

Immediate Placement and Provisionalization of Maxillary Anterior Single
Implants: 1-Year Prospective Study (INT J ORAL MAXILLOFAC
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Purpose: This 1-year prospective study evaluated the implant success rate, peri-implant tissue response, and esthetic outcome of immediately placed and provisionalized maxillary anterior single implants.

Materials and Methods: Thirty-five patients (8 men, 27 women) with a mean age of 36.5 years (range 18 to 65) were included in this study. Thirty-five threaded, hydroxyapatite-coated implants were placed and provisionalized immediately after each failing tooth had been removed. The definitive restoration was placed 6 months later. The patients were evaluated clinically and radiographically at implant placement and at 3, 6, and 12 months after implant placement.

Results: At 12 months, all implants remained osseointegrated. The mean marginal bone change from the time of implant placement to 12 months was -0.26 ± 0.40 mm mesially and -0.22 ± 0.28 mm distally. No significant differences in the Plaque Index scores were noted at different time intervals. The mean midfacial gingival level and mesial and distal papilla level changes from pretreatment to 12 months were -0.55 ± 0.53 mm, -0.53 ± 0.39 mm, and -0.39 ± 0.40 mm, respectively (Large Standard Deviation shows high variability even though the means are ok). All patients were very satisfied with the esthetic outcome and none had noticed any changes at the gingival level.

Discussion: Although marginal bone and gingival level changes were statistically significant from pretreatment to 12 months of follow-up, they were well within clinical expectations.

Conclusion: The results of this study suggest that favorable implant success rates, peri-implant tissue responses, and esthetic outcomes can be achieved with immediately placed and provisionalized maxillary anterior single implants.

Student Comments: The statistic component of the study proves the scientific detail that the authors were aiming for. Perhaps of greater importance, is the one of the endpoints of this study: patient satisfaction. It shows the goal we sometimes lack in identifying. Finally, the success rates of all implants can be attributed (not only but also) to very careful case selection, i.e., not “pushing the envelope”.

Dr. Tarnow’s Comments:

The question is how do we know if and when we can expect bone fill between the implant and the gap to the buccal wall when we leave a certain distance from it at implant placement? Carlsson (1988), Knox (1991), Akimoto & Becker (1998) [animal studies] and Wilson (1998) [Human study] showed us that bone would not cross a gap of more than 1.5 mm without a membrane covering the defect (keeping the other cell populations from colonizing the defect). Becker showed that even if you place autogenous bone into the gap, you would still have a long fibrous seam.

Results can be deceiving: although statistical averages of measurements of pictures were to the hundredth of a millimeter, each measurement individually was rounded off to the nearest millimeter.

The standard deviation (S.D.) is as high as the measurement. This gives us an indication of the spread of the cases results. Having such a high S.D. should also tell us that we may not have predictability in these cases, so we shouldn’t “corner” ourselves promising the patient something we might not be able to deliver.

What was the tolerance in the measurements? They rounded it out to the nearest millimeter. What am I getting at? You are looking at something that he measured, but because he statistically “played” with it, it looks like he did it to the hundredth (of a millimeter).

That is a statistical number because he took an average, but in reality his measurements were all within the 1mm, more or less. He is rounding it off to the nearest mm, not even half of a mm. So you could be a mm off either way. That’s almost a two mm “play” either way (because of the standard deviation).

Look at his pre-op picture. You can see he started with a tooth with more tissue than he needed, but he had recession, which levels it out (the gum level). So any of the cases can be off by 1mm, either way, which is two mm. I am not criticizing the procedure. I am saying it can cause recession. How much on an individual tooth remains unknown. That is why you don’t see me favoring immediate socket placement in the esthetic zone, except in the most ideal circumstances. Cosmetically we can get away with this. The implant will certainly integrate because we can lock it in the apical bone, but please understand that this is a bit of an unknown.

So what if we start with centrals with equal tissue heights? Peter Wohrle did this about 5 years ago, in 1998, when he did 14 cases of immediate sockets like this, with immediate placement and temporization. But in his cases, the tissues started out equal, but as far as I’m concerned they ended up too short.

So, in a high smile line, that is critical, I like the idea of immediate placement and restoration, only because it’s good for the papilla. But it is questionable for the mid-buccal height of tissue. The papilla never resorbs away because the contact is always there. Remember that the papilla is there as a result of the contact point. You take away the contact point, the papilla and the col will shrink back. And it will only come back when you put the contact point back in. And it does. But instead of losing it and bringing it back, why not just leave it there? And that’s what this concept does so well. This is very good for the interdental papilla. I totally agree with that. You don’t cut it, you don’t open it, and you just support it from the beginning. Other than a few hours, while the patient is in your chair there is no loss of the contact point.

But the important part is that it's good for the papilla, but unknown for the mid-buccal height if tissue. You must choose your cases very carefully if you're going to do this. You want the mid-buccal bone to be thick. You don't want it to be thin. You also want the tissue to be thick and flat. Usually with thick bone that's what you get. As opposed to thin and scalloped where you have to watch out. Thick and flat you will be OK, if the buccal plate is present.

Don't guarantee anything to the patient. Some times you can get away with that, but if you have no buccal plate after the extraction you should not immediately place and restore. You can only know that after the extraction.

You should have a provisional removable or resin-bonded bridge as a temporary to place in, as a backup. Explain you might decide not to place the implant, once you see how the bone looks when the tooth is extracted, you will then decide. This way, it's not like you made a mistake. The worst you can do is to place yourself into a corner. Be careful of what you promise. You might have to graft the socket. And what do you do when you have the recession? Then you have to coronally reposition flaps. So you still submit the patient to another surgery.

And this is not a surgery that is predictable. Sometimes it works, sometimes it doesn't work that well. It depends on the person's thickness of tissue, vascularization and what's underneath. Remember that the tissue will not adhere to the crown. This is different than the mid-buccal recession surgery on a root.

I started with this article for a reason. It talks about standard deviation and it talks about what were you measuring. Everyone thinks it's measured to the hundredth of mm, but the fact is it's measured to the nearest mm. So you can get lost in the mean. And always remember that each case is variable.