

Do ceramic implants outperform metallic implants in survival/success, esthetics, & patient satisfaction?



Clinical Problem

Titanium implants are considered the "gold standard" in implant dentistry based on their excellent osseous integration and biocompatibility. Zirconia ceramic implants are a promising alternative to conventional titanium-based implant systems. However, the efficacy of ceramic implants have yet to be established.

Clinical Question

In adult patients with at least one missing tooth, how do ceramic implants compare with metallic osseointegrated implants in outcomes such as success/survival and complications of implants, as well as patient-reported outcomes and clinician-appraised esthetics, with at least 1 year of follow up?

Evidence Search

Search date: Feb 16th, 2022

Ovid MEDLINE(R) results: 91 evidence sources

Additional search: C.A.T. database, TRIP Database, Journal of Evidence Based Dental Practice, ADA EBD web site

References

Hashim D, Cionca N, Courvoisier DS, Mombelli A. A systematic review of the clinical survival of zirconia implants. *Clin Oral Investig*. 2016

Ruiz Henaó PA, Caneiro Queija L, Mareque S, Tasende Pereira A, Liñares González A, Blanco Carrión J. Titanium vs ceramic single dental implants in the anterior maxilla: A 12-month randomized clinical trial. *Clin Oral Implants Res*. 2021

Clinical Bottom Line

There is limited evidence of moderate quality that failed to show that ceramic implants outperform metallic implants in terms of survival and complications. The evidence from the RCT suggests that ceramic and metallic implants provide similar soft tissue esthetics. These results were not statistically significant but were clinically meaningful and decisive. The evidence quality may have been compromised by lack of blinding and unequilibrated baseline characteristics. These results are generalizable to adults missing at least one tooth.



<https://myholisticdentist.com/2017/12/22/dental-implants-san-diego/>

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Results

- Ceramic implants' survival rate was 92% after 1 year follow-up. Titanium implants' survival rates were 97.2% and 95.2% after 5 and 10 years follow-up, respectively.
- Results were not statistically significant with respect to crown, pink esthetic (PES), and overall implant esthetic scores, probing depth, bleeding on probing, and marginal bone loss. Both the ceramic and titanium implant groups achieved clinically meaningful and decisive PES scores.

Strengths

- Three databases; no publication year limits; summary table; PRISMA diagram; two independent reviewers; risk of bias assessment; meta-analysis
- RCT design, external validity (generalizable to our clinical question), inclusion/ exclusion criteria, computer generated sequence and concealed allocation, no dropouts in sample size, no missing data.

Limitations

- Many studies are prospective case series with no titanium implant control group; different follow-up lengths and small sample size; language bias.
- Participants and care providers were not blinded; baseline characteristics of not equilibrated for study groups.

Applicability

- The studies were conducted in 6 different countries, 5 from Europe and 1 from North Africa.
- Safe - The risks for adverse effects of surgery is no different compared to that of titanium implants.
- Success and survival rate of ceramic implants are no different from traditional titanium implants.
- Esthetic outcomes of ceramic implants are slightly superior to titanium implants.

Clinicians should weigh the clinical benefits and risks of ceramic implants along with patient values and goals to decide whether they would like to employ them over titanium implants.