



Clinicians' questions

In addition to titanium, zirconia, alumina, gold, lithium disilicate and titanium nitride are also used as implant abutments. Do these materials perform similarly in clinical practice?

A meta-analysis including 29 studies on 954 patients (1,266 implants) showed no statistical differences between these abutment materials either in terms of marginal bone loss (MBL), implant survival or incidence of complications over a mean follow-up of 30 months (range: 6 to 86.4).

Although the documented clinical performance seems to be similar, can any differences in peri-implant tissue reactions be measured between the abutment materials?

No statistically significant differences in mean probing depth (PD), bleeding on probing (BoP) or plaque accumulation (PA) could be identified in the RCTs. However, a separate comparison of zirconia and titanium abutments reported significantly higher levels of BoP with titanium. Similarly, there was a trend for more PA around titanium abutments than with zirconia ($p=0.068$).

All the tested materials seem to have comparable clinical and biological responses. But what is its effect on patient satisfaction and aesthetics?

Patient satisfaction with the implant-supported prostheses was generally high, and no differences could be attributed to abutment materials. Moreover, the meta-analysis did not detect a difference between the abutment materials in aesthetic index scores. Other studies not included in the present systematic review, however, reported significantly better results for ceramic abutments than titanium in terms of mimicking natural soft tissue colour.

In conclusion, what is the most suitable abutment material to use?

Titanium should continue to be considered the abutment material of choice in general clinical practice. However, other materials – zirconia and alumina above all – have been shown to work equally well and should be considered appropriate for clinical use. In particular, zirconia has been found to achieve better results than titanium in regard to PA and BoP.

Future research should focus on soft tissue integration and the anti-biofilm properties of abutment materials. No new abutment materials should be introduced to the market without having been thoroughly tested and without the appropriate corresponding documentation.



Key points



1. Titanium is the abutment material of choice for most clinical indications
2. There is no apparent difference between titanium and other abutment materials in terms of implant survival, marginal bone loss or incidence of complications
3. Zirconia abutments tend to be associated with less plaque accumulation and bleeding on probing
4. Some studies found that ceramic abutments were superior to titanium abutments in terms of aesthetic appearance of tissues