sort out your sock drawer, you dump them all out and inspect them. Then you match them up into pairs, right?



With a treatment plan...

- 4
- You dump out all the diagnoses and in the light of the patient's:
 - Medical concerns
 - Personal preferences
 - Economic resources

you plan at least one (usually several) reasonable **treatment options** for each one.

- Looking at all your socks, you might sort them by function...maybe
 Workout socks vs Dress socks vs Crazy color socks, whatever.
- Once you've paired up diagnoses with treatments, decide which phase each of these treatments belongs in.

Let's try an example. Remember Jill?







- Chief concern identified as "stained teeth" and "spaces between teeth."
- 2. Jill's medical history includes Type 1 diabetes. Last HbA1c was 4 mo ago.
- Pain "pain with thermal stimuli" in site 19.
- 4. You also noted:
 - Periodontal problems
 - Caries
 - Missing teeth
 - Occlusal plane problems

Start thinking of possible treatments

- 6
- Chief concern identified as "stained teeth" and "spaces between teeth."
- 2. Jill's medical history includes
 Type 1 diabetes. Last HbA1c was 4 mo ago.
- 3. Pain "pain with thermal stimuli" in site 19.
- 4. You also noted:
 - Periodontal problems
 - Caries
 - Missing teeth
 - Occlusal plane problems

- Several options.... Porcelain veneers? Orthodontics?
 Bleaching and direct bonding?
- Get current HbA1c
- 3. Diagnose pain #19, then go from there to develop tx plan.
- 4. Other problems:
 - Perio- D0180, scale, root plane
 - Caries- list needed restorations
 - Missing teeth- options... implants? RPDs?
 - Occlusal plane problems. Wild card! How are we going to manage this???



And focus on the Key Decision Points

Develop treatment plan

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Knowing Jill's problems, you look at her study casts, and start thinking. Some problems don't have any real options...her diabetes is going to be followed up with an HbA1c. But other problems have options, and the **big decisions that are going to determine the overall direction of the case are key decision points.** Examples:

Problem	Possible Treatments	Advantages	Disadvantages
Esthetic Concerns	Porcelain Veneers	Best Esthetics Usually last longer	More expensive Requires tooth prep
	Vital Bleach + Composite Bonding	Less expensive No prep /reversible,	Not as long lasting
Missing 29-32	Implants, fixed partial denture ("bridge")	Very functional Not removable	Expensive, requires surgery Takes up to a year to complete (healing,etc)
	Removable partial denture (RPD)	Less expensive No surgery required Reasonably quick treatment	Less effective chewing, loose Has to be taken out at night. Tends to increase caries, perio risk

What if you can't tell if there's enough space? Or how it might work? To help you see which *might* be possible, you will often do a diagnostic set-up in wax.

Back to

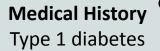
But which would work for Jill?



- You've had a chance to talk to Jill. You know her concerns pretty well, and you
 have a sense for her priorities.
- BUT...You always want to offer all *feasible* treatment plans! Maybe she hasn't said she's interested in implants because she's heard they cost \$50,000. If she finds out that here they are only \$10,000, she might be delighted to do that. Maybe not. Maybe she just doesn't want screws in her jaw. You really never know unless you offer all the options with estimates.
- Bottom line...never assume you know what people can or can't afford. Every dentist has a story of some poorly dressed patient who paid cash for the highest end treatment plan. (Go read the story of why Stanford University was founded for a useful lesson on that idea.) And never talk down to a patient.
- After you give Jill some ball-park estimates and talk over the advantages and disadvantages of each treatment, she gives you some direction on what she wants.
- Now you can start matching up problems with her preferred treatments.

Matching up Jill's preferred treatments:

Develop treatment plan



Verify control with current HbA1c

Crown #3,4 Extract 2

Periodontal Dx Moderate

Occlusal plane

#2,3,4

supraerupted

D0180 Scl/RP

High Caries CRA=22.

#8,9 2,4

Comp

Esthetic Concerns

Stained teeth and "spaces between teeth"

Endodontic

#19- pain with thermal stimuli

Dietary counseling
Daily Fluoride x4
Office Fluoride q 3 mo

Composites 8,9 Amalgam 2,4 Vital Bleaching (lighten color)

Direct Bonded Composites (close spaces)

Verify diagnosis, RCT #19

Missing #29-32

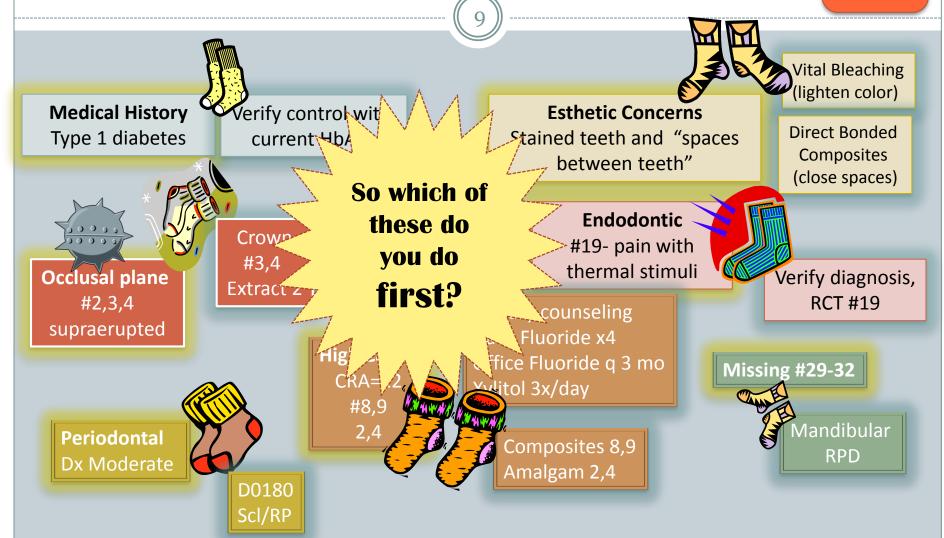
Mandibular RPD



= Land mine. Be careful!!!

Matching up Jill's preferred treatments:

Develop treatment plan

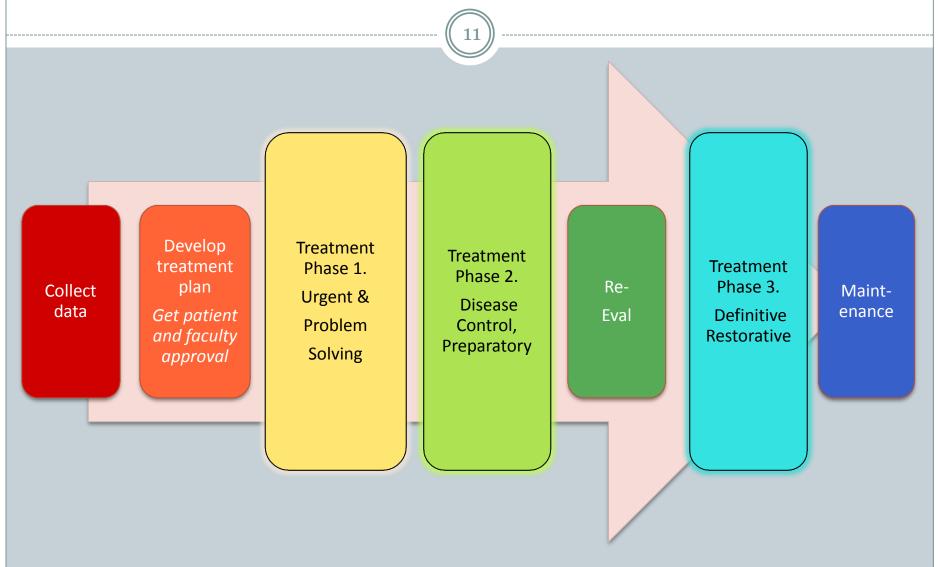




It helps to think about what our priorities are...

- 1. First Priority. Address urgent problems, like relieving pain, following up on health concerns, and making sure a suspicious lesion isn't cancer. You also need to get areas of uncertainty cleared up before you can formulate a final treatment plan.
- 2. Control Disease and Preparatory Treatment. Caries and Periodontal disease need to be controlled before we move on to any other treatment. Any other treatment to prepare the dentition for final rehabilitation treatment is done here.
- Rehabilitation. Now we can turn to providing restoration of form, function, and esthetics.

Where do those priorities fit with our plan?



What fits in each phase:

Develop treatment plan



Phase 1.

Urgent & Problem Solving

Address urgent problems and answer key questions that will affect the final direction of treatment plan.

Urgent problems:

Answer medical questions, Relieve pain, Biopsy suspicious lesions, Provisional replacement of missing anterior teeth

Sample Key Questions:

Is this tooth restorable?
Does endo need to be redone? Can an implant be placed there? Should we do ortho first?

Phase 2. Disease Control

Control disease and prepare patient for Phase 3. Usually does not leave pt worse if do not progress to Phase 3.

Ortho- arrange teeth to prepare for prosthetic care.

Endo- treat pulpal pathosis

Perio- treat perio disease

<u>Surgery</u>- remove hopeless teeth, place implants, shape bone for denture placement

<u>Caries</u>- Control disease with diet counseling, fluoride, etc. Operative to restore carious lesions.

Phase 3. Definitive Restorative

Restore form, function, and esthetics.

Ortho- definitive care

Endo- when done for restorative reasons

<u>Perio-</u> Esthetic, mucogingival, or changing ridge shape in conjunction with prosthetic treatment.

<u>Fixed Pros</u>- Crowns, fixed partial dentures

Removable Pros- RPD, complete dentures.

Back to Review

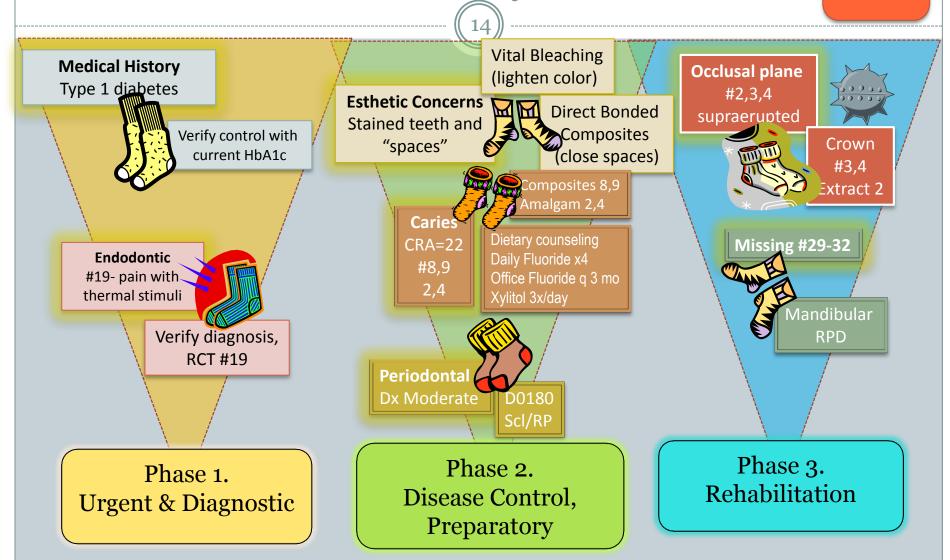


So which category-which bin- do you throw each of Jill's treatments into?



Develop treatment plan

Sort the socks by function:



- You're probably thinking "since when are stained teeth and spaces part of Disease Control?" and you'd be right.
- But- That was her chief concern! If we don't address that fairly soon, we aren't being responsive to her needs.

Besides, since we're going to be doing composites on #8 and 9, we would need to do the vital bleaching first (so we would be selecting the correct shade, right?) so why not go ahead and meet her esthetic needs? A happy patient refers her friends...

Begin with the end in mind.

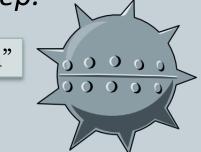
Develop treatment plan



The complexity comes when you learn how many options there are to treat any particular diagnosis.

Take a look at Jill:

- Her carious lesions in #2, 4 could be restored with either composite or amalgam. Which is best? Depends.
- But wait, didn't you say you're going to extract #2 because it's supraerupted and there isn't enough space for an RPD? Or crown it to make it shorter so the RPD will fit? Yep.
- You need to figure all that out before you start drilling away on anything.
- Occlusion always has to be part of the plan!



Treatment before Treatment Planning Board



- But there are going to be times when you can't get a
 Treatment Planning Board appointment for a few weeks and you're going to ask "can I start on the directs while I'm waiting for Treatment Planning Board?"
- Well, you can, **if you know the difference** between directs that will be done in any treatment plan, and those that depend on which Phase 3 plan is chosen.
- So- do your homework. In your Phase 2 Treatment Plan (which will be approved at DXR) sequence it so that you know which direct restorations will not be affected by decisions made at Treatment Planning Board.

Phase 1: Urgent and Problem Solving

- **Urgent Treatment:** Space Infections
 - **Acute Periodontal Infections**

Problem Solving: •

- Medical
- **Orthodontics**
- Implants
- Periodontics
- **Endodontics**
- Restorability

Phase 1. Urgent and Problem Solving

- Let's start with urgent. It's easy to define: Pain. Bleeding. Swelling. Infections. But also giving a patient a front tooth so they can go to work can be urgent.
- We've covered pain already, and you will learn options for that missing front tooth in Prosthodontics. Bleeding (like from trauma) will be handled in Oral Surgery.
- What about swelling? Usually swelling means an infection.



Space Infections

General concepts on management:

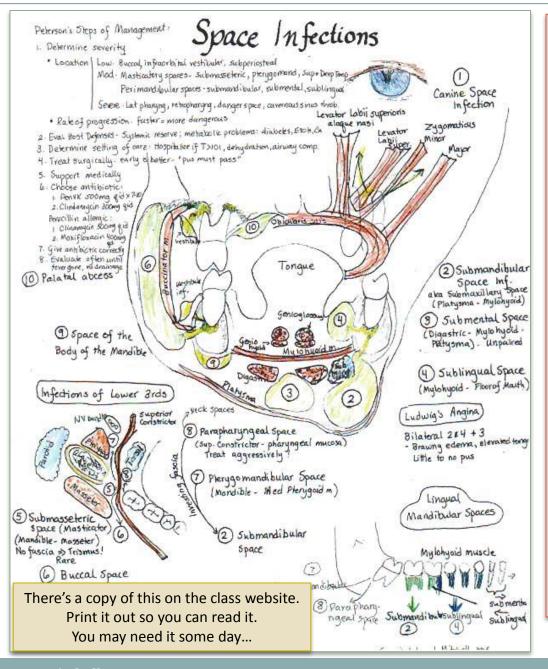
- 1. Once the infection is out into the fascial spaces, just starting endo or removing the tooth is not enough. First, the space infection must be managed, then the original problem (endo, 3rd molar, etc) is addressed.
- 2. "Pus must pass" an incision must be made into the infected area and a drain put in.
- 3. Generally, these should be managed by an Oral and Maxillofacial Surgeon. Make friends with one-you can really learn a lot from them

Red Flags

(19)

- Any of these symptoms should make you sit up and pay attention!
 - Fever
 - Swelling
 - Trouble swallowing
 - Trouble breathing
 - Trismus
- If you can't find the origin of the problem, or are not sure you have solved the problem, get the patient to someone who can (ie an Oral Surgeon)!
- Follow these patients! Call them even if they don't come back to the clinic.





Applied Head and Neck

Let's put your Head and Neck Anatomy classes to practical use!

This is a drawing I made to help visualize and remember space infections.

Key concepts:

- Infections usually start from the apex of an abscessed tooth or pericoronitis on a 3rd molar.
- Drainage direction and structure location (like muscle origin and insertion) determine which space is infected.
- -Some of the spaces are connected-infection can flow around. Life-threatening: Ludwigs Angina is bilaterally submental, sublingual, and submandibular, leaving no room for the tongue but into the airway. Parapharyngeal space can go into the neck spaces which blocks off the airway.

Both of these can compromise the airway and are life-threatening.

- There are only 10 of these spaces, and if you think about where the muscles are and how they relate to the teeth, you can have a pretty good guess of which space is which.

> Back to Review

Case 1. Suzanne





This patient remembers having a bad toothache "a month or two ago" and then a dull ache that started about 5 days ago. Two days ago she woke up with a swelling which has rapidly worsened to this condition. The swelling is relatively hard with a soft fluctuant central area. She has a temp of 101.2.

- Which space is this most likely to be?
 - Submandibular
 - **b** Submental
 - c Sublingual
- Which tooth is most likely to be the origin?
 - a #26
 - b #29
 - c #31

Indications for Antibiotics



Not indicated:	Indicated for:
Pulpitis	Persistent infections
Necrotic pulp + radiolucency Apical periodontitis Sinus tract	Systemic illness: Temp >100, Malaise, Lymphadenopathy
Localized, fluctuant swelling (may need to be drained, but still may not need AB's)	Progressive infection: Trismus, Cellulitis, Increasing swelling
"I don't have time to take that tooth out or start a root canal today, so I'll give you this to hold you till I can get you in."	Osteomyelitis (OMFS referral!)
"I'd feel more comfortable if you took some antibiotics"	
The patient wants a prescription for something	

- While we're talking about this, let's make sure you understand when antibiotics work and when they don't work.
- Antibiotics are still hugely overprescribed for many things, dentistry among them.
- The idea that antibiotics will help control pain in pulpitis or periapical inflammation has been disproven in study after study but many dentists still stubbornly cling to the belief, even when confronted with the evidence.

"Don't be that guy"

Understanding Pain Management

- You will take your **Pharmacology** course in the Junior year, but in the mean time, here is the basic plan for dealing with pain.
- Over the counter medications are quite effective for mild-moderate pain. We've got research. Reassure your patientconfidence works.
- Ibuprofen is dose-dependant. It is a good pain reliever at lower doses:
 - 400 mg every 4 hours (q4h)
 - 600 mg every 6 hours (qid)

But for it to be **anti-inflammatory**, it needs to be the highest dose:

800 mg every 8 hours (tid)

And Ibuprofen has a **very slow onset** of relief (40 minutes). Start pts on it *before* anesthetic wears off, and have them **take it by the clock** instead of waiting until they hurt.

Mild



- Aspirin
- Tylenol
- Ibuprofen 400mg, 600 mg

Moderate



- Ibuprofen 800 mg three times a day (tid) by the clock
- Consider adding narcotics

Severe



- Mod + breakthrough med:
- Narcotics q4h as needed

Case 1. Suzanne

Phase 1 Urgent





Suzanne is an otherwise healthy patient with no allergies to any medications.

You take a radiograph and see this image. The patient wishes to save the tooth. What do you do?

- Start a non-surgical root canal treatment (endo) and drain through the access, start antibiotics.
- Incise and drain the abscess surgically, place a drain, and when the acute infection is resolved start endo.
- Incise and drain the abscess surgically, place a drain and start endo the same day to remove the source of the infection.

After the procedure, what will you prescribe/recommend?

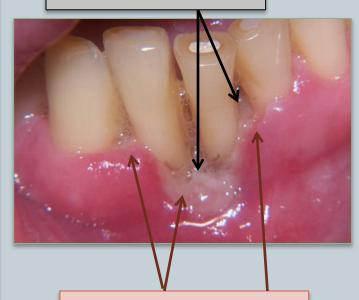
- a Antibiotics
- Over the counter pain medications
- Narcotic pain medications

Acute Periodontal Infections



- Remember learning about an acute periodontal abscess?
 There is another kind of periodontal disease that is quite painful.
- It used to be called "trench mouth" because it was common in the trenches in WWI. They thought it was an infectious disease, but really it was only because in the trenches they were getting shot at so they were stressed out and nutrition was poor.
- It was common again in the early days of HIV before current medications were available. Now you can see it on college campuses during finals (cold pizza, anyone?) or boot camps or in anyone who is stressed. It's called NUP or Necrotizing Ulcerative Periodontitis.
- The bacteria invade the gingival papilla causing rapid loss of papilla, bone, and attachment mechanism. It has a classic grayish slimy "pseudomenbrane" and "punched out" papillae and a really vile smell that you will never forget once you have gotten a whiff. Tends to attack first molars and mandibular anterior molars.
- Treatment? Sleep, good nutrition, and good oral hygiene as well as antibiotics.

"Pseudomembrane"



"Punched out" papillae

Scratch n' sniff for characteristic odor

Phase 1. Problem Solving





Let's look at #19

Let's assume that we would really like to keep #19 for the treatment plan. So what are you thinking....

- 1. Does it need endo?
- 2. Is it restorable?

- Problem solving is a harder concept, and we need to spend some time on this one.
- Let's look at the kinds of questions we might be asking:
 - Is that soft tissue lesion anything we should worry about?
 - Is this tooth restorable?
 - Does the endo need to be redone before I put a crown on it?
 - Can I plan implants for that space?How many will I need?
 - Should we do ortho first?

Answer Medical Questions

- (27)
- As you were taught in Oral Medicine, you are the best trained person to know the parameters for dental care.
- But if there are issues in the medical history that require clarification or testing, the time to get the answers you need is before you start treatment.



Specialty Consults: Orthodontics

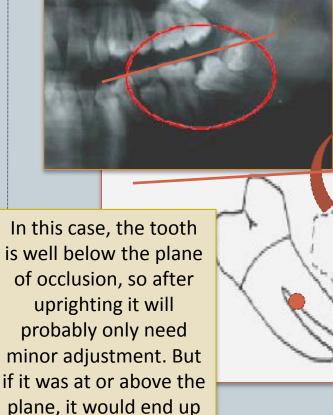




This patient had a single large space between his centrals partly closed with composite. Imagine how BIG these teeth would be if veneers were placed on them in this position! But after ortho, the space was shared and the teeth could be sized normally for a nice result.

- Ortho- it's not just for kids any more!
- It can be quite helpful in setting up restorative care.
- You will learn more in your ortho class, but for now, consider ortho when dealing with:
 - Space or crowding issues if you're doing Fixed Pros
 - 2. Implants! Once they are in, you can't move them, or the teeth around them. Think of ortho before you put in implants!

- 29
- 3. Problem: Tipped molar. Sometimes you want to use for an FPD abutment, but you can't prepare it correctly if it's tipped too far- you'll see why in Fixed Pros lab.
- But notice the center of rotation- a point in the center of the root.
- This usually means the crown rotates above the plane of occlusion- keep that in mind for your planning.
- Finally, ortho is NOT a fairy-dust answer: you can't just say "oh, I'll move those teeth" without knowing that it is feasible. You have to move teeth where there is bone, for example. It's harder than it looks....



well above it and

maybe unusable.

(30)

BUT

- Before an orthodontist will consider the case, they will ask the referring dentist two questions:
 - Is the patient caries active?
 - O Does the patient have active periodisease?
- Why? Because Ortho treatment will aggravate both of these diseases and the patient will be worse off than if they had not had the treatment.
- You want to have a good working relationship with your referring orthodontists to get these diseases under control before placing appliances.

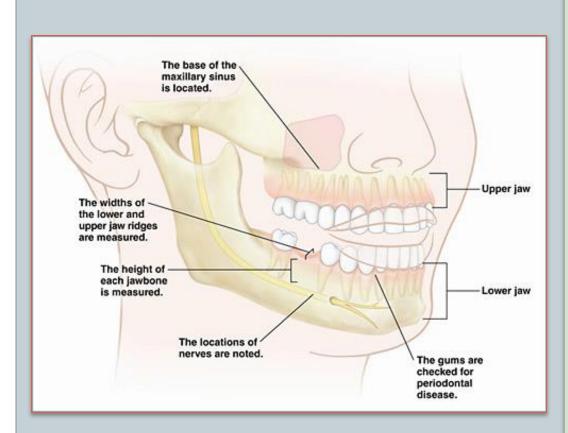


Note the pattern of caries and white spot lesions around areas where the brackets were bonded, where the *S.Mutans* laden plaque builds up. This is not the esthetic result orthodontists want to show on their websites! It's much harder to brush and floss around ortho appliances, too, so perio disease is a consideration.

Back to Review

Implants





- We will talk more about implants in a later tutorial, but for now let's say the patient is interested. Are implants a feasible option?
- The major questions are:
 - Is there enough bone to support an implant?
 - Is there enough space for the crown /FPD?
 - Is the patient a good candidate health-wise and psychologically?
- You will go through patient services, who will assign them to one of three departments for an evaluation. (Oral Surgery, Perio, GPR)

Periodontics

(32)

- The question- Is tooth #7 savable periodontally? If so, what would be required?
- This patient would require a D0180 rather than just a prophy, right?
- Your perio exam will look at each tooth on it's own, but also keep in mind your overall treatment plan, and what role this tooth might play.
- Are you thinking of using that tooth to support an FPD? An RPD? You might run that past the periodontist as part of the overall consideration.



Endodontics





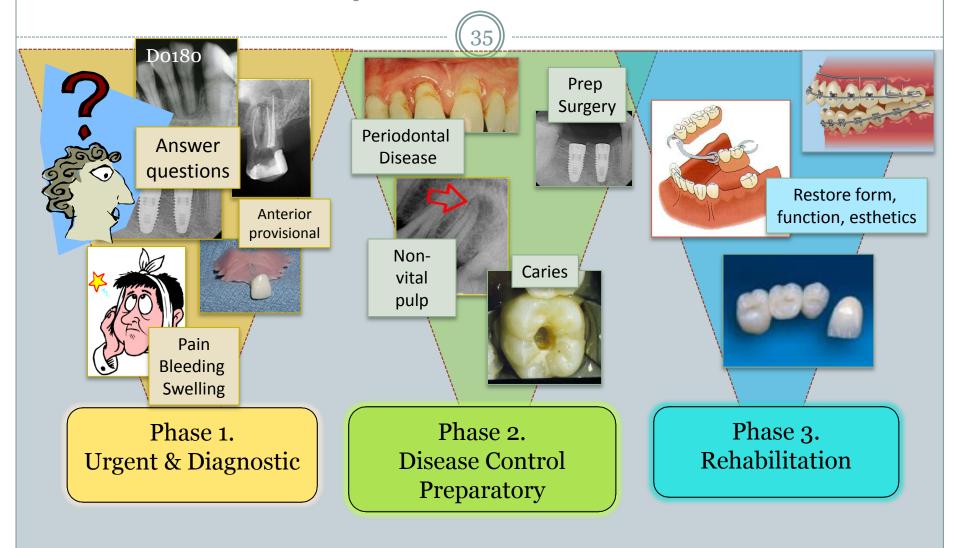
What if you are thinking of putting crowns on these teeth for esthetics? Would you need to redo these endo txs first? Would it be smart to do that? I'd sure ask an endodontist.

- You've already learned how to evaluate a tooth endodonticallygenerally do your own diagnosis before you refer.
- But what if the tooth is already endodontically treated, but doesn't look right radiographically or clinically? Best answer is an endo consult.
- What if an endo treated tooth still has not been restored correctly? If the endo fill itself (the gutta percha) has been exposed to saliva for more than 3-4 weeks, consider redoing the endo. The oral bacteria have contaminated the endo fill and it may fail.
- Again, tell the Endodontist your restorative plan so they can give you the best advice!

- Let's get to the **bottom line**: You generally can't tell from a radiograph or even visually if a tooth is restorable or not if it's borderline.
- What works? Remove the caries and see if you can get a matrix band on it. If you can get a matrix band on it, then you can restore it.
- Crucial concept: you must determine if the tooth is restorable before you do the endo. Why?
 - 1. Let's say you don't, and after the endo you find out the tooth is NOT restorable! Ouch! (Pull out your checkbook...) Planning keeps you from the embarrassing position of taking out a tooth you just did a root canal on.
 - 2. A good restoration helps hold on the rubber dam retainer.
 - 3. With a good restoration in place, you can better control the sodium hypochlorite (bleach) that's used to irrigate the root canal space- it won't leak out through the deep cavity if there's a nice restoration in it.



Summary: Overview of Phases



Review of Learning Objectives

36

If you have trouble with any of these, click on the link. Some cover several pages before the Return to Review button appears. Be sure you know all the terms in blue or red in the tutorial.

- 1. Be able to recognize Key Decision points in a treatment plan.
- 2. Give examples of what treatments go into Phase 1,2,3.
- 3. Be able to explain space infections, what influences their location, the sequence of treatment, and why Ludwig's Angina and Parapharyngeal space infections are a significant threat.
- 4. List when antibiotics are indicated and when they are not indicated.
- 5. List and clinically recognize the three treatment planning indications for considering an orthodontic evaluation. Recognize when a case is disease controlled for referral
- 6. Define how to determine restorability and list the sequence of restorative and endodontic treatment.









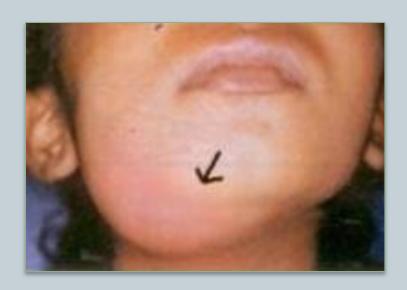


Now that you know the basics...

- Read Chapter 3 pg 53-65 (before occlusion): Developing the Treatment Plan
- Read Chapter 6 pg 113-135: Acute Phase of Treatment. Gives you a very good overview of how to handle an emergency patient start to finish. Also has a good review of the pain material we covered last semester, but in more detail.



Case 1: You chose a "Submandibular Space"



- Correct!
- You probably noticed that the swelling is on one side only (eliminating the unpaired Submental space which would be right in the middle) and that it is under the Mylohyoid muscle.
- Nice work!



Case 1: You chose b "Submental Space"



- Probably not.
- Check the diagram and try again!



Case 1: You chose c "Sublingual space"



- Probably not
- Check the diagram and try again!



Case 1: You chose a "#26"



- Probably not...
- Check the diagram and try again!



Case 1: You chose b "#29"

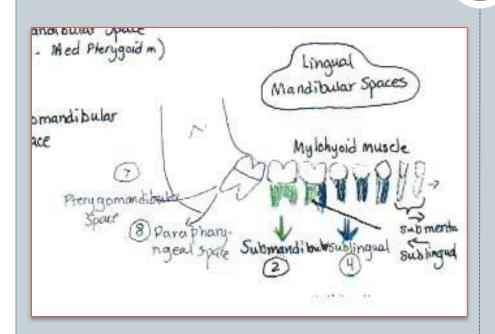


- Probably not.
- Check the diagram and try again!

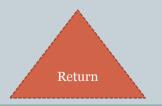




Case 1: You chose c "#31"



- Correct!
- You probably noted that the most likely tooth to be below the mylohyoid insertion is a second molar, so #31 is a likely option.
- Nice work!





Case 1. You chose a- Endo



- Not really the best choice.
- Read the slide on infections and try again!





You chose b.



- I&D, delay endo Correct!
- Of course you want to get the endo done as soon as you can, but generally patients like this will have trouble opening and you will make them much more sore if you try to do it all at once.
- Good job!





Case 1. You chose c- I&D + Endo



- Not really the best choice.
- Read the slide on infections and try again!





Suzanne: You chose Antibiotics

Not indicated:	Indicated for:
Pulpitis	Persistent infections
Necrotic pulp + radiolucency Apical periodontitis Sinus tract	Systemic illness: Temp >100, Malaise, Lymphadenopathy
Localized, fluctuant swelling (may need to be drained, but still may not need AB's)	Progressive infection: Trismus, Cellulitis, Increasing swelling
"I don't have time to take that tooth out or start a root canal today, so I'll give you this to hold you till I can get you in."	Osteomyelitis (OMFS referral!)
"I'd feel more comfortable if you took some antibiotics"	
The patient wants a prescription for something	

- YES!
- This is clearly a case for antibiotics. The patient has a fever and a progressing infection.
- Good choice, doctor!
- Keep clicking, though





Suzanne: You chose OTC Pain Meds

- Good idea!
- Not because that is going to be enough for her pain after the I&D surgery (it won't be) but because it is antiinflammatory. You would give it at the highest dose:
 - 800 mg every 8 hours (tid)
- She will have less overall pain if the inflammation is controlled, not just the pain.
- Keep looking, though





Suzanne: You chose Narcotic Pain Meds

- Of course.
- This woman is going to be in a lot of pain after we open up her neck, drain out a lot of pus, and put in a drain. This is not a fun day. Ibuprofen is not going to keep her comfortable.
- Patients need narcotics for this sort of pain, and you are wise to prescribe it in advance of the pain.
- Keep looking, though

