IMPLANTS
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Single Central Implant: From Dreaded to Manageable

By Dave St. Ledger (/spear-review/author/dave-st-ledger/) on December 11, 2015 | (/bookmarks/bookmark/38711)

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Not long ago, my periodontist and dear friend for 20 years, Dr. George Papasikos, called me on a case we were doing together: restoring a single maxillary central with an implant (https://www.speareducation.com/spear-review/category/implants) supported crown.

He told me he would like to use the soft tissue grafting techniques he saw in a Spear Study Club (/study-club) module with hopes of improving the emergence appearance and esthetics of the final outcome. You see, Dr. Papasikos formed a Spear Study Club with the assistance of Straumann and saw something that would help me maintain the tone of the soft tissue while fabricating the crown in conjunction with The Winter Lab.

With the guidance of the Study Club module, “Dave,” (https://www.speareducation.com/study-club/module-details/id/20) put together by the incomparable Dr. Gregg Kinzer (https://www.speareducation.com/spear-review/author/greggory-kinzer/) and Dr. Steve Ratcliff (https://www.speareducation.com/spear-review/author/steve-ratcliff/), and the skilled periodontal hands of Dr. George Papasikos, I would like to share with you the steps and the methods used to maintain soft tissue esthetics around an implant supported crown on a custom zirconia (https://online.speareducation.com/course/adjusting-and-polishing-zirconia-restorations) abutment after soft tissue grafting and an immediate implant on the dreaded “single central.”

Meet The Patient

Linda has been a patient of mine for 15 years. She is a hygiene queen, historically has little going on in her mouth, but for #9 having RCT and large bonding. I treated the tooth in 2006 with a Cercon (zirconia) post and core, and a Procera crown. I was never a fan of my choice after the fact, but the root was so dark. I really tried to soften the show-through of the free gingival margin. As years passed, she began to play with her teeth a little more, especially protrusive end-to-end. The out of position #24 did not help matters, and ultimately the mesiofacial aspect of the coronal 1/3 of the root fractured obliquely. Crown lengthening and restoring would have left an unpleasant gingival position. After some time, she came to terms with her changing parafunction, minimally wore an anterior bite plane, and eventually proceeded into vetting the aspects of implant placement with myself and the periodontist.

For the sake of brevity, please assume the following: The patient did not want a bridge of any sort or a removable option; her parafunction is reasonable, and her slide is not relevant to her complaint; she will be treated in MIP; the patient wears an anterior bite plane and the activity on the plane was used to track mandibular position; the patient is not a candidate for a sleep study; the patient does want a more ideal outcome despite a minimal gingival display.

Treatment Planning the Single Central

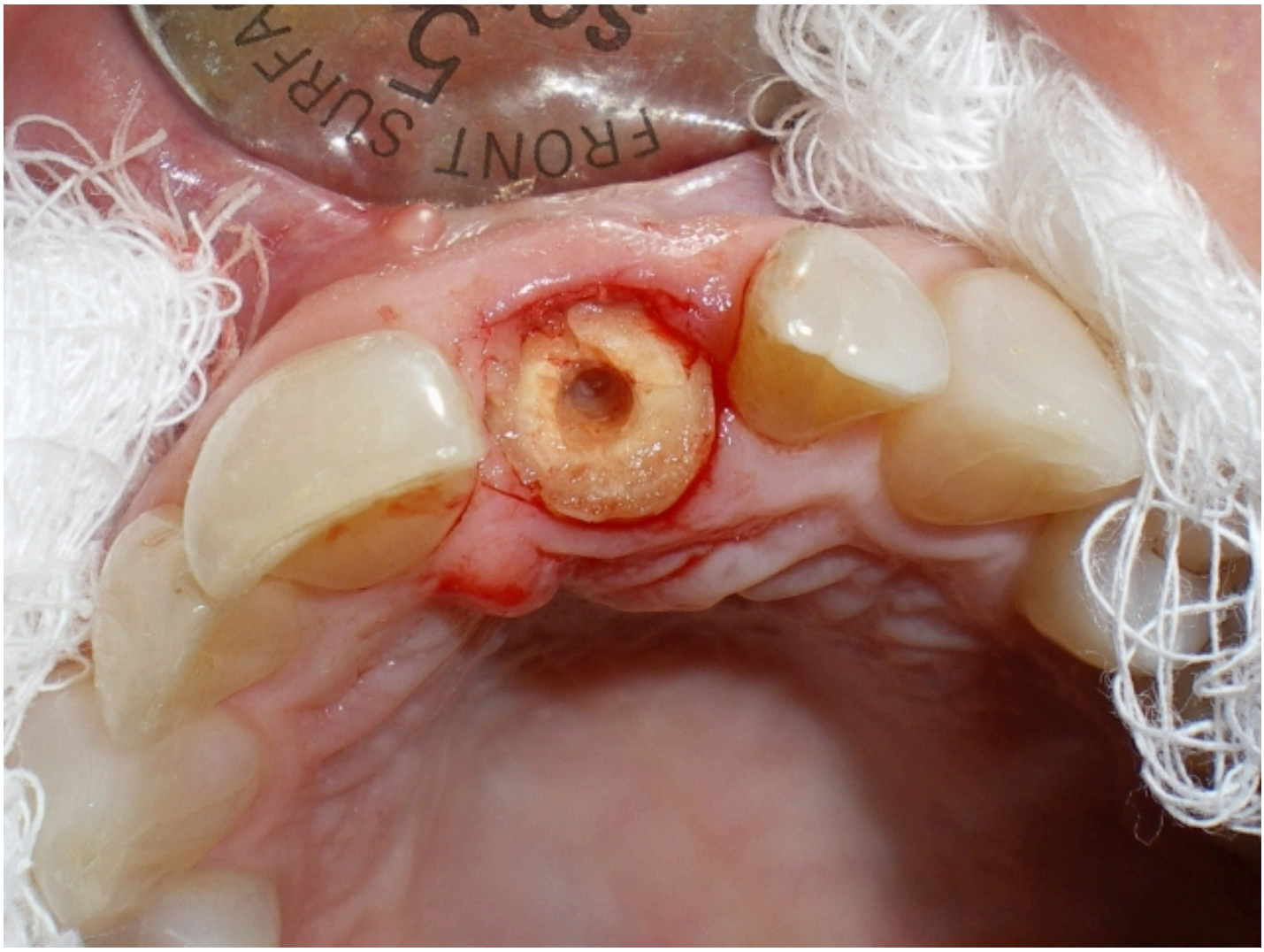
Once it was determined that an immediate implant could be placed, Dr. Papasikos used Study Club module No. 19 to plan for a connective tissue graft as well on the day of surgery. In October 2014, the tooth was removed and the implant was placed along with a bone graft and a connective tissue graft. What gets forgotten about, relative to the fuss we as dentists make about vertical changes in papilla height and gingival margin levels, are the **horizontal changes** that always occur. Often, after the fact of implant placement, you can develop facial concavities from the free gingival margin going apically that differ from when the tooth had its original profile. After this method of tooth replacement, the majority of horizontal resorption that may occur is facially relative to palatally (J Clin Periodontal 2004; 31(10):820-8). This may also lead to titanium shadowing and gingival recession or tissue moving apically.

The point of incorporating a connective tissue graft is to maintain soft tissue contours and emergence profiles, and "plump" the gingival tissue by adding volume and diminishing the chance of a concavity. This combined procedure method has been shown to:

- Create greater keratinized gingival widths
- Decrease probing depths
- Establish facial-gingival contours similar to adjacent teeth

Now comes the fun part. The key to this entire process is what happens going forward to preserve the contours of the soft tissue throughout until the final restoration is delivered. Options are as follows, alone or in some combination:

- Removable appliance ("flipper")
- Fixed appliance (bonded pontic)
- Custom healing abutment
- Immediate provisional



We chose a removable appliance and a custom healing abutment. There was not enough interocclusal space for a bonded pontic, and an immediate provisional was never an option for functional considerations. If you use a removable appliance, the pontic cannot engage the tissue but rest on the cingulum of the adjacent teeth. Valplast acrylic works very well here. In this case, the custom healing abutment is what will maintain the tissue position.

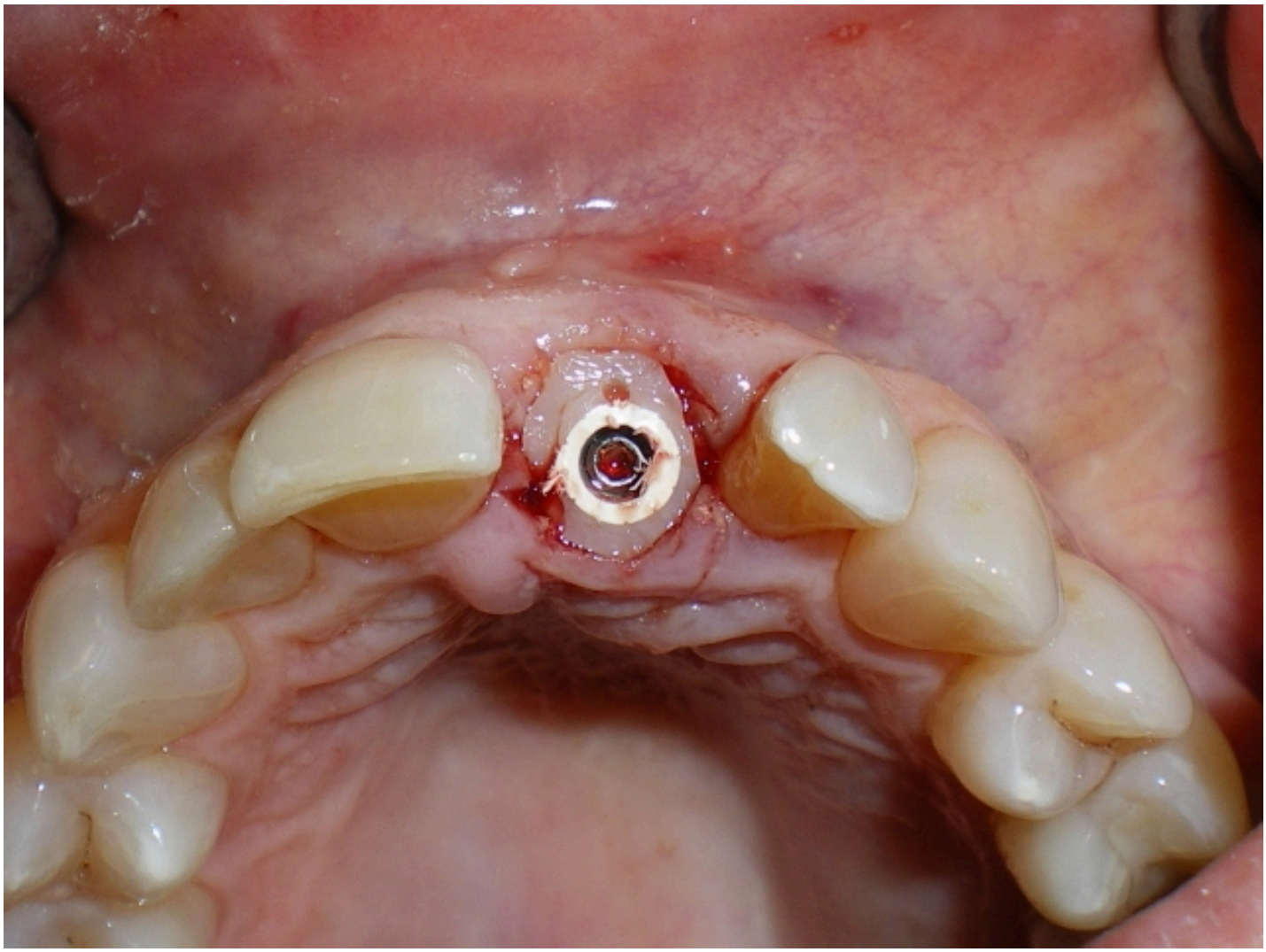
(Click here for more on implant abutments in the esthetic zone (https://www.speareducation.com/spear-review/2015/06/get-in-the-esthetic-zone-implant-abutments).)

It begins with the surgeon creating a custom healing abutment. The implant used was a 3i Certain 4 mm platform:

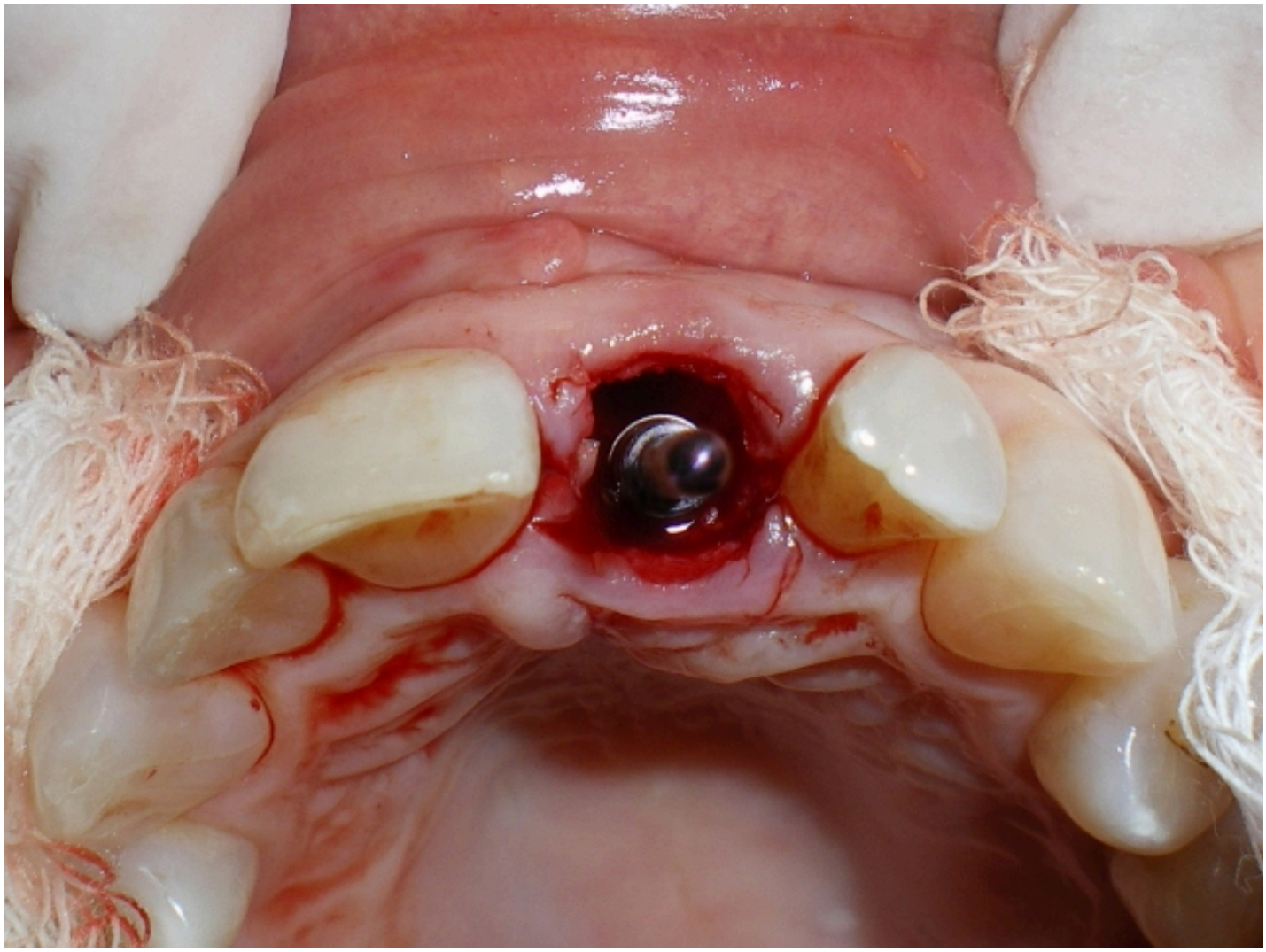
- A Performance Post was screwed onto the implant and resin placed into the new sulcus and bonded to the post.
- The post was cut back to the desired height and the screw covered.
- The CT graft may now be placed.
- The Valplast Nesbit device is delivered not engaging the surgery site.
- Four months is allowed to pass prior to testing the implant and moving to the next stage of maintaining soft tissue support with a custom provisional abutment.

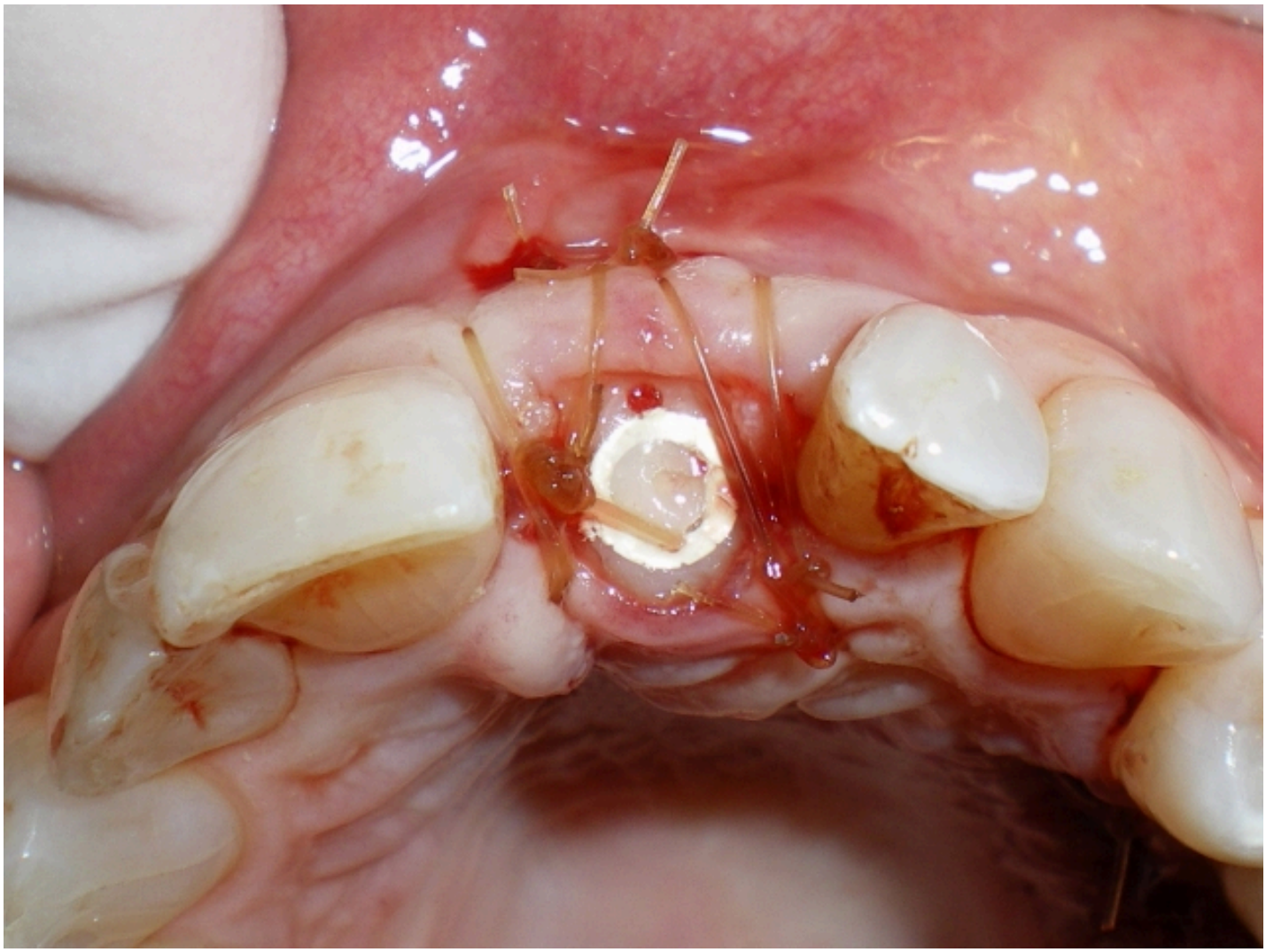
Implant Surgery

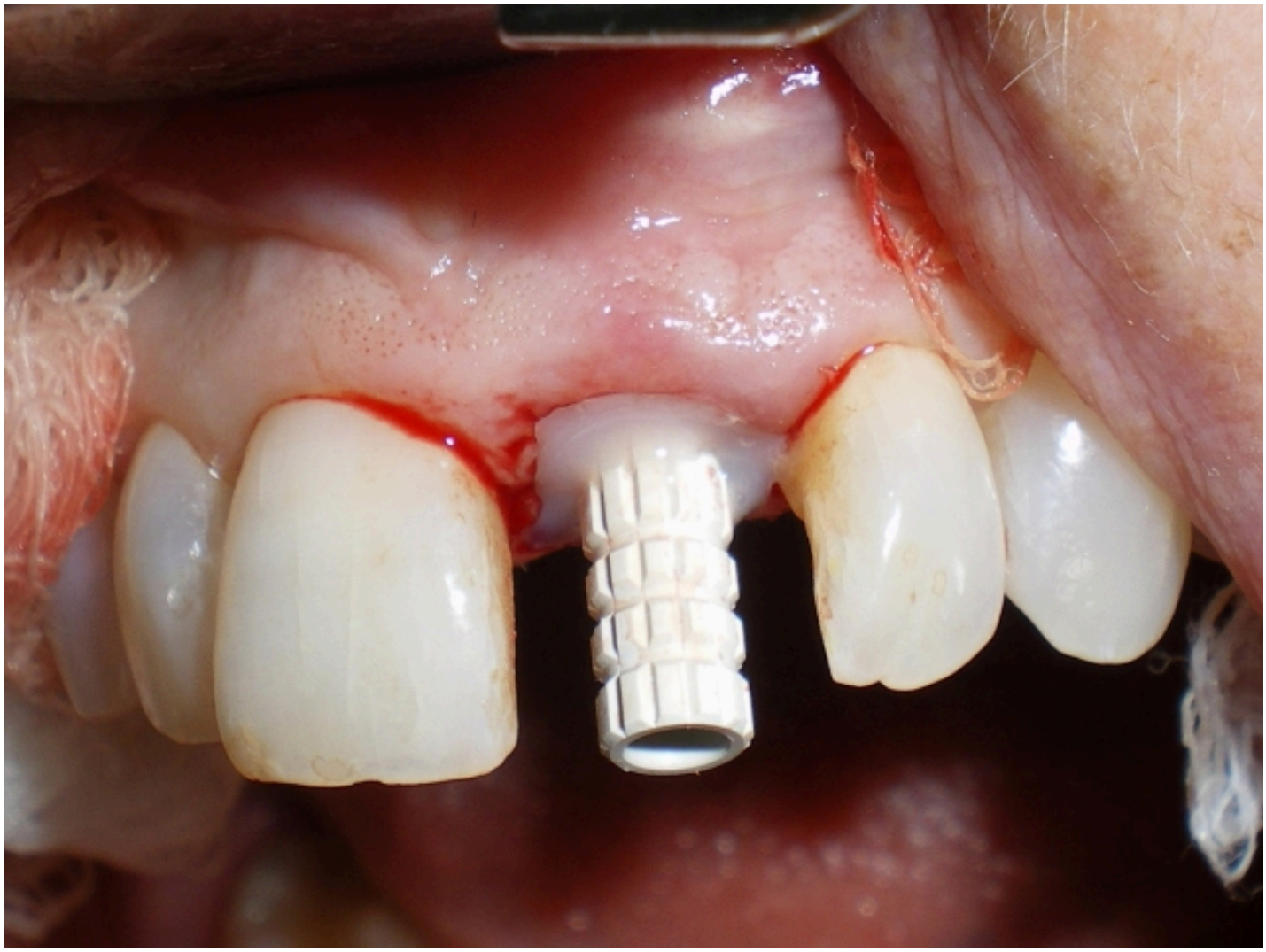
The following photos are from the October 2014 surgery.

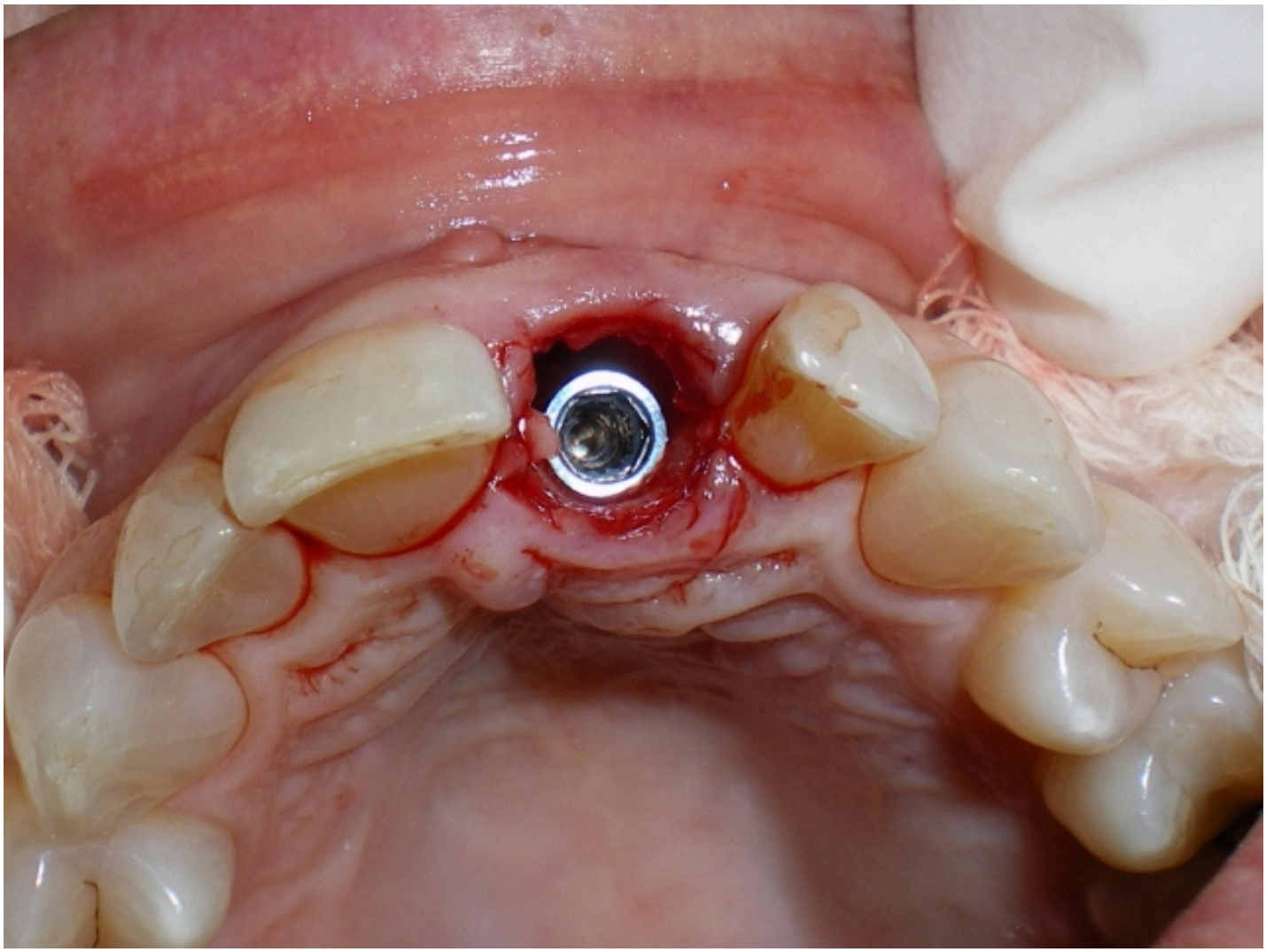



FRONT

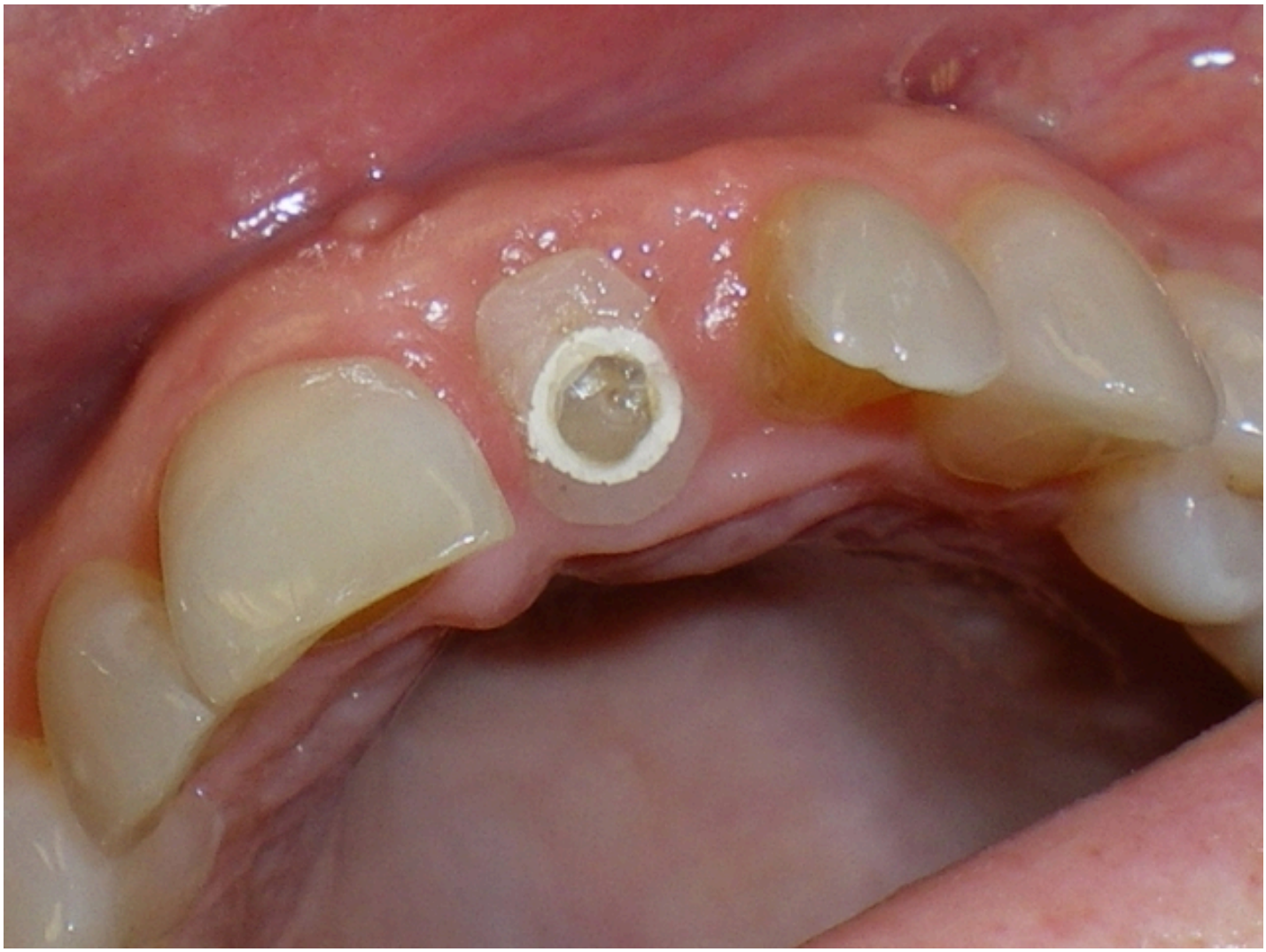








The next set of photos are from March 6, 2015



The Provisional

The patient is ready for the next phase. Notice the beautifully similar contours apical to the healing abutment. It is here that a custom provisional abutment and crown will be placed for about six to eight weeks.

This next photo is the provisional in place on May 9, 2015. It was fabricated in the same fashion as the custom impression coping, as you will see in the next series of photos. It is another Performance Post from 3i, with flowable composite creating the subgingival contours, then prepared with the idea of having a 0.5 mm facial hemisphere margin and the palatal hemisphere at the free gingival margin.

A provisional was fabricated from the wax up and was bonded to the post. This allowed me to make an access hole and make a screw-retained provisional abutment, and then polish the subgingival aspect prior to replacing. Yes, when you do that you need to place the healing abutment back in to maintain the contours.

The patient returned Aug. 4, 2015, for the final impression.

(Click here to learn about avoiding problems with impression materials (https://www.speareducation.com/spear-review/2015/11/dental-impression-problems-why-you-get-them-and-how-to-avoid-them).)

The Final Stages

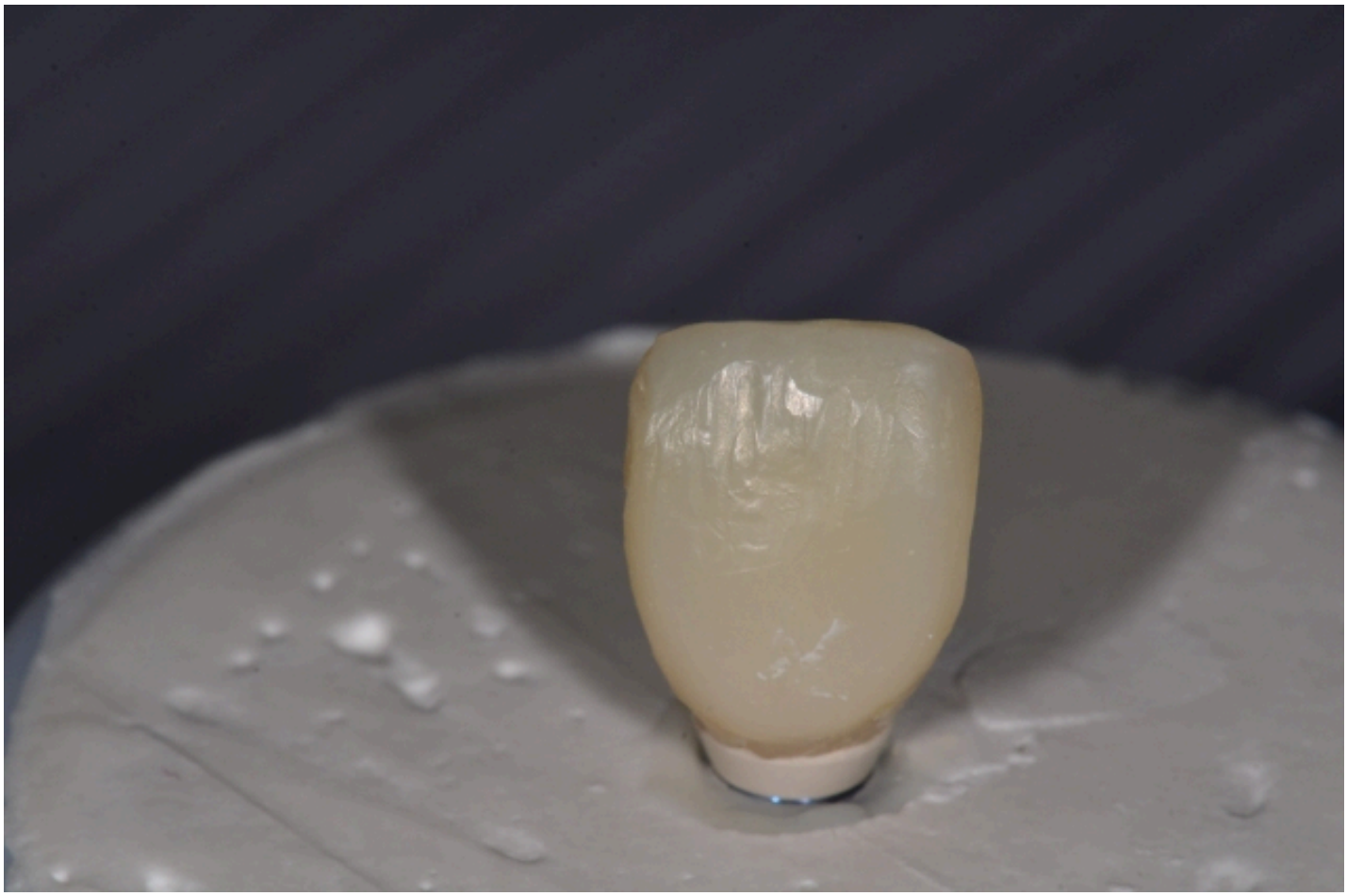
And now the crescendo of this article: From October to August, Dr. Papasikos and I painstakingly attended to managing the soft tissue contours and maturation; now I needed to translate its position to the lab, in this case The Winter Lab. The Study Club module was now my guide going forward.

The issue is what happens to the soft tissue once you remove the provisional. Apparently it “slumps” almost immediately after removal. When it is brought to your attention, you watch and it is amazing to see the movement in real time.

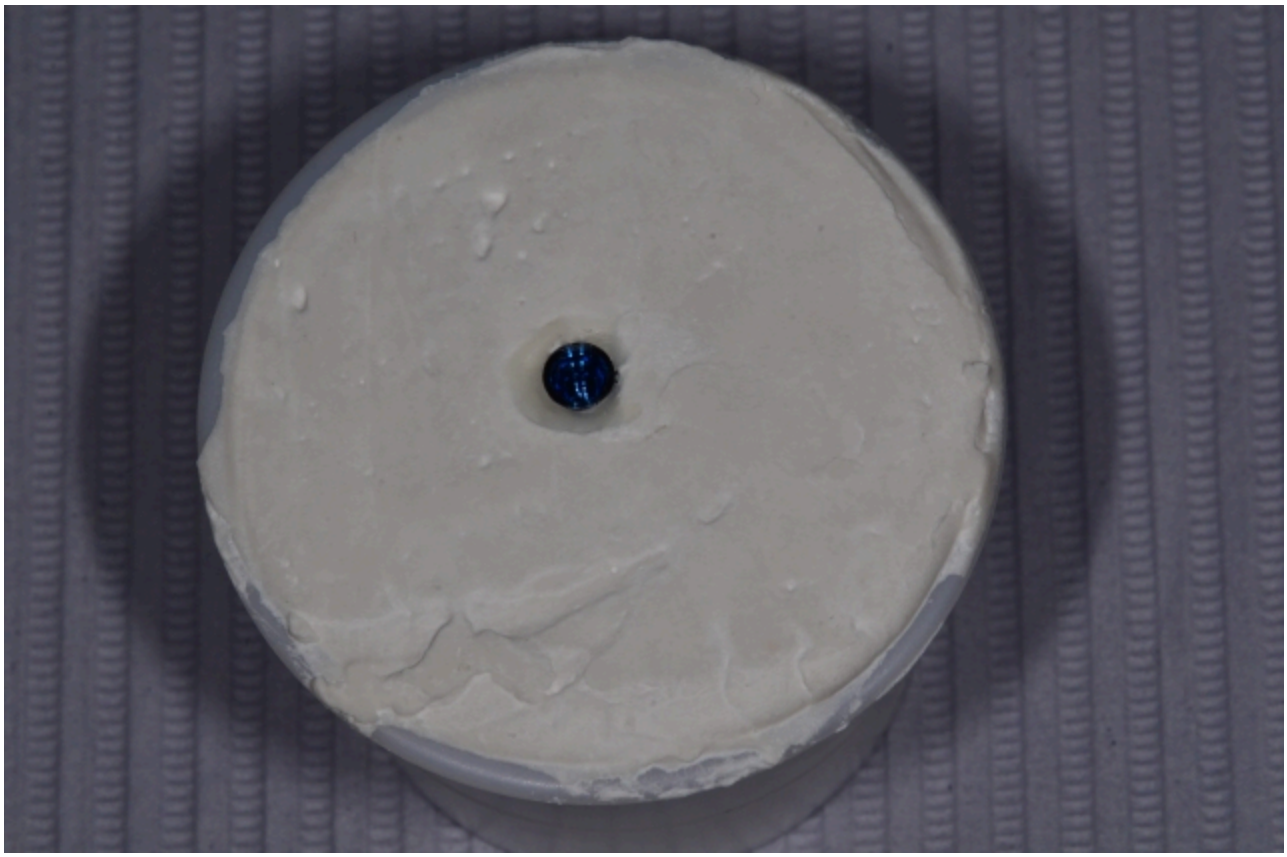
I used the contours, especially the subgingival contours, from the provisional and fabricated a custom healing abutment for the final impression. The process is as follows:

- In this case, unscrew the provisional; with the first healing abutment at hand, place it back onto the implant.
- Take the provisional and place it on an implant analog that is submerged in plaster in a medicine cup.

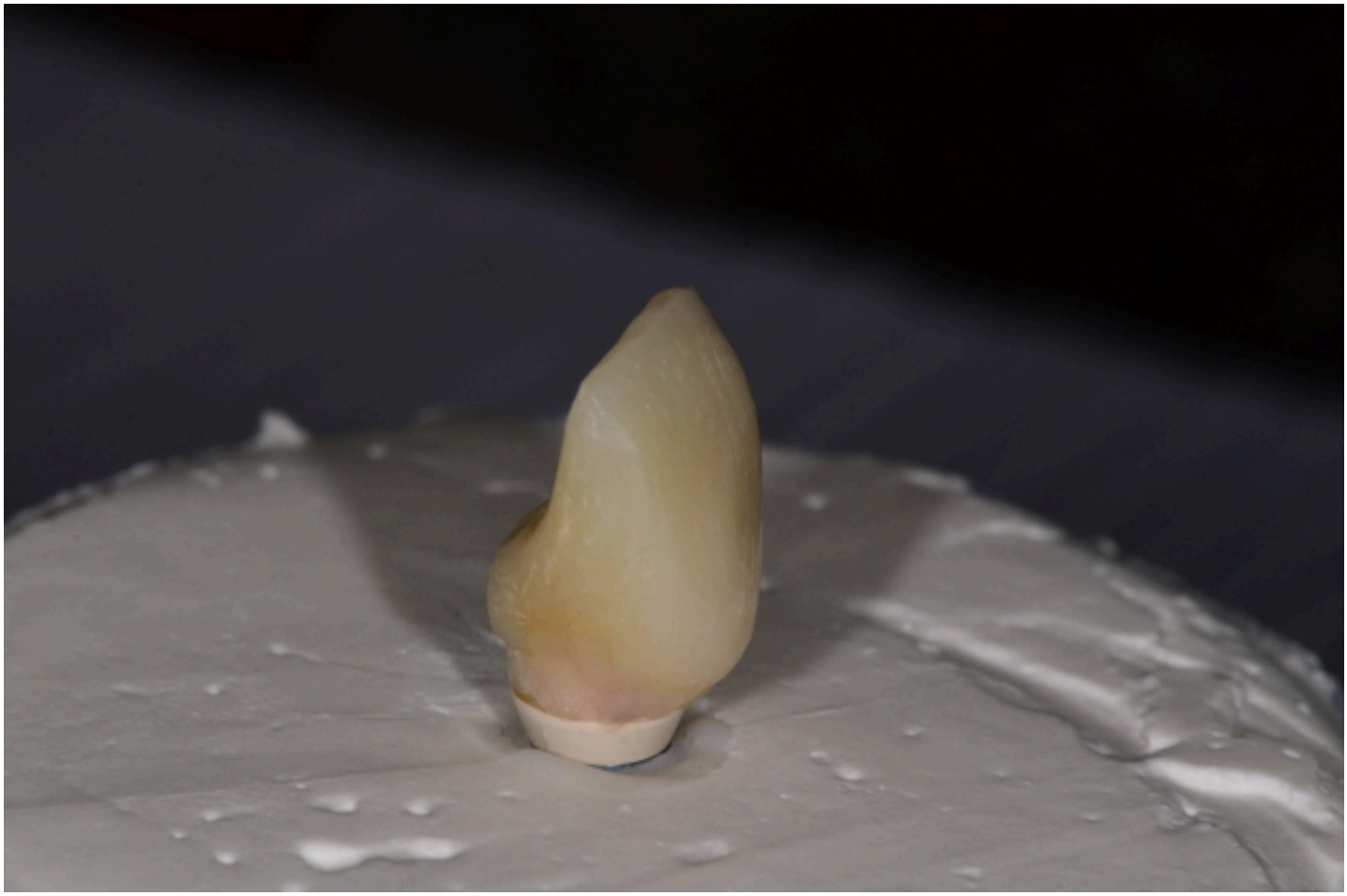
- Use MACH-2 VPS Die Silicone and express around the apical one half of the provisional to capture its contours.
- Remove the provisional and replace it on the analog with the impression coping.
- Use adhesive and flowable composite and place into the silicone mould.
- Transfer the newly formed custom impression coping back to the mouth and take your final impression.
- Now you are cooking; you can have your lab create, in this case, a custom zirconia abutment with all of the contours you preserved and improved upon since the day of the surgery.

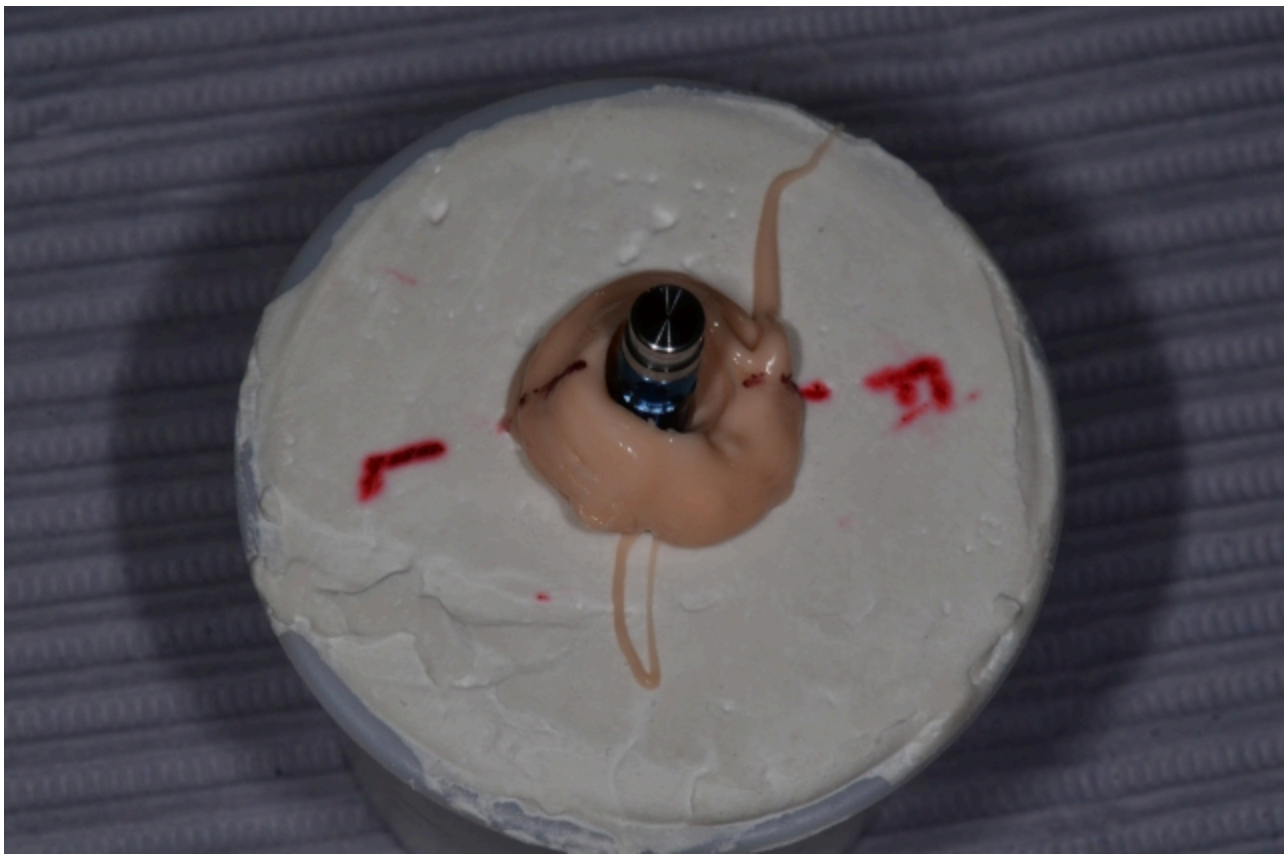


- IMPORTANT: Whether you are going to screw or cement retain your restoration, please know that the key to preserving what you worked so hard for, the tissue, is done so subgingivally, and has nothing to do with the contour of the crown, especially of you are cementing.



- IMPORTANT: When communicating with your lab, let them know not to alter the gingiva on a stone or soft tissue model.





(Quick aside: You are deep into this article and some of you are saying to yourself, “I can whip up all of this using my newest CEREC software (http://www.cereconline.com/) and Omnicam.” And that is so true. You can now create custom healing abutments, provisionals and impression copings in your pajamas even before the tooth is extracted. I just witnessed it in September at the Spear Campus, and it is something to behold. To date, I do not have one, so I live in the analog world, and that is OK, too.)

The final restoration was made of e.max, cut back and layered with Noritake ceramic. It was placed about three weeks later.

And now for a little controversy. The final restoration was cement retained. The provisional was screw retained.

(Click here to read to more about cemented versus screw-retained implant restorations (https://www.speareducation.com/spear-review/2015/10/cemented-vs-screw-retained-implant-restorations-part-1).)

The change was clear due to the path of the screw through the palatal aspect of the incisal edge of the provisional. I was able to get away with it in pretend material, but would not risk it in the end. The beauty of designing a custom abutment is you have control where you want the margins. This should go a long way in eliminating the controversy of cleaning cement and risk peri-mucositis or peri-implantitis. Again, the facial hemisphere was about 0.5 mm and the palatal half was at the free gingival margin. The cement used was Improv from Salvin Dental. The patient was very pleased with the final result shown below.

We here at Spear Education often use phrases like, “having tools in your tool box,” or “adding a tool to your toolbox.” Exposing yourself in such advanced dental education provides opportunity to grow and thrive and become proficient in newer or older techniques.

So many avenues exist. Spear Study Clubs are exemplary in this realm of growth and achievement. This one module gave this team of 20 years another tool to place in their respective toolboxes. And maybe this article gives you something to add to your own toolbox.

David St. Ledger, DDS, Spear Visiting Faculty, Spear Moderator, and Contributing Author

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