SameDay Dental Implants® & Teeth
A Surgical & Prostho Protocol

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The original Branemark protocol advocated the use of a two stage surgical approach where the turned (smooth) implants were buried for several months under the mucosa. With the advent of surface enhanced and tapered implants the protocol later evolved into a one stage approach.

Several clinicians then proceeded to immediately load these one stage implants with good success provided good primary stability (more than 45Ncm) was achieved at time of implant placement and provided micro-movements could be limited to 100μm. Ample reports have been published on immediate loading of dental implants showing an initial unloaded period of 3-6 months is not necessary. From a patient’s point of view the reduction of treatment time between implant placement & installation of a functional prosthesis leads to increased patient satisfaction & treatment acceptance and a gain in time the patient implies an economical benefit especially for professionally and/or socially active patients.

High treatment acceptance and patient satisfaction are the most important advantages of immediate loading and immediate function.

Surgical Protocol
The surgical protocol of immediate loading of dental implants with same day teeth is based on the following:

Avoid Bone Grafts
This is in line with Prof. P.I. Branemark’s philosophy of “Lesser Surgery to Treat More Patients” (Fig 1).

With increased costs and patient morbidity due to bone grafting, an increased patient resistance to implant treatment has been noted. An alternative method of treating implant patients who have suboptimal bone volume without bone grafting is made possible by using:

1) Angled implants in a tilted manner placed into available bone anterior and posterior to the maxillary sinus (Fig 2).  
2) Wider and appropriately shaped implants placed into immediate extractions socket to enhance lateral implant design.

High Primary Stability
An important factor for immediate loading success is high primary implant stability (greater than 45Ncm) which can be achieved by using a surface enhanced tapered implant design to enhance lateral compression of bone.

By underprepping, high insertion torque and primary stability can be achieved even in cases of decreased bone density such as with the case in maxillary alveolar bone and as well as in osteoporotic patients. Primary stability can easily be measured during implant placement with a torque wrench (Fig 4).

If 45Ncm insertion torque is not achieved, the implant should be removed and without further bone preparation a 1mm wider implant is placed. This usually results in adequate primary stability of 45Ncm for immediate loading. If 45Ncm insertion torque is still not achieved then again the implant can be removed and replaced with an even wider diameter implant if the available bone width permits. This usually results in adequately high insertion torque and primary stability to enhance lateral compressive forces (Fig 4). If despite this, adequate primary stability is not achieved then immediate loading is not recommended.

Prosthodontic Protocol
By using a silicone key of the facial surfaces of the existing teeth (Fig 5) or a silicone key of a diagnostic wax up (Fig 6), it is possible to place the implant in the correct position and angle so that the screw access hole can exit in the correct place to allow for screw retention.

In order not to loose significant orientation, extractions are not performed all at once prior to implant placement but are rather performed one at a time followed by implant placement so that the silicone key can direct the implant surgeon (Fig 7).

It is very often necessary to use an implant with a built in angle of 12’, 24’ or even 50’ so that the case can be screw retained.

Screw retention is an absolute requirement for biological reasons (to avoid risk of inflammation due to excess cement) as well as e.g. the ease of handling of immediate loading in a surgical environment.

Bite registration is started prior to extraction of all the teeth in the arch/mandible case so as not to lose the centric relation and vertical dimension (Fig 8). After bone milling to remove any interfering bone, in multi-unit abutments are placed (Fig 9).

Alternatively minimal flaps are raised where indicated. This flapless/punch technique/minimal flap approach results in the integrity of the extraction socket walls is inspected and assessed with a 15mm or 20mm periodontal probe placed into the extraction socket walls of the extraction socket walls (Fig 10) and is then completed by good vision with magnifying loops and light illumination.

In healed sites where possible the “punch” technique is used (Fig 15).

Alloplastic/Mineral Flap Surgery
In extraction cases no mucoperiosteal flap is reflected. The integrity of the extraction socket walls is inspected and assessed with a 15mm peri-implant probe (Fig 12) and is then completed by good vision with magnifying loops and light illumination.

In healed sites where possible the “punch” technique is used (Fig 15).

Alternatively minimal flaps are raised where indicated. This flapless/punch technique/minimal flap approach results in the integrity of the extraction socket walls is inspected and assessed (Fig 11).

Immediate Loading Dental implants either should be loaded the earliest possible (never exceed ten days after surgery) or alternatively two months after placement. This is because the so-called initial stability (mechanical stability) that an implant has, starts to drop gradually and the implant cannot be loaded to failure if forces are applied. Fortunately, simultaneously a “secondary stability” (Osseointegration) starts to build up. The sum of the two “stabilities” which is demonstrated on the stability graph (Fig 16), gives us the “total stability”. As a golden rule implants ideally should never be disturbed during the “stability dip” period.

Preoperative Preparation
In order to achieve this protocol, preoperative screening and detailed surgical and prostho-

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Fig 1. Dr. Costa and Dr. Petros in line with Prof. Branemark’s philosophy of “Lesser Surgery to Treat More Patients”.

Fig 2. Angled implants placed into available bone anterior and posterior to the maxillary sinus.

Fig 3. Immediate molar replacement implants.

Fig 4. 45Ncm Primary Stability measured during implant placement.

Fig 5. Silicone key of the facial surfaces of the existing teeth.

Fig 6. Silicone key of a diagnostic wax up.

Fig 7. The silicone key can direct the implant surgeon.

Fig 8. Bite registration is started prior to extraction of all the teeth in the arch/mandible case so as not to lose the centric relation and vertical dimension.

Fig 9. Good peri-implant tissues around the patient’s needs. It’s promise quality. The patients are never left without teeth for more than six hours. As a result treatment acceptability is high. All implants with good primary stability (>45Ncm) are immediately loaded with screw-retained teeth. For single implant cases, the final all ceramic screw retained tooth is fabricated and delivered to the patient within six hours. For multiple implants cases, temporary screw retained ceramic teeth are fabricated with an impression and permanent screw retained all ceramic or metal ceramic teeth are delivered one week later.

Timing of Immediate Loading Dental Implants either should be loaded the earliest possible (never exceed ten days after surgery) or alternatively two months after placement. This is because the so-called initial stability (mechanical stability) that an implant has, starts to drop gradually and the implant cannot be loaded to failure if forces are applied. Fortunately, simultaneously a “secondary stability” (Osseointegration) starts to build up. The sum of the two “stabilities” which is demonstrated on the stability graph (Fig 16), gives us the “total stability”. As a golden rule implants ideally should never be disturbed during the “stability dip” period.

Preoperative Preparation
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Two months later upon maturation of the soft tissues and osseous integration (Fig. 25) the patient returns for the permanent prosthesis. Once all necessary modifications are made and the patient is satisfied, we need to convey all newly established parameters (Fig. 26). This is achieved by: i) taking photos and videos to record the esthetic result, in the mouth and ii) using the so-called “Clinical Remount Procedure”, in the laboratory.

The permanent teeth need to be established which means that in posterior teeth, there is a separation of 0.1 to 0.3 mm. The anterior teeth are touching/guiding and there are momentary movements the anterior teeth will never have a perfect fit onto the zirconia crown and eventually bakes the porcelain on to it. Four to six hours later the permanent tooth is placed into the mouth of the patient. This allows to verify the perfect fit (Fig. 5) on the implant (Fig. 20). Occlusion is checked and verified with the help of 5th grade "chimichotch" articulating paper. The prosthetic access hole is obturated with layered filling (telfan tape + opaque composite resin) to allow easy access for retrievability in the future but simultaneously excellent esthetics. Two months later upon maturation of the soft tissues and osseous integration, an additional x-ray is taken and if needed modifications are made to the prosthesis.

Impression During Surgery
An impression of the implants is taken during the surgery, either at implant level for single implants or at abutment level for multiple implants. It’s imperative to make sure that the impression copings are seated all the way onto the implants (peritubular x-rays can be used for verification). For multiple implants, the open tray technique is recommended with the use of very hard addition silicone impression material.

At the end of each surgery, preoperative impressions, impressions of the implants and bite registration are provided to the dental lab (Fig. 15). The dental technician mounts the implant models and starts the fabrication of the implant prosthesis.

Single Implant Reconstruction
For single implant cases the permanent, screw retained, all ceramic zirconia teeth are fabricated immediately with the use of prefabricated zirconia cores (Fig. 19). They are available in different sizes and shapes, according to the prosthetic platform of the implant in use and the available prosthetic space, between the adjacent teeth. While the patient is waiting in the recovery room the dental technician grinds and shapes the zirconia core and eventually bakes the porcelain on to it. Four to six hours later the permanent tooth is placed into the mouth of the patient. This allows to verify the perfect fit (Fig. 5) on the implant (Fig. 20). Occlusion is checked and verified with the help of 5th grade "chimichotch" articulating paper. The prosthetic access hole is obturated with layered filling (telfan tape + opaque composite resin) to allow easy access for retrievability in the future but simultaneously excellent esthetics.

Multiple Implants Reconstruction
1) Temporary Teeth
For multiple implant cases (three unit bridges to full mouth reconstructions), the temporary screw retained teeth are fabricated by the in house dental lab within five to six hours and are sent to the patient on the same day.

Providing the temporary teeth immediately isn’t only a great service to the patient but is also the best “diagnostic tool” for the restorative dentist to record all necessary information for the fabrication of the permanent teeth. If needed modifications are easily made to the acrylic teeth either directly in the mouth or in the dental lab.

The patient should be evaluated for esthetics, phonetics and occlusion. Midline, plane of occlusion and buccal corridors are established. The “S” and “P” sounds are checked. The occlusal scheme is adjusted. For extensive cases the "mutually protected occlusion" (Fig. 23) is established which means that in centric occlusion, all teeth are touching but the posterior teeth have slightly heavier contacts compared to the anterior and on lateral and protrusive movements the anterior teeth are touching/guiding and there are no posterior “working” or “non-working”interferences (anterior guidance). X-rays are taken in order to verify the passive fit of the prosthesis.

On the use of the “Passive Abutment” (Fig. 23), which is a tita-