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IMMEDIATE VS. DELAYED DENTAL IMPLANTATION: A COMPARATIVE ANALYSIS

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Introduction.

Dental implantation is a widely accepted and effective method for the rehabilitation of partial and complete edentulism. The timing of implant placement following tooth extraction remains a topic of ongoing debate in implant dentistry. Immediate dental implantation, performed at the time of tooth extraction, and delayed implantation, carried out after complete healing of the extraction socket, represent two commonly used clinical approaches.

Immediate implantation offers potential advantages such as reduced treatment time, preservation of alveolar bone, and improved patient comfort. However, concerns remain regarding primary stability, risk of infection, and soft tissue management. In contrast, delayed implantation allows for complete healing and resolution of inflammatory processes but may be associated with greater bone resorption and prolonged treatment duration.

The choice between immediate and delayed implantation depends on multiple factors, including local bone conditions, presence of infection, systemic health of the patient, and clinician experience. Understanding the clinical outcomes and limitations of each approach is essential for evidence-based treatment planning.

The aim of this study is to compare immediate and delayed dental implantation in terms of clinical indications, advantages, limitations, and treatment outcomes based on current scientific evidence.

Materials and Methods. This study is based on an analytical review of scientific literature published in peer-reviewed journals indexed in international databases such as PubMed, Scopus, and Web of Science. Publications from the last 10–15 years were selected using keywords including immediate dental implantation, delayed implantation, implant timing, osseointegration, and implant success rates.

The reviewed materials included randomized clinical trials, cohort studies, systematic reviews, and meta-analyses evaluating survival rates, marginal bone loss, soft tissue outcomes, and complication rates associated with immediate and delayed implant placement.

Comparative analysis focused on clinical parameters such as implant stability, peri-implant bone changes, aesthetic outcomes, and patient satisfaction. Factors influencing treatment success,

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including bone quality, implant design, surgical technique, and postoperative care, were also considered.

Results and Discussion. The literature analysis indicates that both immediate and delayed dental implantation demonstrate high success and survival rates when appropriate case selection and surgical protocols are followed. Immediate implantation has been shown to reduce alveolar bone resorption and maintain soft tissue architecture, particularly in the aesthetic zone.

Primary implant stability is a critical factor for immediate implantation success. Adequate bone volume and absence of acute infection are essential prerequisites. In cases with favorable conditions, immediate implantation provides comparable osseointegration outcomes to delayed protocols.

Delayed implantation remains the preferred approach in sites with active infection, insufficient bone volume, or compromised soft tissues. Allowing time for complete healing may reduce the risk of postoperative complications and enhance long-term stability.

Comparative studies suggest no significant differences in long-term implant survival rates between immediate and delayed implantation. However, immediate implantation may be associated with a higher risk of early complications if strict clinical criteria are not met.

Conclusion

Both immediate and delayed dental implantation are reliable and effective treatment modalities with high success rates. The choice of implantation timing should be based on careful clinical evaluation, patient-specific factors, and clinician expertise.

Immediate implantation offers advantages in terms of reduced treatment time and preservation of tissue architecture but requires strict adherence to clinical indications. Delayed implantation remains a safe and predictable option, particularly in complex clinical situations.

Further long-term studies are needed to establish standardized protocols and to optimize treatment outcomes in implant dentistry.

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