

Managing the terminal dentition: are immediate implant teeth a panacea?

Dental implant therapy has had a dramatic impact on improving the quality of life for our patients. Advances over time have made dental implant treatment predictable and often the preferred method to replace teeth. The term 'terminal dentition' has been used to describe a condition in which the remaining natural teeth have a questionable or poor prognosis. In some cases, there is a mixture of failed and savable teeth. The decision to maintain teeth and include them in the definitive plan may depend on several factors including the number of teeth, their position in the arch, the discrepancy between the ridge and the bordering teeth, caries susceptibility and the ability to achieve proper aesthetics. It may be decided that sound teeth are worth saving or they may complicate comprehensive treatment and are best removed. However, a controversial treatment philosophy has evolved in managing patients with a failing dentition. The threshold for removing teeth seems to have become lower as some clinicians appear to have either lost interest in treating compromised natural teeth or overestimate the superiority of implant therapy. It appears the trend has shifted away from maintaining and rehabilitating teeth to removing them for a full-arch fixed implant prosthesis. It is also not unusual for some patients to request extraction of their remaining teeth even if they are salvageable. Patients are exposed to multimedia advertising on the benefits of immediate implant teeth. Although the internet offers patients a large resource of information on implant treatment, it may be unreliable or biased towards implant solutions. Treatment centres have emerged all over the world that focus primarily on delivering 'Teeth in a Day'. The promise of a quick fix is attractive to patients who have neglected their dentition or are fearful of dental treatment. Patients fatigued by treating chronic dental problems may look

at this treatment option as the ultimate solution where they will never have to worry about dental problems again. Both patients and clinicians may have unrealistic expectations regarding the success and longevity of this approach. There are indeed advantages to this option compared with saving teeth or partial edentulous implant replacement including a shorter treatment length, immediate function, fewer appointments, avoiding the need for bone grafting and in some cases lower costs. The treatment plan and surgical workflow is simplified – extract the remaining teeth, perform bone reduction to create adequate prosthetic space and place four to six implants with abutments to support immediate fixed prostheses.

Although extraction of the dentition may well be an appropriate alternative for implant replacement, it is important for the dental team and patient to understand the future implications of this irreversible choice. The transition to complete edentulism must only be contemplated after the patient has been fully informed of all risks and alternatives. The aetiology of a failed dentition may be periodontal disease, caries, trauma or structural damage such as fracture or severe wear. The cause of tooth loss may influence the long-term prognosis of the implants and prostheses. Patients who lose their teeth primarily due to caries are no longer susceptible to this disease process with dental implants and may experience a more favourable longevity. Patients who suffer tooth loss from structural failure due to parafunctional habits may be at higher risk for future prosthetic complications. It may be prudent to avoid acrylic and consider more durable restorative materials, such as zirconia or individual ceramic crowns on a milled titanium framework. The use of a protective nocturnal bite splint is also well advised. Patients with a history of severe periodontitis are

at higher risk of developing peri-implantitis and extraction of all remaining teeth does not reduce this risk. A systematic review revealed that the prevalence of peri-implantitis ranged from 1% to 47%¹. This is a concern for a vulnerable patient population as the most common biological complication in patients treated with full-arch fixed implant prostheses is excessive marginal bone loss². A retrospective study found that 10% of implants supporting full-arch fixed prostheses developed peri-implantitis after 5 years and this rate doubled after 10 years³. In addition, smoking, poor oral hygiene and lack of regular maintenance care further increase the risk of developing peri-implant disease. The patient population that lost their teeth due to neglect may well experience continued problems with their dental implants. The majority of patients think that dental implants are a life lasting treatment⁴. However, the longer the implants are in function the greater the chance of developing peri-implantitis, so patients who choose this solution earlier in life must be prepared for possible revisions or retreatment. The lack of predictable methods to successfully treat peri-implantitis places these implants at jeopardy for continued bone loss and eventual failure. This is problematic as these patients have already undergone significant bone reduction for implant placement and longer implants are typically used to improve primary stability for immediate loading. Peri-implantitis progresses in an accelerated pattern compared with periodontitis, often with greater surrounding bone loss. Further bone loss from implant failures may compromise the jaw for retreatment. The ridge may be too atrophic for supporting a conventional denture and the patient may not be candidate for new implants without major bone augmentation, or the use of alternative therapies such as quad zygoma implants or custom computer-aided design/computer-aided manufacturing (CAD/CAM) implant devices. These advanced procedures may be unaffordable for patients who already spent significant funds on their original full-arch implant prostheses, leaving them in a dire edentulous state. I have already treated several of these types of challenging cases and fear we will all see many more.

In a recent systematic review on the long-term success of full-arch fixed implant prostheses the authors expressed caution by stating that clinicians should apply this treatment concept on carefully selected cases: "the strategic removal of teeth with satisfactory prognosis for the sake of delivering an implant-supported full-arch prosthesis should be avoided"⁵. Giannobile and Lang⁶ pointed out that the erroneous belief that implants provide a better long-term prognosis, has been clearly rejected in several comparative studies, and that even teeth compromised by periodontal disease or endodontic problems may have a greater longevity than the average implants. Full-mouth extraction for fixed implant-supported prostheses may not be the ideal solution for every patient with a compromised dentition. When contemplating the transition to complete edentulism for implant replacement, it is important to identify high-risk patients and consider a personalised approach with the treatment tailored to their individual characteristics. The prevention of biological complications is paramount for providing a favourable long-term outcome with implant-supported prostheses. The American College of Prosthodontists has provided an informative position paper on the maintenance of full-arch implant prostheses with several guidelines⁷. Clinicians must record baseline probing depths and radiographs upon the delivery of the final prosthesis for future comparison. Prostheses should be designed with proper contours to allow adequate plaque removal, and be retrievable to manage mechanical as well as biological complications after their delivery. It is imperative that patients understand the importance of routine home care and professional maintenance to improve the long-term success of their implants. If the clinicians who provide treatment do not offer maintenance care, then it is their responsibility to direct the patient to an office that can properly monitor and maintain implant health. The interval of maintenance visits should be based on the patient's risk profile including their history of periodontal disease, smoking, systemic diseases and ability to perform adequate home care.

Managing the terminal dentition with immediate implant teeth is a viable and beneficial option

for many patients. However, this solution is not a panacea and should be carefully weighed as a treatment alternative after comprehensive evaluation of the patient and a thorough discussion of risks, benefits, alternatives and the expected prognosis. It is also well advised to educate patients so they have realistic expectations and understand that dental implants may not last a lifetime – just like their own natural teeth.



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References

1. Derks J, Tomasi C. Peri-implant health and disease. A systematic review of current epidemiology. *J Clin Periodontol* 2015;42:S158–171.
2. Papaspyridakos P, Chen CJ, Chuang SK, Weber HP, Gallucci GO. A systematic review of biologic and technical complications with fixed implant rehabilitations for edentulous patients. *Int J Oral Maxillofac Implants* 2012;27:102–110.
3. Papaspyridakos P, Barizan Bordin T, Kim YJ, et al. Implant survival rates and biologic complications with implant-supported fixed dental prostheses: A retrospective study with up to 12-year follow-up. *Clin Oral Implants Res* 2018;29:881–893.
4. Insua A, Monje A, Wang HL, Inglehart M. Patient-centered perspectives and understanding of peri-implantitis. *J Periodontol* 2017;88:1153–1162.
5. Kwon T, Bain PA, Levin L. Systematic review of short-(5-10 years) and long-term (10 years or more) survival and success of full-arch fixed dental hybrid prostheses and supporting implants. *J Dent* 2014;42:1228–1241.
6. Giannobile W, Lang NP. Are dental implants a panacea or should we better strive to save teeth? *J Dent Res* 2016;95:5–6.
7. <https://www.prosthodontics.org/about-acp/position-statement-maintenance-of-full-arch-implant-restorations/>. Accessed: 23 December 2019.