The Convenience of Dental Cantilevers

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A cantilever is a beam with support at only one end. This engineering design is ubiquitous, and with appropriate design, it provides long-term successful service. We depend on the cantilevers of airplane wings when we fly—think about it.

Patients with reduced periodontal support often require extensive prostheses to restore an entire dentition. Nevertheless, with planning, dental cantilevers are valuable to restore complex dental situations, and can even be used to stabilize a dentition.[1]

Osseointegration and its antecedents have forever changed the scope of dental treatment planning for our patients.[2] Early applications were for totally edentulous patients with severe alveolar bone loss. Implants were inserted into the reduced anterior residual alveolus and every prosthesis had cantilevers to the anterior or lateral, and especially to the posterior, occlusion.

Dentistry has expanded implant applications to range from the single tooth to complete maxillofacial reconstructions. Dental implants have rapidly become embedded into the public consciousness more than any other recent dental innovation. Implants are the new "normal." This enthusiastic endorsement of the excellent results of dental implants creates the risk that our profession overlooks the obvious: Dental cantilevers provide a simple and expedient solution to tooth replacement without titanium. Not all patients are interested in the expense, complexity, and risk of "site preservation," bone grafts, implant and abutment surgeries, and additional laboratory expenses.

A dental cantilever is a conservative cost-effective alternate to implants for tooth replacement of teeth where:

- Normal or hypofunction exists (avoid parafunctional situations with evidence of excessive occlusal wear)
- A small replacement site exists (eg, a single premolar or lateral incisor)
- The adjacent dentition has robust root support (eg, canines or splinted premolars)
- The abutment(s) are vital and have adequate resistance/retention form anatomy
- The abutment(s) would benefit from dental crowns due to esthetic or restorative conditions

Prudence needs application as dental fixed partial dentures with cantilevers and/or nonvital abutments have been reported to have more complications.[3] But to what is this compared? Here are two examples where dental cantilevers solved a patient's concerns better than other options.

Patient A presented as an 80-year-old who needed replacement of the maxillary right lateral incisor. Radiographic examination revealed a lack of alveolar bone suitable for an implant. This patient was restored happily in three appointments by a junior dental student who was providing his first dental crown for a patient. This is straightforward dentistry well within the scope of every dentist. It lasts. A similar design served 46 years before being replaced with another cantilever[4] (Figs 1a and 1b).

Fig 1a Periapical radiographs of the maxillary right canine with a healthy crown and bone support and the maxillary right lateral incisor with a deficient alveolus.

Fig 1b Two-unit dental porcelain-fused-to-metal cantilever. Maxillary right canine serving as a single abutment for the pontic of the lateral incisor.

Fig 2a Panoramic radiograph of a cantilever pontic on the mandibular right first molar complimenting the fixed restorations of other quadrants.

Fig 2b Four-unit porcelain-fused-to-metal cantilever restoration in situ for 14 years.

Patient B desired more chewing efficiency but did not want a removable prosthesis. The mandibular alveolus was too narrow to receive implants without bone grafting prior to implants. The adjacent premolars would benefit from dental crowns, and this allowed the splinted crowns to retain a single posterior premolar. This has provided an esthetic and effective restoration for 15 years, compared to the cost and complexity of implants (Figs 2a and 2b).

Conclusion

Dentistry must not succumb to the tyranny of titanium. When dental cantilevers are appropriately planned, they can replace teeth with a minimum of risk, cost, and complexity. This inclusion of cantilever principles into prosthetic planning allows for enhanced service to our patients.

References

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