

## A literature review on the contemporary treatment modalities in implant dentistry

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### ABSTRACT

The aim is to evaluate the contemporary treatment modalities in implant dentistry. The aim of the study is to evaluate the contemporary treatment modalities in implant dentistry and to evaluate various implant treatment options in dentistry. A literature search was done in the following databases: (1) Medline (Ovid), (2) PubMed, (3) Embase, and (4) Google Scholar. To assess the implant longevity, the bone quality and its clinical evaluation were evaluated. Clinicians should actively reassure edentulous patients to attend annual recall evaluations, to consider denture replacement in a timely manner, and to contemplate the potential use of endosseous dental implants as an operative means of improving their own perceptions of function, appearance, and image.

**KEY WORDS:** Dental treatment, Dentistry, Implant dentistry, Treatment modalities

### INTRODUCTION

Implant dentistry is a boon for the restoration of missing teeth. "Implantation is defined as insertion of a material or an object, which is alloplastic in nature either partially or completely into the body for experimental, therapeutic, prosthetic, or diagnostic purpose."<sup>[1]</sup> One of the major issues challenging the modern dental clinician is the handling choice between take out a tooth with situation of a dental implant or conserving the ordinary tooth by root canal treatment.<sup>[2,3]</sup> The factors that command the correct range of one procedure over the other for each exact case are not yet well known by randomized meticulous studies. The aim of this assessment is to gauge key aspects allowing the clinician to make clinical verdicts on the basis of the best indication and in the patient's best comforts.<sup>[4,5]</sup> General considerations are deliberated that will help the booklover investigate clinical studies engrossed on this problem. Importantly, the major studies available to date indicate that there is no change in long-term forecast between single-tooth grafts and reinstated root canal-treated teeth. Therefore, the choice to treat a tooth endodontically or to place a

single-tooth implant should be founded on other criteria such as prosthetic restorability of the tooth, excellence of bone, esthetic weights, cost-benefit ratio, orderly factors, possible for adverse effects, and persistent preferences.<sup>[6]</sup> It can be concluded that endodontic treatment of teeth signifies a feasible, applied, and inexpensive way to reservation purpose in a vast array of cases and that dental grafts serve as a good other in selected signs in which forecast is poor.<sup>[7]</sup>

### DISCUSSION

An evaluation of whether to acclimatize a tooth requiring endodontic treatment or to change it with a dental implant can often involve an interesting and complex decision-making process. The literature pertains to both treatment modalities and recognizes key questions that need careful consideration in planning the most proper course of care in a given clinical status.<sup>[8]</sup> A need to grow advances across both corrections is highlighted, allowing the expansion of effective interdisciplinary evidence-based treatment tactics to maximize dealing outcome.

The following general factors should be considered for the long-term successful performance of all dental implant types:

- Biomaterials
- Biomechanics

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- Dental evaluation
- Medical evaluation
- Surgical requirements
- Healing processes
- Prosthodontics
- Post-insertion maintenance.

## HISTORY

- Ancient Egyptians and South American civilizations already experimented with re-implanting lost teeth with hand-shaped ivory or wood substitutes
- 18<sup>th</sup> century – replaced with extracted teeth other human donors
- 2500 BC – Ancient Egyptians – gold ligature
- 500 BC – Etruscan population – gold bands incorporating pontics
- 500 BC – Phoenician Population – gold wire
- 300 AD – Phoenician Population – carved ivory teeth
- 600 AD – Mayan population – implantation of piece of shell
- 1911 – Greenfield – irridoplatinum basket soldered with 24-carat gold
- 1948 – Gustav Dhal – sub-periosteal type of implant
- 1952 – Per Ingvar Branemark – use of titanium appliances in human bone
- 1967 – Leonard Linkow, Ralph, Harold Roberts – endosteal blade implant
- 1970-1980's – Tatum – custom blade implants of titanium alloy
- Early 1980's – Tatum – titanium root form implants
- Late 1980's – Niznick *et al.* – hollow basket core vent implant.
  - Screw vent implant
  - Screw vent implant with hydroxyapatite coating
  - Implant with titanium plasma spray.

Classification of implants by Charles A. Babbush

1. Endosteal
  - Ramus frame
  - Root form
  - Blade form.
2. Subperiosteal (staple bone implant or mandibular staple implant, transmandibular implant)
3. Transosteal
4. Intramucosal.

Classification based on attachment mechanism:

By BRANEMARK

- Direct contact between bone and implant
- Bioactive materials.

By Dr. Charles wises

- Encapsulation of implant and soft tissue.

Classification based on macroscopic body design of implant

- Cylinder
- Thread

- Plateau
- Perforated
- Solid
- Hallow or vented.

Classification based on surface of the implant

- Smooth
- Machined
- Textured
- Coated.

Classification based on type of the implant material

- Metallic
- Ceramic and ceramic coated
- Polymer
- Carbon compound.

Classification based on loading

- Immediate (< 2 weeks)
- Early (2 weeks -2 months)
- Delayed (> 3 months).

Classification based on method of placement

- Tapping system
- Threading system.

Classification based on the surface

- Machined surface
- Sand blasted
- Acid etched
- HA coating
- Plasma spray
- Bioactive surface
- Oxidized surface
- Combination of one/more of the above.

Methods to alter the surface texture

- Additive surface treatment
  - Titanium plasma spraying and HA coating.
- Abrasive surface treatment
  - Grit blasting
  - Acid etching
  - Grit blasting and acid etching.
- Modified surface treatment
  - Oxidized surface treatment
  - Laser treatment
  - Ion implantation.

Throughout the past 40 years, dental implants have changed to where they are now careful to be a dependable management for lost teeth. Dental implant treatment, as enthused by the work of Mark *et al.* is, however, a rapidly altering field in dentistry. Only within the last few periods has this action procedure become widely documented, and it is only variations within the past 10 years that have prompted to underwrite to standardized group of clinical product data.<sup>[9]</sup> During this time, the bids of dental implant therapy have been expanded dramatically, with

single-tooth replacements. From the days former the innovative study by Mark *et al.* until very lately, the available options for refurbishing cooperated teeth were limited to root canal usage.<sup>[10]</sup> At present, in addition to root canal action, single-tooth implants are also being future to patients who have cooperated teeth. However, the precise role of single-tooth grafts in the management of patients with cooperated teeth has remained uncertain, contentious, and the subject of considerable debate.<sup>[11]</sup> One of the major issues challenging the modern dentist is the choice of action for a harshly cooperated tooth. Yet, it is understood that not only is the outstanding of treatment argumentative but also the standards for important a tooth as collaborated are argumentative and subject to changes in explanation.<sup>[12]</sup> However, a careful and wide thought of signs, contraindications, risks, and welfares of both single-tooth implants and the natural reinstated tooth are of critical position if an accurate assessment of treatment options is to be accessible to the patient for their knowledgeable consent.<sup>[13]</sup> This review précises the available literature concerning single-tooth implants and restored natural teeth and endorses management strategies based on the latest accessible information.<sup>[14]</sup> These endorsements are evidence-based, and where signal is not available, expert estimation is used to verbalize recommendations. This review will deliberate major inquiries that might be conferred with patients for them to make a learned decision of these different handlings.<sup>[15]</sup>

Dental implant reinforced refurbishments have been added considerably to the clinical action options existing to patients.<sup>[16]</sup> However, difficulties with these behavior selections also arise due to indecorous patient assortment and scarce treatment planning joint with poor follow-up care. The problems related to the attendance of irritation include perimucositis, peri-implant bone loss, and peri-implantitis. Commonness rates of these difficulties have been stated to be as high as 56%. Treatment choices that have been stated include nonsurgical therapy, the use of locally brought and systemically delivered antibiotics, and surgical etiquettes aimed at restoring the lost bone and soft tissue around the transplants.<sup>[17]</sup> The aim of this article is to crash on three cases and review some of the handling options used in their running.

The recent attainment of dental grafts has caused in important changes in oral rehabilitation plans.<sup>[18]</sup> Some authors reflect dental implant treatment as the most reliable other for spare of teeth with dubious prognosis, presentation achievement rates of 94% of cases yielded to this therapy. However, it is vital to note that the care of natural dentition with fitting function, and suitable esthetics are the main unbiased of any therapy since an artificial repair cannot contest with a usual tooth regarding its corporeal, biomechanical, and sensory possessions.

The action of peri-implantitis and peri-implant bone loss gifts a significant scientific problematic opposite many clinicians and their patients. The search for foreseeable action procedures is on-going. Based on the two case intelligences presented and on the authors knowledge to date, the use of surface arrangement of the exposed grafts with an ultrasonic instrument using a special insert, joint with the claim of EDTA for 2 min twice along with the use of endogen and freeze-dried bone allograft, has shown optimistic results.<sup>[19,20]</sup>

Zena J. Wally, Abdul M. Haque, Antonio Feteira, Frederik Claeysens, Russell Goodall, and Gwendolen C. Reilly stated the selective laser melting processed Ti6Al4V lattices with graded porosities for dental applications (The Journal of the Mechanical Behavior of Biomedical Material).

Thaisa T. Oliveira and Andréa C. Reis mentioned various methods of fabrication of dental implants by the additive manufacturing method in his systematic review.

#### **Postscript Comment by Dr. Sendax**

One issue under scrutiny in clinical oral implantology that has apparently eluded final determination is the question of whether it is conceivable to splint natural teeth to dental implants without sustaining troublesome complications. Search of bending stiffness variables is under current reflexion as perhaps a key to cracking the apparent ability of ultrathin mini dental implants (MDIs) to be mated to natural tooth props while displaying few of the bewildering mobility and instability issues often met when conventional-width implants are comparably splinted to periodontal viable teeth intraoral. Research explorations conceived by me and my co-investigator Dr. John Brunski are considered to test the hypothesis that ultrasmall-diameter 1.8-mm IMTEC/Sendax MDIs have a degree of latitude in their winding stiffness at least similar to that of a natural tooth's periodontal ligament, thereby serving as a protective mechanism helping to protection the restorative system from the unequal loading and bite instability that may characterize the force impact of natural tooth supports connected to unyielding conventional-width implants.

## **CONCLUSION**

Edentulous remains widespread in the United States, and a renewed focus on the edentulous persevering is indicated by demographics. Dental implant therapy is effective and successful. The associated complications require a lifespan of recall evaluation for prevention and dutiful maintenance. Clinicians should actively reassure edentulous patients to attend annual recall evaluations, to consider denture replacement in a timely manner, and to contemplate the potential use

of endosseous dental implants as an operative means of improving their own perceptions of function, appearance, and image.

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