Implant Retained Tissue Supported Maxillary Complete Denture

A case presentation and discussion among dental professionals on the message boards of Dentaltown.com. Can four implants support a maxillary denture? This case will prove it in beautiful detail. This should get you excited about implants. Log on today to participate in this discussion and thousands more.

Patient of record is a 63-year-old man with non-contributory medical history and c/o “My upper bridge is loose.” Clinical exam shows: Maxillary pfm [porcelain fused to metal] bridge with abutment teeth, numbers 4,5,9,11,12 and pontic, numbers 6,7,8,10,13. Patient also has #2-MOD composite, #3-rctx [root canal treatment] and Captek crown, and #15-OB amalgam. Mandibular teeth, numbers 18, 20-29, and 31. Bridge was removed bi-digitally and all abutments were seen to be moderately to severely decayed. Treatment options were discussed including implant retained and supported fixed prosthesis and full maxillary denture with or without overdenture options. Patient expressed disinclination toward extensive clinical treatment, and we developed a plan to address his dental restoration with an implant retained, tissue supported maxillary prosthodontic appliance.

Figure 1: Patient with pfm bridge in situ. Bridge had been inserted by non-me dentist seven years ago.

Figure 2: Occlusal view of maxillary arch.

Figure 3: At time of extraction, 3-i external hex implants were placed at positions corresponding to teeth numbers 4,7,10, and 13 approximately. Numbers 7, 10, and 13 were 4x13 mm # 4 was 5x13mm

Figure 4: Patient was initially provided with an interim full denture.

Figure 5: After osseointegration had proceeded, healing caps were placed and a wax up including the cast metal framework was tried in to ascertain/ confirm VDO [vertical dimension of occlusion], occlusal considerations.

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Figure 6: Cast showing design ideas for fabrication of framework.

Figure 7: Maxillary arch with locator abutments in place.

Figure 8: Tissue side view of the completed prosthesis after chairsidt placement of 3-i locator “females.”

Figure 9: Occlusal view of completed prosthesis.

Figure 10: IC view of prosthesis in place. Retention with the least retentive females is excellent.

Conclusion:
This case took just under seven months to complete. The patient is pleased with the appearance, comfort and retention of the denture, and is very happy about the open palate. I hope it lasts a long time. I'd like to credit Townie Bob Henkel for providing me with his ideas on this subject including some very useful images.

Just so everyone knows, Peter and I had discussed a way to potentially bring patients into implant prostheses, with minimal costs. I had a case very similar to this a number of years ago, and gave Peter some photos of what I had accomplished. Splinting all of the implants together in the maxilla by way of a bar is always desirable, sometimes just not financially feasible for the patient. All of the support is borne on the tissues, and retention comes from the
implants and locators. A cast metal framework within the denture gives much added reinforcement to the palateless denture.

I think you did the patient an excellent service...and is there a kickback for all of my “intellectual involvement” ■ Bob Henkel

jmaya
Posted: 11/14/2006
Post: 6 of 35
Total Posts: 6249

Nice case. I particularly like the lack of perfection in the denture set-up and wax-up.

Why didn’t you open the bite in this case? The overjet could have been reduced preventing the early wear of the plastic teeth that will most probably occur. ■

vulgar antagonist
Posted: 11/14/2006
Post: 7 of 35
Total Posts: 2002

Thank you so much jmaya. Imperfection isn’t without its merits. I determined the position of the teeth relative to the patient’s lips – support and amount of teeth exposed when speaking/smiling. Although I determined the VDO and tooth position based on a protocol I use for most of my denture patients, I gave some account to the VDO and tooth/lip position of the patient’s pre-extraction dentition (mounted, articulated casts). The patient and his wife had expressed their dissatisfaction with the amount of maxillary teeth showing with the fixed prosthodontic appliance.

Opening this patient’s bite further would have been excessive, and reducing the overjet might have caused more strain on the implants in protrusive excursion, as well as failing to provide the correct lip support/appearance. As it was, the patient functioned quite well for about six months with the full denture (no healing caps/abutments) with the exact occlusal set up we later used in the final appliance.

I think I’ll stick with my advice resources for now. ■

drbean
Posted: 11/14/2006
Post: 8 of 35
Total Posts: 2816

Were there any draw considerations with implant alignment? It looks like there could be, but it might be the angle of the photo. Either way, you’ve got a happy patient that didn’t spring for a bar overdenture and should hopefully reap the benefits of splinted maxillary implants.

I like the provisional denture as well and just have a clear duplicate for the final impression. If you have a happy patient with the temp than the case can go from start to finish in three months or less (assuming you don’t use a metal framework in the lower...two months)?

You already know your vertical, tooth position, shade, form, etc. which saves so many appointments.

Great work. ■ Jackson

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Thanks Jackson.
There were absolutely no “draw” issues – I think the tissue-side picture is deceiving, because the abutments were close to parallel clinically. Again thanks for your input.

Peter Devlin

I have done a ton of these cases and each one turns out great. I think this is a good service for the patients who desire better retention from upper dentures and do not have a ton of money for a hybrid or fixed. Nice job.

John Cannariato

And so much more low profile that the IO [inter-occlusal] space considerations become less of an issue. Has anyone ever tested the rigidity of the prosthesis to see if we are truly rigidly splinting the implants? I don’t know why I’m having trouble wrapping my brain around that but it surely benefits more than a metal-free upper.

Thanks for sharing and taking the time to post.

Jackson

Trust you to bring that up Jackson...

The rigidity of the prosthesis is determined by the design and choice of materials (am I sounding familiar here...)

When making the casting for these, make sure you instruct your lab to use the best quality of material like a Vitallium 2000. I use a German brand that is specifically designed for this kind of framework. If your lab uses a non suitable alloy, you could experience a lot of flex and fish-tailing and we all know where that leads.

Also, the palatal design of the case must reflect the strapless design in terms of reinforcing the palatal structure of the casting. This has to be done in the waxing stage into the matrix of the setup (somebody showed this here quite nicely not too long ago). At that stage you also place the retainers for the teeth in an ideal rather than assumed position.
Good Job, the patient will have years of good use with only the occasional reline or replacement of locator parts.

Peter,

Excellent case! I had a woman come in to the office a couple of months ago with one of these done by a prosthodontist back east. It was 10 years old. He had placed the males directly into the denture and they were worn out. I called him and he explained at the time they didn’t have the metal housings available. I decided to place metal housing since the denture fit so well. It took a little “grinding” to get them to fit but I did one at a time and everything went well. Now we can replace the males very easily as needed. It didn’t cost a fortune and she was very happy. I learned a lot just fiddling with the case and I’m anxious to start doing them myself. In this case he had placed six implants but only activated four. Two of them still have healing caps on them which act as stops and could be activated if needed; I thought that was a great idea. ■ Dan Boudro, DDS

Dr. Cannariato, thanks for looking at my case. I wish I had a lot more of these to do because they are interesting. I love your quote about increasing the overjet or decreasing the overbite.

Herr Mohr, thank you for looking at my case. Any input from you is highly valued. I did specify Vitallium 2000, but only because I always do, not because I really thought about the physical properties.

Dr. Boudro, thanks for looking at my case. It sounds like you are more than ready to do a few of these.

Again, thanks guys. ■ Peter Devlin

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Again, thanks guys. ■ Peter Devlin

Dr. Shariati, You are correct. More implants are definitely recommended. When I asked Bob Henkel about a case he had mentioned doing, he was very careful to remind me that a bar, and/or more implants would be much better, but that he had had some (5+ years) success with a denture similar to the one I have shown. I think he used six implants though. We used the least retentive female elements there are, obsessed about the occlusion, discussed home care ad nauseum, and offered up a prayer to Appollonia. I hope it functions well for many years. Thank you for checking out my case. ■ Peter Devlin

Awesome result. Did you use an articulator and how did you determine the VDO?? Did you mount in centric relation? ■

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Pete, just out of curiosity, why did you choose locator attachments vs. ball abutments? Can someone give me some pros vs. cons on choice? I have a similar case that I will soon be restoring and I was planning on using ball attachments, but will go with locators if I can see they are better. Thanks, Bill.

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Thank you. Yes I did use an articulator (Denar mark-5). For the interim denture I determined VDO by going from the pre-extraction casts mounted in CO [centric occlusion]. For the final prosthesis VDO was determined with wax rims on acrylic record bases using a method for evaluating free-way space, lip support, and occlusion I learned in dental school - likely the same way you do it. At the stage where occlusion was being worked out in wax, I tried as best I could to establish a scenario where balancing occlusal contacts existed in all excursions.

I compared the 3-i locator to the ERA, Dal-Ro, O-ring and EDS and chose the 3-i because I liked its low profile compared to the others - 3.17mm compared to 4.85, 5.82, 6.4, and 6.22 respectively. They claim to allow corrections of up to 40 degrees between divergent implants. I like 3-i stuff, and I like my 3-i rep.