Biological Width Invasion or Allergy?

Patient with one-year-old crowns presents with sore tissue. What do you think is going on with this case? Log on to the message boards of Dentaltown.com today to participate in this discussion and thousands more.

Patient is healthy adult female with one-year-old crowns. She referred herself to a periodontist because her tissues wouldn't get any better. All-ceramic crowns were done by a dentist whom I don't know and nothing was ever done to treat the erythema. No past history is known other than she wanted some cosmetic treatment done.

Figure 1: Initial presentation. Patient was placed on PG and was seen April 2008.

Figure 2: No improvement, did case today. Heavy bleeding and soreness. Probing depths are 2-3mm with heavy, heavy bleeding. Crowns were done to apparently improve aesthetics, but there is no rise and fall of laterals with centrals, just straight across. Laterals are as long as centrals and are longer than canines.

Figure 3: X-rays today.

Figure 4-5: Open margin UL [upper left] FPD [fixed partial denture], but tissues are inflamed on all max teeth anteriorly.

Figure 6: After 2-3 carps 1:100,000 lido/epi, still heavy bleeding almost so you can't see the roots. Sulcular incisions and mini-reflection. Noted bone loss over roots.

continued on page 82
Figures 7-8: Ledged margin #10 M which was placed straight-across and does not rise/fall with scalloped bone architecture.

Figure 9: Root planed all teeth and smoothed crown margins with diamond burs to open embrasure spaces slightly, also etched with tetracycline. Did not perform any bone removal along the facial aspects.

Figures 10-11: As smooth as they are going to get here, also root planed into interproximal regions-smoothed overlying facial bone with osteoplasty only.

Figure 12: Closure.
Figure 13: Smile photo

Conclusion: So what do you think caused this? I know what did, but I would ask you. This is today’s quiz. Hopefully tissues will become pink and she will either need no treatment other than new FPD 10-12 or will need all-new crowns with better scallop and not placed so close to bone, which will cause further bone loss.

Biologic width invasion is my vote.
I’ve got to say, you have some heavy skill to do that without being able to remove crowns/or temps.
I would like to see a video on how you did that – polishing without vertical access – I have tried. Definitely not easy and on that many choppers at one time. You’re the man.
Thanks for sharing and taking the time to photograph.
Please post photos of suture removal post-op.
I’ll vote for a combination of cement sepsis, the open margins, over-bulked margins, and some BW [biological width] invasion. ■

My vote is cement problems and poor marginal adaptations.
If you look at the margins on the X-rays, you can see a definite line and in some cases, they do not match up properly with the prepared tooth margins.
Nice glass, but poor techniques.
Excellent case Dr. Erikson. ■

Glass is so easy, but to get a truly great result is very difficult. I thank all of you guys, especially my buddy Danny Melker for making me realize that the gingiva is way more important than the glass. If glass breaks we redo it. If we neglect biology we interfere with the patient’s health (I believe that the chronically infected gingiva is the same as any bodily infection) and sometimes their comfort. ■

I was wondering about BW invasion. There appears to be quite a lot of root surface available for attachment before getting anywhere near bone. I guess I don’t understand the mechanism of BW invasion in this case if that’s what it represents.
Somebody should rattle Danny Melker’s chain on this. With his knowledge of biology, I’ll bet he could shed some light on this case. ■

Chip: I don’t have any post-op photos yet. When they come, they can be posted.
My diagnosis of this case is in fact invasion of BW. There was probably bone right next to the crown margins when they were placed, which is the key to this discussion. Following time, the bone remodeled and she developed pocketing with heavy bleeding. Of course this is an educated guess. If the tissues respond favorably, then we will know this is true. There could be some form of allergy as well, but I very much doubt it. ■ Scott

Absolutely cannot be BW invasion. Impossible! “Why?” you ask. There are still CEJs [cementoenamel junctions] remaining! How in the world can it be BW invasion when the crowns have not gone past the CEJs?
Thank you. ■ Danny Melker

In some cases of altered eruption the CEJs are still at a distance from the bone that is inappropriate. The bone never receded apically to the normal level. BW invasion can easily happen in these cases... even if the margin is coronal to the CEJ.
Not impossible! Not by a long shot. ■
Correct statement! The problem however is that if there is still CEJ present between the margin of the crown and bone there cannot be BW invasion as there never is attachment of tissue to enamel correct?

I think we need to review exactly what the BW is. There is a sulcus which is not part of the BW. The junctional epithelium does lay on enamel for about 1mm but is a very weak adaptation of epithelium to enamel (glycoprotein attachment, sticky). The connective tissue of 1mm is on root. The CEJ determines the BW related to bone. If there is still a CEJ below a crown than it is theoretically impossible that there could be BW invasion. In AAE and APE any tissue on the enamel is unattached. So put the above biology together and BW invasion really would be impossible. Cement sepsis, etc. would be a better option with the case above. I am only stating biology facts and no subjective thoughts.

From the information provided, it seems that you can indeed violate the biologic width with a crown margin and still be above the CEJ. The invasion is confined to the junctional epithelium but still violates the 2.04mm. Is this correct or am I missing something? Danny?

If the BW is normal in an adult violation of the BW indeed could happen by intrusion into the junctional epithelium as that is part of the BW. With that said look at picture #7, and you will notice sufficient space between the crown margin and the CEJ. When tissue looks the way it does in the above case I think open margins and cement sepsis not ruling out BW invasion though. I believe that if chlorhexidine was used in the pockets the tissue would have turned pink for a while.

Alternative treatment. Initially when dealing with such inflamed tissue I like to use chlorhexidine subgingivally weekly to control the shrinkage of the tissue before I consider surgery. Notice in the final photo, how much inflamed tissue is still present. Black triangles should be present upon healing as the tissue shrinks. Just alternative to initially entering surgically. I don’t like to use any granulation tissue in a flap.

I haven’t kept pace with the entire discussion, but I know that I placed her on PG before the surgery and the tissues remained inflamed. I do not know the history because I am in North Carolina and the previous work was done in the southwest. She had seen the new dentist here who apparently smoothed the margins for her and saw no improvement. There was no cement noted upon flap elevation and the tissues were severely inflamed. Oral hygiene has always been impeccable with this patient, according to her reports. Maybe more to come when she is seen for a post-op soon.

I wish I could discuss this case in person. First, notice that there is not significant inflammation on the buccals of #8 and #9. Biologic width invasion? I sincerely doubt it. Second, notice where the most inflammation is, interproximally. To go a step further look at the radiographs interproximally and location of the margins on the mesial of #8.
and mesial #9. Not too deep but the margins are open. I feel very confident in saying there is no concern for BW invasion but rather open margins with cement sepsis and APE (crappy tissue) causing crappier tissue to occur. Look where the inflammation exists. Not too much on the buccals but more interproximally.

[Posted: 7/24/2008]
Infringement on interproximal tissue doesn’t have to be BW invasion. Notice the long contact areas and blocky appearance of the crowns. Look at the X-rays and how the porcelain fits and the emergence profile. I could on and on about the restorative causing the tissue problem but it would not be related to BW invasion. ■

I did not do subgingival irrigation, just with a TB and rinsing. I did, however, smooth all the restorative margins as best as possible with loupes and a headlight, using fine-diamond burs and a handpiece. Hopefully this will make a big difference. I have not heard from (the patient) yet and it is going on almost two weeks, so I guess either things look better or she just hasn’t looked at it yet. ■ Scott

Danny, what would be your protocol for treating this if the subgingival irrigation did not accomplish what you had hoped?
Can you tell us what you would expect from the general dentist and what you would do (I think I know the answer but I thought I would make sure I am not slipping)? ■

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As I said, I hate typing so there is a lot missing in my thought process. High lip line? Will the patient have the case redone? Did Scott discuss possible unaesthetic result with black triangles? Cores if necessary provisionals and surgery, that would be my plan with all porcelain restorations and supragingival margins! The lip line is critical! Show me a picture of the smile and that will tell us a lot! This case should have been a surgical case initially. Look at the crown lengths of the cuspids.

I’ll second Chip’s response!

Have you noticed, guys, that there are two teeth missing? I think it was two laterals, or possibly right lateral and left central (judging by the length of the roots). This lady probably had ortho to move left central mesially to close diastema (thus its slight root angulation), or maybe it moved by itself and she still had diastema, which was attempted to be closed by the crowns (You would find it out if you communicated with previous doc).

It would be nice to have smile pictures, as Danny said and also some X-rays of the posteriors for the better treatment planning, but here are some thoughts.
- Place yourself in a Spear-Kokich mood.
- Take all the glass/PFMs off (open margins won’t close by themselves anyway).
- Put temporaries, leaving diastemas.
- Move the “centrals” to align both crowns and roots (taking care of the diastema issue). This will also help bone issue somewhat. Adjust temporaries when you reach a right spot, closing the diastemas if any.
- Wait; calculate time co-ordination between perio surgery at the temporaries stage and ortho treatment and the times that you have to wait after each.
- Then restore permanently.

This lady deserves the best. I guess there is no way you can avoid communication (written) with the previous doc.

I wish you the very best and thanks for sharing. Galina

I posted her 10-day post-ops. Her tissues are improving. Told her that the papillary regions will take some time and may fill in, but that she will need new crowns. She cannot afford to do this, but I am referring her for a new GP consultation now just as a baseline exam.

I believe the subgingival irrigation would have helped, but not that much. I feel strongly that flap access was needed to smooth crown margins and roots. I cleaned out so much crappy, bloody tissue during her surgery and placing a syringe into her tissues would have been difficult. Plus her roots and crown
margins were all overhanging and rough. She does need new crowns, which will be the only way her tissues will get completely better. Perhaps some long-term provisionals would help, but she can’t do it now.

Ten-day post-op, tissues are getting pinker. Still some erythema. Told her to begin using soft-TB and PG. Also advised her she will need new restorative treatment.

Your comments and opinions are welcome on Dentaltown.com. To participate in the discussion above visit www.towniecentral.com and type in “Biological Width Invasion or Allergy” into the search text box and click, “Search.”

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