Early loading as an alternative to immediate loading

With immediate loading, placement of abutment and provisional restoration takes place before significant healing has occurred. With early loading, the healing process is already underway; therefore it is important to consider how manipulation of the implant will deliver forces to the forming bone-to-implant contact and mucosal interface during this healing process. Based on experience of studies to date, early loading of implants at six weeks with careful patient selection is indicated.

As with any implant surgical or restorative procedure, the treatment outcome is interdependent upon six variables:
- Biocompatibility of materials
- Implant design
- Implant surface
- Surgical technique
- Prosthetic loading conditions
- Individual patient local site conditions

Patient selection
- Sufficient bone density to maintain stability throughout osseointegration phase.
- Sufficient bone volume to allow placement of adequate numbers and diameters of implants to withstand expected occlusal loads.
- Good overall health.
- For single tooth and partially edentulous cases there must be sufficient overall occlusal support to avoid overload to newly placed implant during initial healing.
- For patients not meeting the above criteria, an unloaded protocol to achieve secondary stability is still appropriate.
- Early loading in Type IV bone quality is not currently recommended regardless of initial stability achieved.

Clinical relevance
- Early loading of an implant is an alternative to immediate loading
- Successful early loading of TiUnite implants up to six weeks after implant insertion has been demonstrated in thirteen clinical studies
- Careful patient selection is indicated

Loading protocols – definitions

<table>
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<th>Immediate loading</th>
<th>Early loading</th>
<th>Delayed/Traditional loading (one stage/two stage)</th>
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<tbody>
<tr>
<td>0 hrs</td>
<td>6 weeks</td>
<td>12 weeks (3 months)</td>
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<tr>
<td>48 hrs (2 days)</td>
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<td>24 weeks (6 months)</td>
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</table>

Early loading with Nobel Biocare TiUnite® implants

Clinical guidelines
Surgical guidelines
- General requirements for successful osseointegration.
- Individual implants should be able to withstand a final tightening torque of minimum 35 Ncm torque without further rotation to confirm stability at time of implant placement.
- If resonance frequency measurement is performed at time of placement – ISQ values > 60 is recommended.

Restorative guidelines
- Regardless of anatomic site or bone quality, implants typically show a drop in initial stability over the first several weeks before osseointegration takes place. While the maintenance of initial stability is higher with TiUnite than a machined surface, this phenomenon can still be expected to occur. Consequently, it is not just the early loading itself, but also other prosthetic manipulation of the implant during the first six weeks that needs to be considered, e.g., unscrewing of healing abutments and impression copings.
- A restorative strategy should be developed to ensure minimal handling and tightening of prosthetic components and transference of forces to the implants during the first weeks after placement.

Clinical evidence

Early loading of TiUnite implants – Timeline

<table>
<thead>
<tr>
<th>Maxilla</th>
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<th>Partial</th>
<th>Full arch</th>
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<td>11</td>
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<td>12</td>
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<td>4</td>
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<tr>
<td>&lt;1 Week</td>
<td>1 Week</td>
<td>2 Weeks</td>
<td>3 Weeks</td>
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</table>

Post-surgery and maintenance program
- The follow-up and maintenance is the same as for all implant-based treatments.

Clinical relevance
- Follow recommended guidelines for successful outcomes.
- It is recommended to wait for soft tissue maturation prior to proceeding with final restoration.

References