McGann’s Answers: Session 8 Expectations

Diagnosis

1. When should you start treatment on a mixed dentition case, and when should you wait?
   a) When you need to work on a particular problem (e.g. Severe class II) longer than 2 years to get a full correction
   b) When the patient’s social development is being affected by their appearance
   c) When the parents are willing to pay extra to start treatment now (dentofacial orthodontics)
   d) Phase I in the past used to be for the purpose or correcting skeletal abnormalities, phase II for the dental abnormalities.

2. What does treatment plan 150 do for you to enhance your mixed dentition diagnosis and treatment planning?
   This program organizes your thoughts, including reasons for starting treatment now, goals in phase I, and use of appliances designed for the mixed dentition.

3. What should you ‘see’ when Phase I has ended and Phase II starts? What records are required for the end of phase II? What records are required in POS for the start of phase II?
   Phase II usually starts at ‘full eruption’ of the secondary teeth. There should be a distinct change between phase I and II, the best being another set of records and complete diagnosis. Full records should be required for the start of phase II, even if they had already been taken in phase I, including photos, lateral ceph, panoramic, wrist x-ray for girls 10-13, boys 12-15, growth evaluation including documentation of height changes, menarche, breast development, voice change and hair growth in boys, periapical x-rays to document the incisor roots, bitewing x-rays to document bone levels and lack of decay, frontal ceph as asymmetry/functional shift screening x-ray.

4. How much maxillary constriction (black tab in IPsoft) can be corrected by using non-coordinated arches? When is a RPE appliance indicated?
   A “couple” of millimeters of maxillary constriction can be corrected by using an expanded archwire upper and a constricted archwire lower. How many? 2, 3, 4...no more than this, unknown patient to patient. All you can do is apply the force and sit back and wait to see what the treatment effect is...no magic.
   An RPE is indicated whenever you have a patient less than 20 years old with maxillary constriction. How much constriction? How about whenever you want to be certain that you correct it....4mm and more? These are difficult questions to answer, since it comes down to clinical judgement, your diagnosis on a case by case basis, one at a time.

5. Explain how much over-correction to add to the maxillary constriction calculation.
   This is easier.
   +2mm [1mm per side] when you have a ‘mild’ posterior crossbite on a young patient.
+3mm (1.5mm per side) when you have a moderate posterior crossbite on any age patient
+4mm (2mm per side), when the case is critical that you fully correct the posterior crossbite and can tolerate some relapse, which they all relapse some. For example a patient with TMD symptoms related to the posterior crossbite or a patient with dental open bite where you need to fully correct and retain the crossbite or the dental open bite returns. “that much” extra!

6. How does the shape of the palate effect skeletal resistance? Does a ‘vertical’ palate usually have more or less skeletal resistance than a horizontally shaped palate?
   In one case, the incisor in a certain position and inclination (eg. Roth ideal inclination) will have the root apex is in the medullary space and in the next case, the same inclination and Antero-posterior position and the root apex is outside the cortical bone. What is the difference? The palatal bone anatomy that is different case by case. In general, the more “vertical” the anterior of the palate, the more resistant it is and the more skeletal resistance from cortical bone when you try to retract an incisor.

7. What happens ‘vertically’ when a tooth is retracted into the cortical bone (upper or lower)?
   It extrudes. The entire anterior segment attached to the archwire extrudes.

8. Distalization of the upper arch is forbidden in skeletal open bite cases (FMA>28). Why is this?
   Because the clinical experience in these cases is universally disappointing. Either the molars do not distalize, the anterior bite opens too much, or you think the molar is where it should be and it relapses. Follow this rule, set by McGann.
   With that said, skeletal anchorage from the zygomatic buttress (section 4) has extended our capability to distalize the upper arch, even in skeletal open bite cases. More training for that one.

9. Why should you NOT place a (tooth)dental implant at the start of orthodontic treatment?
   It will certainly NOT be in the correct place after the adjacent teeth are positioned orthodontically. Now what do you do, remove and reposition the dental implant? Nope. Place the implants AFTER ortho is finalized.

10. What are the problems of having a [successful] dental implant in the arch on a new orthodontic patient?
    The dental implant does not move. If you include this “tooth” in the archwire and mechanics, all the natural teeth will move relative to the implant. For example, instead of the dental implant extruding, all the natural teeth will intrude!

11. How can botox injections improve asymmetrical smile and lips? How long does it last?
    By selectively “paralyzing” muscles that may be hyperactive and contributing to a facial asymmetry, the injections of botox (and fillers) can be used to make lips and smiles more symmetrical. This lasts 6 months ONLY, and then must be repeated.
12. When viewing a panoramic x-ray taken during active orthodontic treatment, what is the usual significance of radioluency around the tooth roots? Radio-opacity?
   The radioluency is the ‘normal’ widened periodontal ligament AND osteoid, the immature bone that has not yet calcified. You may see an increased bone density, radio-opacity, on the “trailing” side of the tooth. This is the newly maturing bone. It may take 3 months to fully calcify and see a “normal pre-orthodontic” periodontal ligament and matured bone. Tooth mobilities may also take that length of time to return to normal.

13. How long does it take to change osteoid to mature bone as seen on an x-ray?
   3 months

14. What records do you look at to determine the causes of facial asymmetry? Explain how a photo with a tongue blade between the teeth can be helpful.
   Face photos including full smile, resting lip, and lips together, frontal cephal, face with the patient biting on a tongue blade, study models to study dental asymmetry. The facial photo with tongue blade will show if the occlusal plane is symmetric with the eyes and the floor.

15. If the upper midline is NOT centered in the face on the high smile photo, what should you look for in the records and what are the possible problems and solutions?
   An upper arch dental asymmetry. Look on the frontal cephal to see if the upper midline is centered on the sagittal plane or not. The solution will be to correct the dental asymmetry in the upper, either by adding back missing teeth, asymmetric extraction, or unilateral skeletal anchorage (section 3).

16. Explain how to determine if a ‘double mandible’ seen on a lateral cephal is from head positioning error or skeletal asymmetry.
   Head positioning error: you will see 2 mandibles, 2 porions (one more superior than the other), the molar teeth are overlapped vertically, and you may be able to see two orbitale (inferior of the orbit).
   Skeletal asymmetry: look at the frontal cephal measurements for zygoma plane to antegonial notch to see if there is a difference in vertical height right vs. left. If more than 3-4mm, then this will be enough skeletal asymmetry to be seen visually, and will be also on the lateral cephal as a double mandible.

17. Why should you not trace half way between the upper and lower mandibles when there is a double mandible on the lateral cephal?
   Since most of the double mandibles on the lateral cephal are from head positioning errors. Skeletal asymmetry is rare. We trace the most superior mandible, superior porion, superior molar, and superior orbitale to get the points on the same side of the face, accounting for the head positioning error. Note: this is a McGann discovery, so do not expect this to be in the specialty textbooks.
18. What are the methods available to correct posterior crossbite on adult patients (over age 25) and which ones are most effective
   a) **Dento-alveolar expansion**: slow expansion with a TPA, archwire, or even an RPE appliance expanded “slowly”. What is slowly? Maybe 1/4mm 2 times per week? Slow is a relative term.
   b) **Surgical assisted expansion**: This is the most effective. Surgeon relieves the zygomatic buttress, enabling the dento-alveolus to expand. This follows the concepts of an ‘intra-oral distraction osteogenesis’.

19. What is the recommended (POS) rate of activation for rapid palatal expanders in adult patients (age 20-25) and why?
   ¼ turn every 3 days. This is to allow the dissipation of the force within the rigid system before reactivating again. In a nicely done study, a force gauge was mounted in an RPE screw and showed the initial force after activation was extremely high (3000 grams) and took 3 days or more to dissipate. If reactivation was done before the force dissipated, then the force simply got higher and higher.

20. What is the protocol for adult rapid palatal expansion in your informed consent? What are the signs that a patient may need surgical assisted rapid maxillary expansion?
   If the expansion is unsuccessful, as determined by persistent pain (do not take pain pills or the roots may break through the buccal cortical plate), then surgical assisted expansion will be needed. This will be determined in the first month.

21. Explain the methods that can be used to correct a maxillary occlusal plane cant (more gum showing on one side than the other)
   a) **Le Forte 1 osteotomy** done by a maxillofacial surgeon.
   b) **Skeletal anchorage intruding on one side** (section 3)

22. Is it possible to close a lower molar extraction space where there is a “knife edge” lower ridge? (explain)
   Yes, the molar will need to move by remodeling of cortical bone, which is possible, just takes time. Lower force is best for cortical bone remodeling, so skeletal anchorage may be the only way to get this done...NOT applying long term force to the other teeth. Depends on anchorage planning.

23. Describe the changes in the papilla and sulcus when teeth are separated. Is this the same on the ‘trailing edge’ of all tooth movement?
   The papilla ‘everts”, or stretches, exposing the sulcus. Yes, this is what happens during tooth movement, the tissue AND bone is ‘leveled’

24. Describe the “crease” in the gingival tissue seen buccal to recently closed extraction spaces.
25. Describe the bone changes on the palate when the upper arch is expanded (RPE without sutural opening, OR archwire expansion OR TPA expansion).

In a young or adolescent patient, using a rigid appliance like an RPE that can generate a force greater than 700 grams, the sutures of the maxilla will expand, creating ‘skeletal’ expansion as well as a certain proportion of dental expansion (tipping). As the patient gets older, over age 17, less will have sutural expansion, and the force will create more dento-alveolar expansion, bending of the buccal cortical plate as the teeth expand.

In dento-alveolar expansion, the teeth are “pulling away” from the palatal cortical bone, the trailing edge feeling “tension” where osteoblasts lay down new bone, cortical bone in this situation. Dento-alveolar expansion is BEST accomplished using ‘low’ force, meaning 150 grams or less. The force generated by a rigid appliance like an RPE is too much for this, and is intended for sutural expansion, not dento-alveolar expansion.

An archwire that is expanded relative to the dental arches, and compressed into the bracket slots, will generate a ‘low force” in general. A TPA may be a higher force initially, but this will eventually dissipate and decay to a smaller force as the teeth move. Problem with the TPA expansion is that the range of activation is small...so a little activation means a little tooth movement before ZERO force. BUT, that said, we often see the lateral portion of palatal bars embed into the palatal tissue as the tooth moves and the palate does not.

You may have heard of nitie maxillary expansion devices, which on the surface sounds good since nickel-titanium has a reputation of having a low force and a long range of activation. Unfortunately, these palatal bars are made of very thick gauge nickel titanium that does not really generate the low force you are looking for, are not obvious when the force goes to zero, and are too low in the palate, so the (adult) patient has a very difficult time adapting and speaking.

26. Why is the recovery of over-expanded upper arches ‘slow’? Explain the methods that can be used to constrict an upper arch (posterior teeth)

An over-expanded arch, usually expanded by the use of expanded archwires, has extra palatal CORTICAL bone that has been laid down on the tension side of the expanding teeth. When this is reversed, this bone must now be resorbed for the teeth to move and it is NOT a quick process to reverse.

The usual expectation is to place a more tapered archwire when you see arch coordination problems (upper wider than the lower), and it should simply go back. Well the lower does “snap” back, and this is maybe why you think the upper is so slow to recover (the lower constricted quicker than the upper). But in reality, it can take up to 1 year for an upper expanded arch to recover to its original shape and size...I know, I made this transition in an entire practice!

Speed up the constriction of the maxilla? Not easy. In a severe situation, you can place an ortho anchor at the midline of the palate and attach a nitie closed coil from the anchor to the palatal attachment (tpa sheath) of the molars to constrict.
27. What are the possible reasons that a patient has lips “open at rest” (incompetent lips).
   a) The teeth are too protrusive, the patient is unable to close their lips around the teeth
   b) Excess facial vertical dimension (VME, vertical maxillary excess it is called), so the lips cannot close. The teeth may not be protrusive.
   c) Short (upper) lip.
   d) Excess anterior overjet.

28. Explain a ‘mentalis muscle’ strain (to close the lips at rest). What are the typical changes in the soft tissue of the chin?
   The soft tissue in front of the chin button ‘THINS’, as the mentalis muscle pushes UP to close the lips at rest. There is often a ‘crinkle’ or “orange peel” appearance on the soft tissue of the chin as the mentalis muscle strains to close the lips.

29. It is common for practitioners to focus on the anterior-posterior (class I, II, III) when evaluating orthodontic cases. How can you get your mind to incorporate vertical, transverse, symmetry?
   Evaluate the vertical and transverse dimensions FIRST, when you make an orthodontic evaluation, leaving AP for last.

30. Explain how to use a lower cuspid as a lateral incisor. How does this differ from using an upper cuspid as a lateral incisor?
   The lower cuspsids are much easier to manage in the lateral incisor position. Not only does the soft tissue height not show in the smile, as it does on the upper, but the lower cuspid is not so much wider, curved facial surface and the lingual surface is not in occlusion with the upper. Leveling the cusp tip to an incisal edge is also not as challenging with most lower cuspsids.

31. Explain why it is important to document patient refusals and shortcomings during treatment (eg. Refuses corticotomy or skeletal anchorage that was previously agreed in the diagnosis)
   This releases you from responsibility to get a good result, under the laws protecting patients.

32. How can the lower 7s cause class II dental and possibly TM joint problems?
   The mesial inclination of a lower 7 can occlude with the distal cusp of an upper molar in a “slide” to force the mandible back into the fossa, causing class II dental on that side (or both sides). This is a common reason for a functional shift of the mandible to one side.

33. A progress x-ray is taken to check for the retraction limit using range of bracket torque templates. The tooth appears to be in the round wire range. How can this tooth actually be at the retraction limit and why?
   If there is a gable bend added to the archwire, it changes the retraction limit to be more proclined (added lingual root torque). So what appears to be the round wire range is actually the retraction limit of the bracket + gable bend.
34. Explain how to determine if a case needs a corticotomy (or not)
   Use Range of bracket torque template, referenced to the incisal edge of the dental vto (or on a lateral ceph where you want to finish the incisal edge, and then check the cortical bone in the way of the desired tooth inclination and apex of the tooth. If moderate skeletal resistance, a corticotomy can be avoided, although it is not bad to do one for the purpose of speeding treatment. If Severe or extreme skeletal resistance, then you need a corticotomy for the purpose of moving the cortical bone section with the tooth.

35. How can you change the diagnosis to avoid corticotomy
   Change bracket torque to accept a more retroclined finish incisor inclination.
   Change the treatment objectives to have LESS incisor retraction on finish.

36. What is the support for the LOWER lip in many cases with vertical maxillary excess.
   Many times it is the upper incisor. Either by the upper incisor being BEHIND the lower lip or with anterior overjet, pushing the lower lip down.

37. What treatment options are there for the correction of vertical maxillary excess
   Le Forte 1 maxillary impaction osteotomy and skeletal anchorage dental intrusion.

38. Explain what the causes can be of dental open bite.
   a) Mouth breathing (airway obstruction) forcing an open mouth posture and over-eruption of the posterior teeth (vertical maxillary excess)
   b) Maxillary constriction (eg. Ankylosed lingual frenum, or an airway obstruction where the tongue does not function into the palate) and posterior crossbite.
   c) Under-eruption of the incisors possibly due to a habit (thumb or anterior tongue thrust)

39. Explain the treatment options to close dental open bite and which are more or less effective.
   a) Functional appliance that forces the tongue to function in the palate (bionator) and allows eruption of the anterior teeth by removing the habit (bionator)
   b) Vertical elastics to close the anterior bite
   c) Posterior crossbite correction and retention (plus vertical elastics)...effective
   d) Extraction and retraction of incisors (bite deepens with retraction)...effective
   e) Skeletal anchorage intrusion of the [upper] posterior teeth...can be effective, but not always
   f) Le forte 1 maxillary impaction osteotomy ...effective, but invasive

40. Explain how the transverse dimension is critical in the treatment and retention of dental open bite.
   In maxillary constriction, especially if it is mild, causes the posterior teeth cusp tips to contact prematurely upper and lower, forcing the anterior open bite. Correction and retention of this maxillary constriction has proven to be key to the correction and retention of the dental open bite.
41. How important is ‘tongue thrust’ in the treatment of dental open bite?

The tongue adapts to the open space, filling it up to avoid air getting into the stomach. If you remove the space, the tongue has no reason to fill the space. Tongue thrust is blamed for anterior open bites, but it is likely that the anterior open bite causes the tongue thrust.

42. When should you consider ‘multiple extraction’ diagnosis (bicuspids and molar(s)), and why

If the bicuspid extraction space is not enough to fully correct the protrusion, crowding, and class II, then multiple extraction should be considered to reach the treatment objective. The space gained in extracting a bicuspid is not always enough to correct severe problems.

43. Why should the extracted tooth mass be approximately equal in the upper and lower arches?

To keep the arches ‘coordinated’, the upper proportionately larger than the lower for a good occlusion. If you extract more teeth in one arch than the other, you may have a difficult time obtaining a good occlusion since they are not coordinated.

44. Explain the concept of anterior anchorage and how you get this for the positioning of incisors and minimum anchorage treatments. How is this different than the concept of posterior (molar) anchorage?

Cortical bone resistance to upper or lower incisors moving lingual. This happens when the incisor must move bodily (translate) and a higher force is used that resists cortical bone remodeling.

To use anterior anchorage to position incisors in their desired position, select a bracket torque and archwire using the range of bracket torque templates over the treatment decision via picture, that has a retraction limit (archwire binds in the bracket slot forcing bodily movement) in the desired final incisor position, then apply step 3 or 4 force (210-270 grams per side).

In molar anchorage concepts, the molar position is maintained by either using low force, translation of the molar(s), root surface area, and tipbacks. Cortical anchorage concepts are used only in the use of expanded TPA appliances.

Growth

45. When is the best time to start treatment on class I growing boys? Class II growing boys? Class III growing boys?

In class II growing boys, you want to start early enough to “manage” the Differential horizontal growth, and the maxillary molar shift forward. This would be approximately stage 3 of the growth cycle, although there are millimeters of class II that can be corrected by starting at stage 2 growth.

In class III boys, growth management is limited to restraining the lower arch from shifting forward, which happens every year from an early age. By using molar ligation, this can be stopped, reducing the dental class III. Starting at age 10 or even earlier may be an advantage. When considering the use of Reverse Headgear to establish a positive overjet and occlusion so the upper will follow the extra mandibular growth should be started at a very early age to get
the maximum treatment effect (dental and skeletal). Age 7 is an ideal age for this type of treatment.

In class I boys, the upper teeth are following the extra mandibular growth (DHG), so it is not as critical to start early. BUT, there is a natural loss of archlength during the developing years as the molars upper and lower drift forward more than the incisors. This could be managed by skeletal anchorage ligation to the molars.

46. How does differential horizontal growth help you correct class II cases? When is the best time for differential horizontal growth in boys? Girls?

The mandible is growing more horizontally than the maxilla (or the maxillary growth forward is slowing). This takes the lower teeth with it, and if the upper teeth do not follow, then class II dental is corrected by the magnitude of the differential upper vs. lower

The best time for DHG appears to be stage 3-5 in boys and stage 2-4 in girls. More information is coming on this topic as the McGann growth study is processed by the research company.

47. When the Cervical Vertebra (CVM) growth stage is different than the hand-wrist x-ray, which growth stage do you use?

In general, the distinctions between growth stages are more precise and clearly defined in the hand-wrist x-ray than the cervical vertebra method. So I would favor the hand-wrist x-ray.

48. How can you have ‘negative’ differential growth on an A point overlay?

a) If the maxilla grows faster than the mandible during that time period.

b) If the mandible is rotated down and back (negative treatment effect) during the time period (clockwise rotation of the occlusal plane)

49. How can class II elastics and other bite opening mechanics ‘kill’ the differential horizontal growth and your efforts to correct class II? How do you see this happened on the A point overlay?

By rotating the mandible down and back, the horizontal growth of the mandible is directed more vertically, reducing the affect on class II. On the A point overlay, the occlusal plane rotates clockwise (without treatment, counterclockwise).

50. If there is horizontal differential growth of 10mm in a class I dental case (boy or girl the same), how do the teeth stay in a class I occlusion (or do they change to class III)?

The upper teeth and alveolus follow the growth of the mandible, moving INDEPENDENTLY from the maxillary denture base (says McGann)

Skeletal anchorage
51. How is the line of force different with skeletal anchorage distalization of the upper arch versus headgear or open coil?
   *With skeletal anchorage from the zygomatic buttress, the force is ‘up and back’ instead of ‘down and back’ with open coil and headgear.*

52. How does skeletal anchorage change the concept of distalization in skeletal open bite cases?
   *What is the ‘open bite’ limit when using skeletal anchorage?*
   *The capability of applying a force “up and back” is only possible with skeletal anchorage (or with high pull headgear which was ineffective and not a constant, controllable force). This has increased the possibilities of distalization in skeletal open bite, as of this writing FMA 35 degrees being the limit.*

53. Where is the cortical bone the thickest in the palate?
   *On each side of the midpalatal suture and lingual to the upper incisors.*

54. Where are the nerves and arteries in the palate, to be avoided when placing skeletal anchorage pins? What is meant by finding the ‘trampoline’ in the palate?
   *The main structure that you need to avoid is the greater palatine bundle of nerves and arteries. This is approximately 1 cm ‘in’ to the center of the palate from the mesial of the first molar and 1cm back. Pushing on the palatal tissue with an instrument handle or Q tip, or similar blunt instrument, you can search for the ‘trampoline’ where the tissue ‘gives’...this is where the greater palatine is located.*

55. If you use a long pin (8-10mm) that extends beyond the palatal cortical plate, what is on the other side that you can damage?
   *Nothing*

56. What is a treatment alternative to Le Forte 1 maxillary impaction and generally how is this done?
   *Anterior and posterior skeletal anchorage intrusion. Applying force from bone plates anterior at the piriform rim and posterior from the zygomatic buttress.*

57. What is the limit of [skeletal anchorage] upper incisor intrusion and how is this documented?
   *The limit for upper incisor intrusion is the upper resting lip being equal to the vertical level of the upper incisor. You must have[upper incisor] tooth support for the upper lip. This starting position is documented in classification II tab PLUS should be documented by a photo of the resting upper (and lower) lip whenever you plan changes in the vertical dimension.*

58. How can skeletal anchorage from the piriform rim (active with an open coil or passive (simple ligation)) help in the treatment of class II cases with upper incisor retraction planned?
   *By controlling the dental deep bite. Intruding the incisors or passively holding them there will negate the extrusion of the upper incisors that goes with retraction*
59. How can skeletal anchorage help the treatment of dental deep bite cases? Under what circumstances do you intrude the upper to correct deep bite? When do you intrude the lower anterior? When do you intrude both upper and lower?

Anterior intrusion, the forces supported by skeletal anchorage pins and bone plates, offers control of the vertical (ie deep bite) that was not possible with brackets, bands and archwires. The limits to intrusion of the upper incisors is the resting upper lip...as it is in Le Forte 1 maxillary impaction osteotomy. You should not intrude the upper incisor further than 1mm inferior to the upper resting lip as the upper lip needs the upper incisor for support.

If you are unable to intrude the upper incisors due to the lack of upper incisor vertical to the resting upper lip, then you must intrude the lower anterior segment to correct the deep bite.

Some cases require some intrusion of the upper incisors, to the limit of the resting upper lip, PLUS intrusion of the lower anterior to gain the needed vertical change.

60. Explain the differences in placing ‘intrusion’ into T loops with a snoopy or squeezing the mesial loops and piriform rim skeletal anchorage intrusion.

**Intrusion into T loops by squeezing the mesial of the T.** This is effective when the archwire is in your hands, before inserting into the brackets. If you squeeze the mesial loops when the archwire is tied into the brackets, the anterior segment will change torque (detorque the incisors). This is not generally desired on the upper, but can be wanted in the lower?

**Snoopy bends** are an intra-oral adjustment using a tweed plier to intrude upper 2-2 without detorquing the incisors.

**Piriform rim intrusion** is entirely different than the dental intrusions of the T loop adjustments. There is a force straight up on the entire upper arch, all teeth included in the archwire, with a very efficient nitie closed coil force. With the loop adjustments, the incisors may feel an intrusive force, but the posterior segment feels an extrusive force.

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**Model measuring and Dental/surgical VTO**

61. Why is model measuring archwire placement different in mixed dentition vs. permanent dentition?

The size difference between primary and secondary teeth. Archwire placement is ONLY a function of what position will predict the final dental overlay (incisor position only)

62. How does the [dentalcad] computer program determine incisor advancement or retraction

The mesial and distal dots are “aligned” on the inside of the archwire shape and size selected. If there is space available after alignment in front of the first molar mesial dots, then the archwire moves back until this space is used, and the “incisors retract” by this amount. If there is less space than the 5-5 alignment, then the archwire moves forward and the “incisors advance” by this amount.
63. What does the mixed dentition ‘alignment’ dental vto represent clinically?
   Alignment with the molars remaining stable (no E space shift).

64. How can you account for mesial molar drifting into the E space in your model measuring?
   Move 36/46M dots forward 1.5mm per side

65. When the distalization vto is the treatment decision and the patient does not wear the headgear (or this appliance is ineffective), then what is the new treatment decision dental VTO and why?
   The class II elastic dental vto is how you will have to correct the class II, so take a look at that.
   This is the ‘worst case’ in a headgear case.

66. How do you make a surgical VTO with maxillary impaction to correct dental open bite? Is this the same when posterior crossbite will also be corrected at surgery?
   Make a copy of the start ceph, select the maxilla, hold down the shift key and drag the end point (palatal by the tooth, last dot) to rotate the posterior maxilla “up”, move the upper molar “up”, lower molar and incisor ‘up’ to occlude with the upper teeth. Move the mandible and symphysis ‘up’ to meet the new lower incisor position. Then, select the mandible, hold down the shift key and rotate the end point (last point at the condyle) to reposition the condylar head...notice the chin button get stronger from this autorotation. Adjust soft tissue, moving the lower profile ‘up’ to close the lips, and then by holding down shift key and rotating the most inferior point to the same soft tissue thickness in front of the chin.

67. How do you ‘autorotate’ the mandible when making a surgical vto to correct dental open bite and vertical maxillary excess?
   After moving the lower incisors ‘up’ to meet the upper teeth, you move the lingual symphysis and mandible ‘up’ to meet the new lower incisor position. (condyle went up also). Then, select the mandible, hold down the shift key and drag the end point (last point at condyle) to reposition the condylar head where it should be. This rotates the mandible, showing autorotation and a larger chin button.

68. How is the skeletal anchorage dental vto prediction for upper dental impaction done differently than the orthognathic surgery maxillary impaction vto?
   You only move the teeth “up” in the skeletal anchorage prediction, in the orthognathic prediction you move ‘up’ the maxilla also.

69. How do you move the soft tissue in a mandibular advancement surgical vto? Maxillary impaction surgical vto?
   For mandibular advancement, the soft tissue advances 1:1 in front of the advancing bone (chin). The lip advances a little less. So first move the lip forward an estimated amount, little less than the advancement, but similar to the lower incisor movement forward, if any...then hold down the shift key and rotate the inferior of the lower profile by dragging the end point (last point at the bottom) to match tissue thickness to the chin bone.
For maxillary impaction: the soft tissue on the lower will change from the ‘upward and forward’ rotation of the mandible. Move the lower profile up the amount of boney vertical reduction (look at inferior of symphysis (menton change), hopefully closing the lips that were open at rest (?)). Then after rotating the condyle to create the extra chin from autorotation, rotate the lower profile by holding down the shift key as you drag the inferior (end) point of the lower profile to match the chin movement forward.

70. What does ‘generation 1” rotation diagnosis refer to and why is this inadequate?
Holding the study models in your hands, viewing the occlusal surfaces to classify tooth rotations. This was proven to be inadequate since only the obvious rotations were classified and at the start of finishing there were still under-correction of rotations that now needed rotation brackets to get a quality finish. A tooth is also rotated or not according to its relationship to the selected archwire shape....not taken into account in generation 1 rotation diagnosis.

IP Appliance

71. Describe “open bite 0%” bracket positioning and what this does to the upper and lower arches
This computer managed bracket positioning prescription is used to close open bites and to keep them closed when the dental vto predicts bite opening from incisor advancement. The upper and lower 3-3 brackets are placed 1mm more gingival than the standard average 0% positioning. There will be a moderate curve of spee on the finish.

72. What is wrong with the directions of the [non IP] manufacturers of orthodontic brackets to place the brackets in the ‘middle 1/3’ of the teeth?
The height anterior vs. posterior is not consistent, the shorter bicuspid clinical crown will be at a height closer to the occlusal table than the larger central incisors. This results in:
a) Deep bite in the anterior
b) Bite opening in the bicuspidsthat needs to be closed with great effort in finishing

** some may argue that the incisor brackets, especially on the upper, need to be in the middle of the tooth, closer to the center or rotation, for better torque control. True, but for this little gain, you lose a lot. The torque control they are imagining is a function of the bracket slot cut (torque) more than the position of the bracket on the tooth.

73. How does torque and torque control change as brackets are moved incisal or gingival?
Theoretically, you should have greater control of torque (incisor inclination) as the bracket is moved closer to the center of rotation, which is supposedly in the middle 1/3 of the root....in reality, teeth tip at the apex, not at the middle 1/3 of the tooth. In reality, teeth move bodily when the archwire engages the sides of the bracket slots, NOT a function of the position of the
bracket on the tooth. Just study dental overlays and range of bracket torque on final ceph and dental vto predictions to confirm.

74. What is the treatment effect if a band is seated more gingival on the mesial? More gingival on the distal?
   *If seated more gingival on the mesial, there is a TipD or “tipback” of the crown (and tip forward of the roots).
   *If seated more gingival on the distal, there is a TipM or “tip-forward” of the crown (and tip back of the roots)

75. What happens when there is an error in welding and the “TIP” weld is excessive (or you seat the band too gingival on one side). Describe closing extraction space and the maxillary sinus.
   The root tip is excessive on that tooth. When closing extraction space, the root of the molar will finish “more than parallel” to the next bicuspid tooth. You may also have problems being able to close the full space if the root hits the adjacent root before the crowns come together. The severe tipD weld will put the root in front of the crown, either increasing the anchorage of the molar (cortical bone resists tooth movement), tipping the crown MORE distal, but will assist moving the root through the sinus as the crown does not simply tip forward.

76. When using a lower cuspid as a lateral incisor, how do you get a lateral incisor bracket on the cuspid in the IP appliance order?
   “X” out the cuspids, indicating the rotation, if any, on the lateral incisor brackets.

77. Explain the concept that brackets with different torques have different skeletal resistance.
   *The more lingual root torque you have on an incisor (more lingual root torque on the bracket) during retraction, the more the root is pushed into the cortex, so the more skeletal resistance of the palatal cortical bone and lower lingual cortical bone. This is a function of the retraction limit of the archwire and bracket combination. (SLi, Li, Roth, La in most skeletal resistance (lingual root torque) to least).
   *In a labial direction, the more labial root torque on an incisor (more forward the root relative to the crown), the more severe is the skeletal (cortical bone) resistance to that root moving forward. This is a function of the advancing limit of the bracket and archwire combination.

78. The IP appliance programming gives you Li torque when the upper incisor is retroclined (upper 1SN is less than 100 degrees). If you want to over-ride this and use Roth torque on the upper incisors (to avoid a corticotomy), how do you do this?
   *Either change the number in the ceph tab for upper 1 to SN, making it more than 100 degrees, or by custom selecting Roth torque brackets.

79. How does the computer programming move the soft tissue when making a dental vto prediction? Where are the rotation points?
The rotation points are the sublabial points on the upper and lower profile. This is the reason why the need to be placed at the tooth apex, since this is where the tooth is rotating from. The program moves the LOWER lips 1mm for every 1mm change of the incisal edge forward or back. The UPPER lips move forward 1mm for every 1mm change of the incisal edge, but 1mm back for every 2.5mm retraction of the upper central incisal edge.

80. When you check Class III dental in classification 1 tab and wits is less than -4, the IP appliance programming gives you LA torque on upper and lower incisors and “D” variation on upper 6s. This is intended for non extraction treatments. How do you over-ride this when treating the class III case with bicuspid extraction?

   Either change class III in classification 1 tab to class I or custom select for the molar and incisor brackets you want. In class III bicuspid extraction cases, Roth is a good upper molar buccal tube (keeps a mesial inclination of the molar) and CIIE or UP on the lower. Incisor torque is per the diagnosis with RBT templates and the treatment decision vto.

Mechanics

81. How should you document bond failure (location of adhesive, tooth number) and when should you change to a band?

   Document “rebond” with tooth number if the patient lost the bracket, and if the adhesive was all on the bracket, then maybe “contam rebond” or all on the tooth, nothing on the bracket “pad rebond”. “Reposition” would not be the patient’s fault, as this was correcting your bracket error. With ceramic brackets, you might want to indicate “reposition new” or “broken” or “rebond new” to indicate why the bracket was replaced (with a new bracket).

82. If a patient keeps biting off lower cuspid brackets, how can you solve this problem?

   Bond the cuspid bracket too gingival, and then make a ‘step down” that amount of change in the archwire to compensate for the non-standard bracket position.

83. If a patient keeps biting off lower incisor bracket(s), how can you solve this problem?

   Bond composite on the occlusal surface of upper or lower molars.

84. If an upper incisor bracket has bond failure 7 times, what can the problem(s) be, and what should you do?

   Either the reconditioning of the bracket pad is faulty, or the bracket pad itself is damaged, or the patient has a habit of stressing that bracket. Bond a NEW bracket and instruct the patient they may have to pay extra if they are responsible.

85. What are the problems of using palatal placed ortho anchors (skeletal anchorage)? How can you improve your success rate?
The tongue and food hit the head of the screw and the closed coil, ‘jiggling’ the attachment [Loose]. Frequent screw failure will be found in the palatal location.

86. How do you add incisor intrusion to a T loop BEFORE placing the archwire? How is this done AFTER placing the archwire [and cinching]? (snoopy) Explain how this may change torque of the anterior or posterior.

BEFORE placing the T loop, you can ‘squeeze the mesial of the loop”, making a 1mm (maximum) step between the posterior segment and anterior segment. Torque changes are possible with this adjustment, but should be mild and can be changed using 2 pliers, one holding the vertical legs of the loop and the other ‘twisting’ the archwire. IF you attempt this adjustment in the mouth, you will get labial root torque (detorquing) of the incisor segment, which is generally Undesirable in the upper arch.

AFTER inserting the archwire, use a ‘snoopy’ bend to intrude upper 2-2 without detorquing the incisors. The tweed plier is positioned on the horizontal of the T, squeezing to “open” the vertical legs first, then flipped to “close” the vertical legs second. The result in an intrusion bend.

87. Explain methods to derotate upper molars in mixed dentition cases and which one(s) are easiest and most effective

a) Toe-in inner bow of the headgear facebow. Ineffective as only slight adjustments can be made on this very heavy (.045) wire

b) TPA toe-in. Ineffective and time consuming removing, adding adjustment, replacing on this heavy .036 wire, but better than the headgear facebow

c) Archwire: 18x25N from 6-2-2-6 is very flexible at the molar because of the large inter-bracket distance, and therefore is the most effective and easiest to use.

88. What will the treatment effect be if the cervical headgear line of force is too low? How do you determine this and what is the correction?

Distal tipping of the first molar crown results if the line of force is too low. To confirm this, take an x-ray with the facebow and headgear strap in place, drawing a line between the center of the force module and the ‘clip’. This needs to pass near the root tips of the molars. To ‘raise’ the line of force, bend the outer bow of the facebow ‘up’ with a 3-prong headgear plier.

89. Explain how a bonded RPE can be used to create ‘corrected records’.

If maxillary expansion is needed anyway, or even if it is not, you can use a ‘bonded’ RPE to disclude the teeth and confirm if the mandible centers or not in a case with a ‘suspected’ functional shift of the mandible.

90. When a TPA (palatal bar) is embedded into the lateral palatal tissue, what is happening? How do you fix this? How can you avoid this happening on cases you want to expand with a TPA?

There was expansion on the palatal bar and the teeth moved but the palatal tissue and bone did not. To correct it, remove the goshgarian palatal bar and recontour. To avoid this from
happening, make an ‘offset’ bend near the doubleback bend to step the palatal bar away from this lateral palatal tissue when making the TPA.

91. Explain how inter-arch elastics can be used to correct a known functional shift of the mandible.

Inter-arch elastics are any elastics placed between upper and lower arches of teeth. If a mandible is shifted to the left, causing class II dental on the left and a midline shift the same way, then using a unilateral class II elastic on the left and an anterior cross elastic can be very effective...but beware of the occlusal interference that caused this in the first place, checking after the mandible is centered to do a quick equilibration.

92. Explain the situation and methods used to ‘walk the midline’.

The situation is the midline in one arch is ‘off’ to say the right, and there are spaces on the left (assumed class I cuspid). Chain is used from UL6-2 to close the anterior space, then UL6-1, then UL6-UR1, then usually upper 6-6. This the changes are made every 4-6 weeks in most cases, giving it the name of ‘walking’ the midline. To avoid detorquing of the incisors you should be using either 18x25N or 19x25ss with a bracket torque offering a retraction limit in the range of tooth movement.

93. Explain the reasons why a mandible will “swing open” during treatment mechanics? Why is this considered bad orthodontics? How can you avoid this from happening in your patient?

When mechanics cause extrusion of the molars (and/or incisors) this can push the mandible down and a rotation ‘back’ will result since the mandible hinges at the condyle. Opening the bite (skeletal) increases class II and therefore works against your effort to correct this most common malocclusion. The change is also considered unstable in retention, the muscles will close the bite back down, causing relapse of your correction.

To avoid this from happening, use as little class II elastics and cervical headgear as possible, and do not advance lower incisors against an upper incisor in your class II mechanics or even alignment stage. Use wherever possible, closed coils or loops within the same arch. Use more skeletal anchorage to control the vertical dimension.

94. When retracting upper cuspids, what problem can you have when using a bracket with Roth-type torque? Why is this problem improved when using Li torque brackets?

The root ‘rubs’ or is forced into the labial cortical bone, slowing or even stopping retraction of the cuspid. Li torque will generally prevent the crown from moving lingual and the root buccal, keeping the root away from the labial cortical plate of bone, assuming you do the retraction on 19x25ss archwire.

95. When using a tapered upper archwire, explain why you should also use an Li torque bracket.

The archwire being tapered in the cuspid area will force the crown lingual and the root labial. This would not be resisted by a Roth Rx bracket, even with 19x25ss, but will be resisted generally by an Li bracket. We do not know for sure in any given case since we do not have RBT templates for the cuspids.
96. When using a TPA for anchorage, explain why you should use a more tapered upper archwire.

The TPA, if expanded, which it usually is and should be to engage the buccal cortical bone, will expand the archwire size and this expansion will be seen in the cuspid area. A tapered upper archwire will compensate for this.

97. Explain the reasons why upper incisors may detorque during retraction. How is this possible if you are using LI bracket torque?

The line of force is at the level of the crown and thus the tooth will naturally ‘tip’ (called detorquing when referring to tipping of the upper incisors). If the Range of bracket torque is still in the round wire range, regardless of which bracket you are using, the tooth will tip, not resisted by the archwire and bracket combination. If after the retraction limit is reached, the incisor is still tipping (beyond the retraction limit inclination), then there must be flexibility in the archwire, not stiff enough to maintain the incisor inclination as bodily movement is resisted by the lingual cortical bone. This flexibility is most evident when using a T loop, but can also be seen occasionally with a KH loop.

98. Explain how to recover from upper incisors that detorqued during retraction.

It is very difficult to recover by holding the crowns from moving forward and push the roots back. The best approach is usually to push the incisors forward again to the proper inclination (with open coil), then re-retract a second time, trying to correct what caused the detorquing the first time.

99. Explain the possible problems and solutions when class II ‘reappeared’ during upper incisor retraction with a T loop.

Either the molars come forward (molar anchorage loss)
OR the mandible was pushed back by a premature contact of the incisors.

100. Explain the forces applied to the teeth when using a class II elastic. How can this be a problem in class II mechanics. How do the forces change when the mouth is closed or open?

The molar feels extrusion and a forward force at the level of the crown (tipping until the archwire engages the mesial and distal ends of the tube. The lower arch, all the way to the lower incisor, feels this forward movement and the lower incisors tip forward until the advancing limit of the rectangular archwire and bracket torque engage. The upper anterior feels an extrusive and backward force at the level of the crown (tipping until the archwire engages the rectangular slot).

The problem is the clockwise rotation of the occlusal plane, forcing the mandible to ‘swing’ (from the condyle) down and back, causing more class II. PLUS The upper incisors tipping back causes loss of anterior overjet, especially since the lower incisors are tipping forward at the same time. Extrusion of the upper anterior teeth deepens the bite, also causing loss of anterior overjet as the lower incisor now contacts further up on the cingulum (which is thicker). Loss of anterior
overjet stops the correction of the class II dental, often forcing the lower jaw back and/or to swing open.

As the mouth opens, the force applied to the teeth (molar and incisor) becomes more vertical, making the unwanted ‘bite opening’ mechanics increase.

101. Why are cleats applied to the lingual surfaces of the incisors in dental open bite cases. When do you place them on the lower teeth? When do you place them on the upper teeth?

To remind the tongue (and patient) not to contact the lingual of the incisors. Myofunctional training. In general, we place them on the upper teeth as the tongue usually protrudes ‘up and forward’. BUT if there is an obvious low tongue thrust (lower incisors under-erupted or class III dental), then it is just as easy to bond cleats to the lingual of the lower incisors.

102. What should you look for when you see molars with a TPA tipped mesial? What are the possible problems and solutions

Usually this means that the loop was made facing mesial (lab made) and the tongue hits the loop, pushing it up, and causing the mesial molar crown tip. Remove the palatal bar and replace it with one where the loop faces distal. You may NOT recover from the molar crown moving mesial (more class II, loss of molar anchorage). Your only solution may be extracting a molar or skeletal anchorage to push them all back.

103. When retracting cuspids on round wire, what is the problem with cutting distal ends?

This means the archwire is also retracting and the incisors detorquing (or molars advancing) STOP, either place a stop mesial to the 5 bracket or change to retract the cuspid on 19x25ss archwire.

Bone Remodeling

104. What does the term “bone remodeling” refer to?

Changing the shape of the cortical bone to allow the [incisor] roots to advance. Resorption and apposition of bone in front of the advancing tooth is necessary to maintain the bone around the tooth.

105. Sla brackets were designed to add anchorage to the lower arch when using class II elastics. Explain how this may turn into [lower labial] bone remodeling with the lower arch moving forward.

The concept for increasing anchorage is that the cortical bone is the limit of tooth movement, so this can be used for added anchorage by knowing when the tooth tipping changes to bodily movement using RBT templates and a dental vto. BUT, with persistent class II elastics and/or a low force applied, then [labial or palatal] cortical bone can be remodeled, allowing tooth movement beyond the intended maximum position.
106. If you plan on [lower labial] bone remodeling in your treatment plan, what additional record(s) should you add. Should there be any changes to the informed consent?

If possible, add a CBCT (cone beam CT) scan, 0.3mm cut resolution, to document the labial cortical bone before and after. Also, be sure to have a good photo of the gingival tissue in front of the lower incisor teeth to establish a baseline for later comparison. The informed consent could have the possibility of gingival recession and bone/tooth loss.

107. What are the limits to orthodontic tooth movement?

*Without corticotomy, where the incisor shows severe skeletal resistance.*

*With corticotomy, somewhere in the extreme skeletal resistance range.*

108. Is it possible to remodel (resorb) palatal cortical bone with orthodontic tooth movement? How.

*YES. Apply low force, 150 grams per side or less with the incisors moving bodily (supported by the retraction limit and a stiff archwire).*

109. Explain why the coil or T loop reactivation schedule is important in determining if bone remodeling will happen or not.

When using nitie closed coils, you need to know when the transition between 200 grams (no bone remodeling) and 150 grams or less (bone remodeling). For instance, a 12mm closed coil activated 8mm or 200 grams will become 150 grams after 4mm of tooth movement without reactivation, AND THE tooth movement will continue for another 3mm at this lower force with bone remodeling.

A T loop has the higher (no bone remodeling) force in activations greater than 1/2mm of the vertical legs. From zero activation to 1/2mm, the force is 150 grams or less, and bone remodeling is possible.

110. Why does having the concept, prediction capability, and tools for cortical bone remodeling reduce the need for corticotomy.

*Skeletal (cortical bone) resistance can now be overcome by bone remodeling where previous to this ability, only corticotomy was capable of extending tooth movement beyond the cortical bone limits.*

**Finishing**

111. When should a fiberotomy be done and how do you do it?

*Whenever there are moderate to severe rotations that a patient can notice and say their teeth have 'recrowded' after the brackets have been removed. These noticeable rotations should have the soft tissue removed from the root surface and allowed to heal back to the new 'straight' position, eliminating one of the causes of recrowding (tooth rotates back due to the*
force applied by the elastic tissue...which supposedly will exchange cells in 6 months to reduce this force of the circumferential fibers).

Use a 12 blade to cut in the sulcus, 360 degrees around the tooth, to the depth of the bone.
Note: Edwards, in his study on this circumferential supercrestal fiberotomy, made his cuts through the papilla, but McGann thinks this gives more pain and risk of papilla blunting.

112. When and why should stripping lower 3-3 be done for retention purposes?
To reduce the inter-canine width, one of the main causes of lower incisor relapse after orthodontics, and to make flat contact points on the teeth to prevent “slipping” into a rotated condition again.

113. Why is the shape of the lower incisor important when planning stripping of interproximal enamel?
Tapered shaped teeth (wider at the incisal edge than at the neck of the tooth) are more favorable for stripping than incisors that are the same width from top to bottom...more enamel can be removed from a tapered incisor.

114. At the start of finishing, you notice a tooth is ‘visually rotated’. How do you determine if this is an under-correction or over-correction? What should you do in each situation
Compare the starting study model to determine if the direction of the rotation is the same or opposite of what was there at the start. If it is the same direction as the start, then this is an under-correction and should be fully corrected before deband...easiest way to do this is to change to a rotation bracket. More difficult is bending the archwire (2nd order end) to make the correction.

If the tooth is over-corrected, the direction of rotation is opposite of the start, then you decide if you want to leave it so the tooth may ‘relapse to straight’ or if you want to remove the over-correction since it may be noticeable to the patient. Maybe tie only one of the tie wings to ‘loosen’ up the rotation correction.

115. Explain what to look for and how to correct dental midlines when the cuspids are class I on both sides.
If the cuspids are class I, the first requirement to have good midline correction, then
a) Look at the horizontal overjet of the cuspids upper vs. lower to be sure it is the same right vs left. If not, then anterior cross elastic MAY be the solution...remember that the elastic pulls on both sides, so if the upper midline is centered, you cannot use this method
b) Look at the tooth inclinations...sometimes the incisors are all ‘leaning to the left”...causing the midline in that dental arch to be off to that side.
c) Look to be sure the teeth are the same size on both sides. Most common is a lateral incisor on one side being larger than the lateral incisor on the other side (upper). Strip to reduce the size of one or use open coil to open more space for the small tooth that will be restored to normal size after ortho.
d) If you want to shift ONLY one arch, usually the lower, to one side, then “skew” the archform to that side (018ss not 18x25N).

e) If all else fails and the patient is insistent on correcting the midlines, then consider unilateral skeletal anchorage (section 3 training)

116. Describe the marginal ridge discrepancies you will see when using “CIIE, UP, or TipD” variations on 6s and 7s. Should you do anything about these in finishing? When you have a ‘tipD”, the crown is tipped distal, the mesial marginal ridge will be “sticking up” and the distal marginal ridge will be “down”. It is ok to leave these to “settle” in finishing, but if it bothers your eye, then consider changing these bands to Roth bonded brackets and leveling with 016N or similar size archwire.

117. What are the possible consequences of NOT diagnosing a tooth rotation at the start of treatment? You find the under-correction LATE in treatment, so the rotation, even if corrected, is not fully corrected for very long and is unstable in retention. BEST is to diagnose the rotation at the start, fully correct the rotation in the alignment wires early in treatment, and then hold it there until finished...then your retention experience will be better.

118. What is the significance of 'tissue bunching' in a [closed] extraction space? What procedure should you do to improve retention? (explain details)

The soft tissue is ‘elastic’ and will want to push the teeth apart in retention. An extraction space fiberotomy (McGann) method is to make inverse bevel incisions buccal and lingual, leaving the papilla shape...then remove the interproximal tissue with a curette. Push the papilla back to place, do NOT suture, do NOT use perio pack. Let the interproximal tissue granulate in.

Patient Management

119. What is wrong with using the words “midline” and studying the dental midlines in front of the patient?

The patient then becomes focused on the midlines and since this evaluation is not exact, may always think the midlines are not right. (ortho tx is imperfect)

120. What should you do when a patient becomes aware of dental midlines and complains?

Take a frontal ceph to check for skeletal asymmetry and give them an anterior cross elastic to transfer responsibility of correcting the midline to the patient.

121. Why is a case with straight teeth at the start of treatment more difficult than a case with crowded teeth?
The patient does not see improvement, and is unable to see the VALUE of the orthodontic treatment.

**Section 3**

122. What is scheduled for section 3 training? *Multidisciplinary treatment, including the addition of the “easy” skeletal anchorage locations, managing TMD problems, managing Perio problems, and more growth.*

123. What additional materials are needed for section 3 training?

The section 3 education kit, which is mostly materials to learn skeletal anchorage. If you have surgical skills, then you should get this kit to do the hands-on exercises since YOU will want to be the one offering this service. If you do NOT like surgery and plan to refer the skeletal anchorage to a surgeon, you are not required to get the skeletal anchorage materials, but please carefully watch the others do the hands on exercises so that you can know how to communicate with your surgeon.

124. What do I have to do to prepare for the final exam?

a) Review and learn the questions in these expectation sheets. The exam will be composed of questions taken directly from the expectations.

b) Also, you need to document 2 cases you are treating. Take photos every appointment, so you can make a powerpoint presentation of the case at the end. If you are not finished with the case, then you will be taking ‘final’ records and doing overlays to show what has happened to date.

125. What do I have to do to prepare my two cases for session 12 presentation?

You will be receiving a book at session 10 explaining how to present the cases, so for now, please be organizing the records of the 2 cases you plan to present. These records should include progress photos, progress x-rays where possible…as much information as you can gather to make a complete ‘story’ of your [first] 2 cases.

The two cases will be presented as a powerpoint presentation, given to the instructor (memory stick) to review at session 12 and possibly presented to the class. LOOK at how McGann presents his cases and follow that format, although you are not expected to make that quality of a presentation.