

Cost–benefit and affordability of dental implant restorations

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_Nowadays, dental implants are well established in daily practice and are well known and accepted by the public. They allow anchorage of removable and fixed dental prostheses in a predictable way. The efforts of scientists in collaboration with the implant industry have led to continuous improvement in clinical outcomes owing to the modification of implant surfaces, implant design and prosthetic connections. Together with a better understanding of biology, these developments yield fewer implant failures despite the usage of implants in compromised or at-risk patients.

In their consensus reports, the European Association for Osseointegration (EAO) stressed the need for additional research in the field of patient-centred treatment outcomes, including the economic impact of implant restorative treatments.¹ Patient-centred outcomes consider a number of parameters that are not always objectively measurable, in contrast to implant survival, bone loss, peri-implant health and incidence of complication, for example. Patient-centred outcome variables include patient satisfaction with a given treatment, improved masticatory ability and aesthetics, the absence of speech problems and the subjective evaluation of oral health-related quality of life.

_Greater attention to cost–benefit

In light of a growing interest in health economics, greater attention is also being given to the cost–benefit of tooth replacements. In economics, cost–benefit analysis compares the cost of making a product or delivering a service to the direct benefit to the individual or the society, including the revenue, the product or service will generate in the long term. Applied to dental or medical care, this analysis would have to consider resource expenditure relative to potential medical benefits, such as longer survival, reduced pain or morbidity, and greater comfort. Such an analysis would seek to determine the best choice considering limited resources, and it would weigh the possibility of undesirable outcomes and side-effects against the potential of a positive treatment outcome.

A cost–benefit analysis would consider these aspects together with the costs involved in terms of chair time, patient-related time, handling complications, and satisfying patients' expectations and preferences. It has become a part of the process of determining necessity in delivery of qualitative care and it brings the patient to the centre of decision-making. In dental science, these aspects are largely uncovered.



implants, believing that ceramics are better than acrylic teeth, and regarding aesthetics as being of sole importance.

_The best option

Long-term clinical studies demonstrate that a single implant is the best option for a missing tooth. It has a greater initial cost, but has a survival rate of above 95% and can be considered more cost-effective than a three-unit conventional bridge.³ Studies have also found that implant-retained overdentures are worth the price given the increase in quality of life and treatment satisfaction. Further-



_Tooth replacement

In the context of implant treatment, it is well established that edentulousness and wearing of a complete denture have a number of negative physiological, functional and psychosocial effects. These influence oral function and aesthetics, as well as satisfaction, self-esteem, body image and quality of life.² Consequently, improving the retention of a denture by fixation on to two to four implants or the fixation of a fixed complete dental prosthesis on to four to six implants has a tremendous effect on oral health-related quality of life. However, adaptation to tooth loss varies individually and many patients cope very well with fewer teeth and do not always desire replacements, let alone dental implants.

In Europe, the demand for tooth replacement is increasingly based upon normative and theoretical grounds and not always on patient-specific assessment. Clinicians are often stuck in dogmatic, non-evidence-based thinking. Often, they impose their personal view concerning the suggested treatment option. Some examples to illustrate this are favouring long implants and bone grafting instead of short implants, believing that the more implants the better, favouring over-dentures on connected

more, when patients' resources are limited, the two-implant solution is a better option from a cost-benefit perspective than a fixed dental prosthesis on four to six implants.

Unfortunately, patients' financial situation imposes a significant barrier to treatment choice. Although dental implants have become a mass product, the price does not reflect normal economic trends in price reduction. On the contrary, prices rise yearly. The high-tech evolution of 3-D radiographic analysis, the use of stereolithographic-guided surgery, the need for individualised aesthetics, and the increased use of additional regenerative procedures have all further increased the total cost. Although these techniques offer the ability to facilitate surgery and enhance aesthetics, the cost aspect is seldom taken into account.

_Affordability of implant treatment

One can question whether this does not lead to exclusive treatments for the happy few. In Europe alone, every year close to one million patients become completely edentulous. It is unlikely that they can afford dental implants. Research in Austria has

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“ **Highly educated** patients were more likely to **receive a single implant**, probably on grounds of **financial affordability**. ”

found that the average person considers implants too expensive and blames the dentist for the high price.⁴ Additionally, 59% of the patients expected a lifetime longevity. A previous study showed that 23% of the patients would not opt for implants at all.⁵

Another study assessing treatment advice given after tooth extraction by Flemish general dentists in Ghent demonstrated that replacement was not recommended in 42% of cases. Of the remaining cases, 54% opted for a removable appliance and only one-fifth received advice for a single implant crown. It appeared that highly educated patients were more likely to receive a single implant, probably on grounds of financial affordability. Hence, despite evidence that a single implant is the best, cost-effective way to replace a missing tooth, it is seldom advised. It is obvious that other patients' and clinicians' arguments prevail in the decision-making process.⁶

_What the future brings

Given the current economic situation, dental health care expenditure will probably slow down or even be reduced. With budget cuts and savings deemed necessary in the EU for the coming decade, an insecure situation or the perception thereof by many patients will require difficult choices. In many countries, national health or private insurance seldom reimburses patients for implant prostheses,

leading to large groups of patients requiring replacements but being without the means to pay for them. The remaining patients can afford dental implants, but have high and often unrealistic expectations regarding the device and are very critical.

It is a challenge for clinicians to deal with these economic factors and offer good treatment to as many patients as is feasible. The clinician should advise the patient which treatment option is preferable based on individual risk assessment, but the patient's preferences, including financial affordability, and the long-term cost-benefit aspects are gaining importance and cannot be neglected.

Editorial note: A list of references is available from the publisher.

_about the author implants



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