**NobelProcera® Abutments**

**Strong NobelProcera Abutments due to quality of design and production method**

**Modified ISO 14801 fatigue test**

Fatigue tests conducted in accelerated conditions (150–300 N). The results were extrapolated to represent a chewing force of 70 N.

**Zirconia abutments with titanium base**

- **NobelProcera**
  - 1,000,000,000,000,000,000 cycles
- **Glidewell**
  - 1,000,000 cycles
- **Full zirconia abutments**
  - **Straumann®**
    - 30,000,000 cycles
  - **Atlantis™**
    - 20,000,000 cycles

Extrapolation to represent chewing force of 70N

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Cycles</th>
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<tr>
<td>NobelProcera</td>
<td>1 sextillion</td>
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<tr>
<td>Glidewell</td>
<td>1 million</td>
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<tr>
<td>Straumann®</td>
<td>30 million</td>
</tr>
<tr>
<td>Atlantis™</td>
<td>20 million</td>
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</tbody>
</table>

**Study findings under accelerated conditions**

At 200 N resistance to failure differed significantly between the four tested CAD/CAM zirconia abutments.

**Zirconia abutments with titanium base:**
No NobelProcera Abutment failed. All Glidewell abutments failed, with a run out of 15,000,000 cycles.

**Full zirconia abutments:** All Atlantis™ abutments failed. Straumann significantly outperformed Astra with 2,534,112 vs. 2,421 cycles to failure.

**Clinical relevance**

“**Manufacturer matters**”
The four abutments look very similar on clinical examination but differed in performance, indicating the impact of design and production method.

**Clinically relevant failure modes:** Distinctly different failure modes were found for both zirconia and titanium based abutments. Observed failure modes in this study are consistent with those observed clinically.

NobelProcera Abutments showed higher strength in fatigue tests compared to all the other abutments.


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