

# IMMEDIATE LOADED DENTAL IMPLANTS WITH INTRA ORAL WELDING

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Immediate loading of dental implants thus implies the existence of an already existing prosthetic structure. Normally, this has been designed in the early stages of the treatment, when we casted the documentary models and had the first wax-up. At that time, both clinician and patient started to have a common understanding of current medical condition and ideal treatment plan.

During surgery, when the implants have been inserted and we go for the next step, the most common solution is to have an impression over the fresh positioned implants, gingiva and sutured flap. Dental laboratory will then as fast as possible produce the needed structure. This new structure will be of laboratory side quality and will hopefully undertake the basic elements from previous prosthetic works (buccal curvature, vertical dimension, size and form of the tooth's, etc.). It takes usually from 6 to 48 hours to complete the most complex prosthesis, thus implying extra normal laboratory time and of course fee, everything being done under time pressure.

As we all have experienced, after the surgery the inflammatory phase is installing and surgical field is modifying itself through edema and swelling. Pain not only bothers the patient but induces antalgic position and muscle contracture for the comfort of the patient. Other functions are not restored (e.g. speech, mastication, esthetics). Other limitations may occur like pain at the TMJ because of extra mouth opening, nausea and cephalgia, etc. All this could be a major obstacle for the dentist when seating the prosthesis, so when Immediate loading is aimed, prosthesis should be delivered as fast as possible. As IOW (Intra Oral Welding) is not always available, companies have designed various systems for creating rigid splinting systems between the implants.

Principles are always the same:

- Implants are splinted direct
- Prosthesis is ready before surgery and will be retro fitted chair side

- Final result is an screw retained , metal reinforced retrievable provisional prosthesis

Here we should always consider one major main stream and decide if it is or not optimal for our particular case : IOW does splinting of the implants , so does some prosthetic systems , but some other techniques does the splinting of the prosthetic components and those will be hereafter cemented or screwed to implants.

Let's take a look at the splinting philosophy! A wise comparison is with the strength of a chain and our work does absolutely the same, the links of the chain being:

- Fresh socket
- Implant
- Connective parts
- Prosthesis
- Occlusal forces

We act at all levels and want to have an nonmoving system for the osseointegration period, avoiding micro movements above 50 micron. [30, 31]

See picture 1



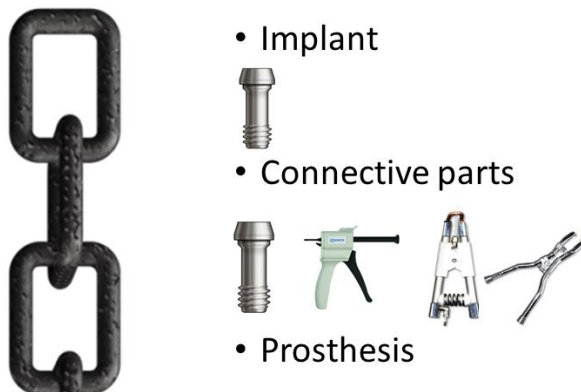
- Fresh socket
- Implant
- Connective parts
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The weakest link is also the most powerful as it dictates our behavior

Here we discuss the last four chain links (implant, connective parts, and prosthesis and occlusal forces) and the mechanical relation among them.

Special prosthetic systems are designed to ensure rigid splinting at the intermediate level between implant, connective parts and prosthesis.

Screw retained connective parts (like multi-unit abutments -) do create a rigid splint to both implant and secondary piece through torque controlled screw.



## 6.2 Links depending on level

Looking back, in the 70's, when Intra oral Welding has been introduced by Dr. Mondani, we can see the simplicity of the method, as the welded implants were one piece implants, mainly needle or screws (Scialom, Tramonte, etc.), prosthesis being cemented on top of the new structure. The use of bicomponent implants – root form biphasic – has created the need for an extra connection, implant abutment connection that also became a major battle field for improvement.

It is worth to mention here that on top of the bicomponent implants we can attach several components like:

- Abutments with indexing system
- Abutments – non engaging
- Multi-unit abutments
- Chonometric abutments
- Ball or locator attachments
- Provisional PMMA or PEEK abutments and many others

Second link discussed is between the connective parts and the prosthesis:

- Cement (provisional)
- Resin
- Screw splinted systems
- Elastic connectors
- Housing for ball or locator
- Intra Oral Welding

- Laser welding (7)

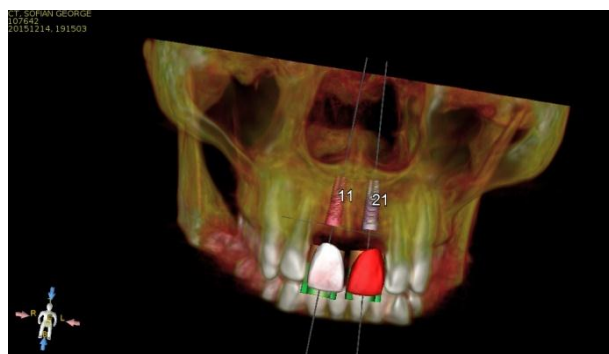
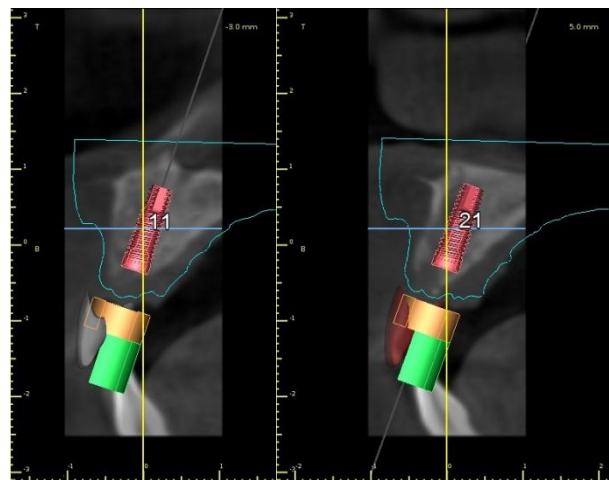
And probably more to come.

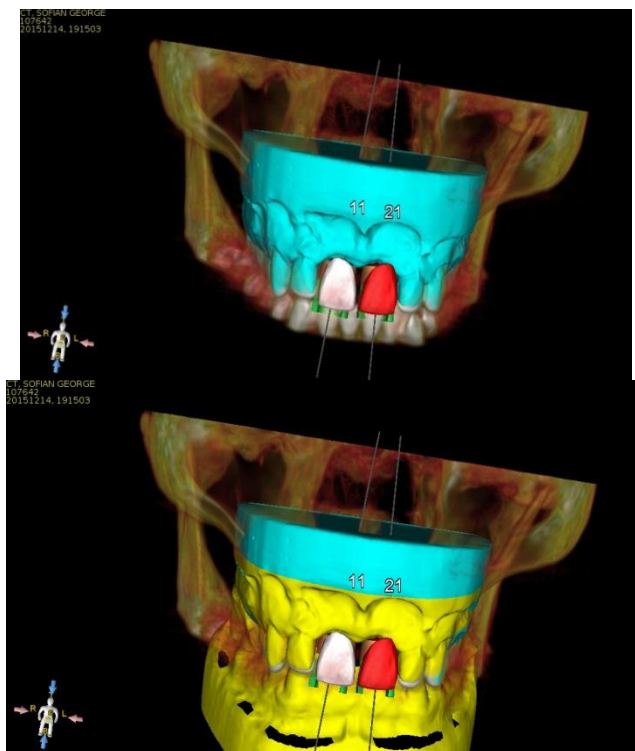
The implant – connective part joint is the battle field for all contemporaneous design improvements. The lack of mobility and perfect sealing of the intra implant cavity is the main objective of both developments and researches. As regarding our chain we will consider it a safe and stable connection.

## CASE PRESENTATION

Young male with missing central incisors requests prosthetic restorations on implants. Patient has been carefully prepared, both for surgical as for prosthetical part. Study models, CBCT were done and based on them a surgical guide was fabricated prior to surgery as well as milled PMMA crowns.

Based on the 3D image of the bone, ImmediateLoad implants (ImmediateLoad SA CH) were chosen with a length of 13mm and a diameter of 3,7mm. Implant position was prosthetically determined by superposing study model, and wax up scan.





The planning of the implant position and the surgical guide design was performed using BlueSkyBio (BSB) software .



Position of future implants is double checked with parallel pins :



Implants inserted ,



Using the surgical guide , a flapless approach is used :

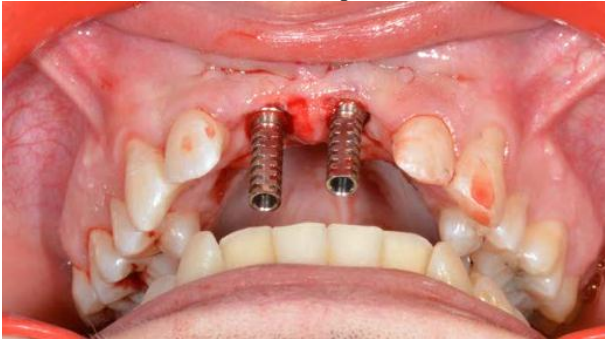


and transmucozal conectors screwed in.





Provisional titanium post attached ,



and those welded with the Argon Control Welder from Implamed Sa Italy.



Post are cut at the prosthetic level , provisional checked



And retrofitted with cold cured resin ( Lang Dental , USA )

## CONCLUSION

Immediate loading of dental implants can be a predictable procedure if combined with appropriate planning , accurate exams e.g CBCT , careful prosthetical planning with wax up and CAD CAM designed structures for the provisional. Intra Oral Welding provides the whole structure with needed stability in order to achieve osseointegration. The whole process incurs less costs , both financial and biological.

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