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Integrated Endodontic and Implantology Strategies in Oral Rehabilitation for Compromised Dentition

Abstract
Dentition compromised dentition provides a complicated restorative challenge whereby biological preservation, structural prognosis and functional rehabilitation need to be closely balanced. This review examines the integration of endodontic and implantology strategies in the management of compromised teeth, emphasizing that contemporary oral rehabilitation should be guided by individualized, evidence-based decision-making rather than by a preference for extraction or replacement alone. Key biological and biomechanical principles underlying periapical healing, osseointegration, bone remodeling, and load distribution are considered alongside current advances in endodontic retreatment, irrigation, regenerative procedures, bioactive materials, digital implant workflows, and tissue augmentation. The review also addresses the factors influencing treatment selection, including restorability, periodontal support, structural integrity, and long-term maintenance. Comparative evidence indicates that both endodontically treated teeth and implant-supported prostheses can provide favorable survival and patient-reported outcomes when applied in appropriate clinical contexts. Interdisciplinary treatment planning involving endodontic, periodontal, prosthodontic, and surgical perspectives emerges as central to optimizing results in complex cases. New changes in the fields of artificial intelligence, regenerative biomaterials, and precision dentistry are bound to further enhance clinical judgment and increase treatment options. Implantology and endodontics must be seen as complementary processes to a single rehabilitative system of the dentition compromised.

1. Introduction
The dentition compromised is an emerging health issue affecting the world, and this has been mostly predetermined by the rising rate of periodontal diseases and their consequences, such as loss of teeth and functional impairment. Modern epidemiological evidence demonstrates that the socio-demographic burden of periodontal diseases in different populations and geographical locations has been significant and continues to be high, which is a product not only of demographic changes but also disparities in access to prophylactic and therapeutic oral care services [1]. This is exacerbated by socioeconomic inequalities, behavioral risk factors, and the reciprocity between periodontal disease and systemic diseases (diabetes and cardiovascular disorders), which have confirmed periodontal pathology as a significant cause of oral morbidity and diminished quality of life worldwide [2]. Simultaneously, demographic change of the population towards the ageing group has monstrously altered the clinical presentation of dental patients. The elderly patients usually possess multifaceted oral health conditions with severely restored periodontium, deteriorated structural support, reduced periodontal support and more endodontically restored teeth. All these are leading to the fact that the treatment planning becomes quite complicated and needs practical, personal, and multidisciplinary approaches to care. This has resulted in a more holistic, procedure-based approach to oral reconstruction that aims at maximizing the functionality, esthetics and prognosis of the long term and is in compliance with the consideration and anticipations of the body at large [3].

In response to these challenges, modern dentistry has equally demonstrated a growing interest in the idea of sustainability and biological preservation. The focus of this paradigm is on maintaining the natural structure of the tooth and the supporting tissues, and advises on the least invasive forms of procedures and long-term biocompatibility compared to more aggressive and replacement-oriented approaches. This modification is in line with more general concepts of sustainable healthcare, where resource saving, reduced biological cost, and natural functionality become the primary concerns [4]. In this context, endodontics remains an important issue because it promotes the preservation of natural dentition due to the development of diagnostic imaging, chemo-mechanical disinfection, and obturation methods, even when the case was considered undesirable before [5]. At the same time, recent progress in regenerative biology and biomaterials has further increased the therapeutic potential of regenerating the impaired teeth. The regeneration of pulp -dentin complex, stem cell-based therapies, and bioactive materials have created new opportunities in the process of restoring structural and functional integrity, and thus strengthening the importance of preservation-oriented strategies in clinical practice [6]. However, the field of implantology has developed concurrently with the ability to provide highly predictable and effective alternatives to the replacement of non-restorable teeth. The design of implants, the surface changes, the computer-assisted operating protocols, and digital processes have been able to greatly enhance the clinical performance and expand the indications of implant-supported rehabilitation [7].

In light of these similar developments, a more patient-focused and integrative method is more and more becoming a replacement for the conventional dichotomy between tooth preservation and implant replacement. Modern oral rehabilitation requires a subtle sense of what teeth to retain, restore, or replace, based on biological, mechanical and patient-specific aspects. In line with this, the purpose of the present review will be to critically analyze integrated endodontics and implantology approach, its main biological rationale, clinical applicability, and effectiveness in maximizing the results of patients with impaired dentition.

2. Review Methodology

This comprehensive review was created with the help of a systematic search of the published literature on the topics of endodontic and implantology approaches to the rehabilitation of the impaired dentition. The major electronic databases, i.e., PubMed, Scopus, Web of Science, and Google Scholar, were searched to identify the relevant articles. Relevant keywords included compromised dentition, endodontic retreatment, implant placement, osseointegration, regenerative endodontics, treatment planning and comparative outcomes as single and as combination keywords. Preference was offered to the recent systematic reviews, clinical studies, cohort studies, and high clinical relevance landmark papers. Articles were filtered by relevance to the biological principles, treatment decision making, clinical outcomes, interdisciplinary care, and emerging trends. The chosen literature has been critically reviewed and synthesized anecdotally to present an evidence-based and clinically significant overview.

3. Biological and Biomechanical Principles

3.1 Biological Basis of Tooth Repair and Periapical Healing

The pulp-dentin complex and the periapical structures determine the biological activity of the dental tissues, which determines the ability to repair and regenerate the tissues. It is a process that includes concerted cellular reactions, such as stem cell activation, angiogenesis, and the deposition of reparative dentin, all of which play a role in the restoration of tissues after injury or infection [8]. Effective microbial elimination and the creation of a fluid-tight seal in the root canal system are considered to be effective in endodontic treatment to ensure successful periapical healing is achieved. Endodontic sealers' characteristics and obturation quality are crucial in the minimization of inflammation and fostering periapical tissue healing [9]. Other factors such as lesion size, quality of endodontic root-end filling and host immune response affect surgical endodontic outcomes. Exactness of surgical procedure and correct selection of the cases are thus necessary to enable foreseeable healing and success over time [10].

3.2 Osseointegration and Implant Healing

In the field of implantology, the most important biological process is termed Osseointegration, which refers to the direct structural and functional bond between the bone and the implant surface. This is followed by later stages of adsorption of protein, cellular adhesion and formation of new bone, making it eventually an anchorage that is stable enough to support functional loads. Sufficient primary stability, adequate vascularization and controlled healing environments can be used to achieve effectiveness in terms of achieving effective osseointegration [11]. Bone remodeling around the implants is a complex process and multi-factors depending on the method of the surgery performed, the type of implant surface, as well as patient-specific factors, such as the health condition of the entire body and bone metabolism. The variables are significant in terms of quality and quantity of bone formation and are extremely crucial in determining the outcome of the implant [12].

3.3 Biomechanical Considerations and Load Distribution

The biomechanical behavior of natural teeth and dental implants has a high difference. Periodontal ligament sustains teeth and provides them with a viscoelastic feature to absorb shocks and redistribute adaption loads. On the contrary, implants lack this ligamentous interface and there the forces of occlusion are directly passed to the surrounding bone. The bone density and its structural characteristics seriously influence the movement of mechanical stress in the vicinity of the implants. Stress pattern and bone remodeling in the

future is largely dependent on the early bone density and a poor state may result in stress concentration and loss of marginal bone [13]. Therefore, the best combination of biomechanical stability is required regarding the stability and survival of the implants.

3.4 Emerging Technologies and Biological Insights

Research methodologies are developing to increase the knowledge about biological interactions in endodontics and implantology. Microfluidic technologies, specifically, provide new technologies for investigating microbial behavior, inflammatory and tissue responses to microbial behavior under controlled conditions. Such systems are useful in terms of understanding the pathophysiology of endodontic infections and peri-implant diseases, which will help in developing more specific and efficient treatment plans [14]. Figure 1 summarizes the main biological processes which underlie periapical healing and osseointegration.

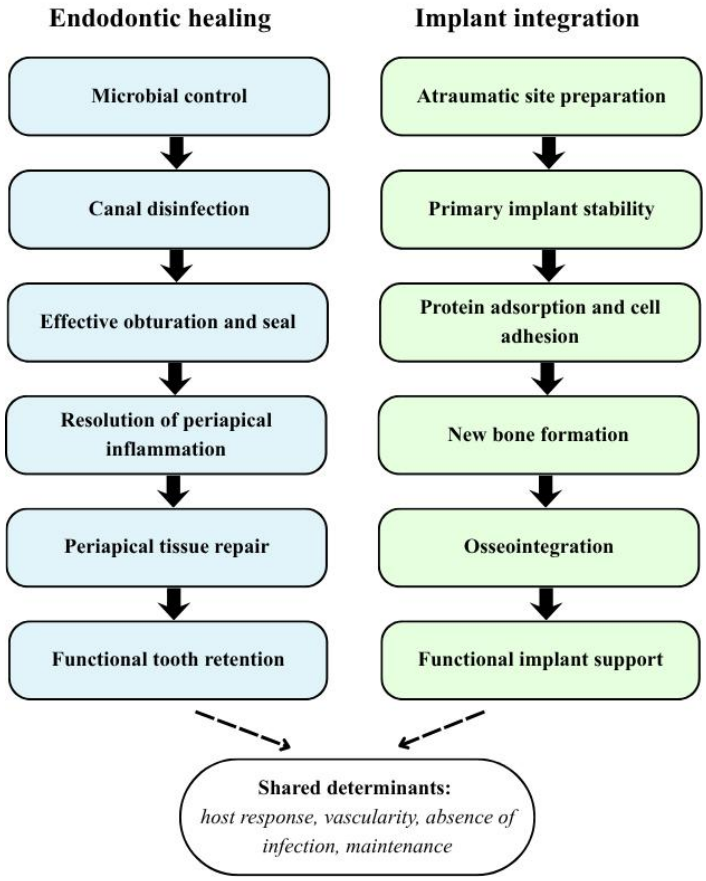

Figure 1. Biological foundations of tooth preservation and implant integration

4. Decision-Making in Tooth Preservation and Implant Replacement

4.1 Endodontic Retreatment and Tooth Preservation Potential

Endodontic retreatment is still one of the main strategies of maintaining natural dentition, especially where there is persistent or secondary infection. The progression in the protocol of retreatment, such as enhanced methods of eradication of filling materials with or without adjunctive solvents, has promoted the success of canal disinfection and treatment [15]. Both surgical and nonsurgical retreatment have been shown to have a good long-term prognosis in terms of survival of teeth, and this supports the viability of the preservation process as long as proper case choice is implemented [16].

4.2 Prognostic Factors Influencing Treatment Outcomes

Much depends on the prognostic indicators in terms of the remaining tooth structure, periodontal support, the periapical pathology state, and the quality of the previous treatment to make a decision to preserve a tooth or not. Organized evidence indicates that these aspects should be thoroughly checked to see the prospects of success in the long term and shape the program of treatment [17]. The presence of teeth of sufficient structural integrity and controlled infection implies more positive results, and the favorability of a conservative, preservative approach.

4.3 Comparative Outcomes: Retreatment and Implant Replacement

Where the prognosis is not clear, the clinician should compare the consequences associated with retreatment and the consequences associated with implant placement. The long-term cohort studies have shown that retreatment and implant replacement may produce similar clinical results, in case they are appropriately indicated, and the success of such approaches depends much on the choice of cases and their implementation [18]. Equally, survival studies indicate that endodontic

retreatment may obtain similar outcomes as implant re-implantation and, therefore, preservation should not be neglected in favor of implants without a comprehensive examination [19].

4.4 Restorative Considerations in Treatment Planning

In teeth having weakened clinical crowns, restorability is an important parameter in decision-making. Often, endodontic therapy is used in conjunction with restorative and surgical treatment to achieve success. Methods of lengthening of crowns, post-core builds-ups, and tooth bonding are commonly used to help improve the structural stability and guarantee long-term functionality [20]. The key clinical considerations affecting whether to preserve the tooth using tooth preservation or to use implants are outlined in Table 1.

Table 1. Key factors guiding tooth preservation and implant replacement

Decision domain	Tooth preservation favors	Implant replacement favors	Clinical relevance
Restorability	Adequate remaining tooth structure	Extensive structural loss or non-restorability	Determines feasibility of long-term restoration
Endodontic status	Retreatment or surgery is feasible	Persistent disease with poor salvage potential	Influences biological prognosis
Periodontal support	Stable or maintainable support	Advanced attachment loss with poor maintainability	Affects long-term survival
Patient-related factors	Preference for natural tooth retention, acceptable maintenance capacity	Preference for replacement, favorable surgical and maintenance profile	Supports individualized decision-making
Long-term outlook	Favorable functional prognosis after preservation	Better predictability after replacement	Guides definitive treatment planning

Individualized and evidence-based decision-making must be used in tooth preservation and implant replacement. The awareness of the complementary nature of endodontics and implantology can enable clinicians to choose the most suitable intervention to be used in each clinical situation and provide the best biological and functional results.

5. Advances in Endodontic Strategies for Compromised Teeth

5.1 Contemporary Developments in Root Canal Preparation and Irrigation

The latest advances in the root canal instrumentation have enhanced the effectiveness, accuracy and safety of canal preparation. Recent tendencies are the "minimal invasiveness of shaping used, the high level of flexibility of nickel-titanium tools, and the adaptation to the complex anatomies of the root canals, which facilitate the use of better debridement and preservation of the dentinal structure [21]. Simultaneously, the protocols of irrigation have evolved to be more complex, as the awareness that the mechanical preparation, eliminating the microbial biofilms and tissue remnants, is not enough. The modern irrigation methods aim at maximizing the chemical action, penetration and activation of an irrigant to promote greater disinfection of anatomically challenging canal systems [22].

5.2 Retreatment and Management of Failed Endodontic Cases

Root canal treatment failure has continued to be a vital element of endodontics in compromised teeth management. Failure is commonly related to chronic infection, incompetence of prior debridement, or anatomical anomalies, including missed canals that are untreated. Close re-assessment and re-treatment can thus re-establish prognosis in teeth which may otherwise be contemplated as being extracted, especially when the root cause of failure can be discovered and appraised [23]. Nonsurgical root canal retreatment or apical surgery can be used in the treatment of apical periodontitis in both cases. There is limited evidence to indicate that the choice of treatment ought to rely on the accessibility of the anatomy, the quality of what has been done previously and the severity of periapical pathology instead of an equal preference towards a particular method [24].

5.3 Regenerative and Bioactive Approaches

One significant development in contemporary endodontics is the introduction of regenerative procedures that focus on the restoration of the viability and functionality of damaged dental tissues. The regenerative endodontics protocols are backed by modern biomaterials that are aimed at not only the control of infection, but also the stimulation of tissue repair and biological recovery of the root canal system [25]. Development of bioactive endodontic materials in this regard has expanded treatment opportunities by promoting mineralization, sealing ability and desirable interaction with other tissues. The role of these materials in the healing process is more than something passive of filling up the wound, but it is an active facilitation of the processes of biological repair [26]. Figure 2 provides an overview of the main contemporary endodontic treatment methods that can be employed to preserve the inferior quality teeth.

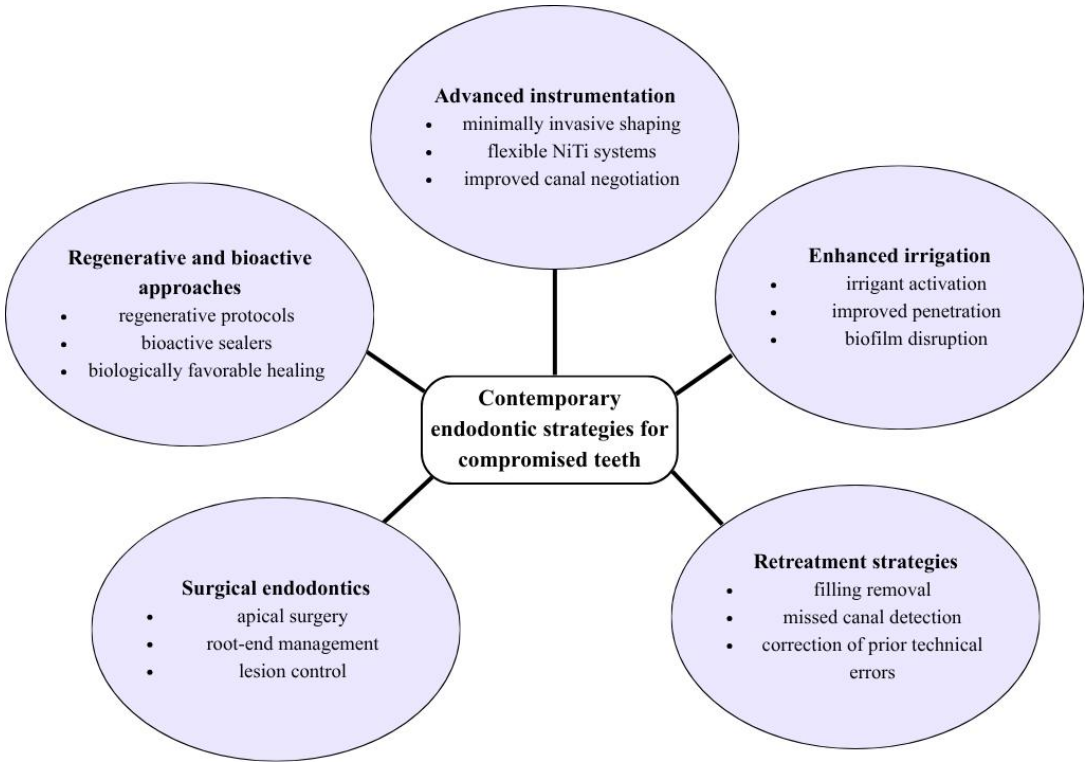

Figure 2. Contemporary endodontic strategies for compromised teeth

5.4 Long-Term Outcomes and Clinical Relevance

The worth of these advances will eventually be based on their role in sustainable clinical outcomes. The data of long-term follow-up suggest that nonsurgical endodontic treatment is able to reach high success rates in terms of tooth survival and enduring success of treatment, provided it is completed with due diligence and case selection [27]. This supports endodontics as a predictable and biologically conservative approach in the treatment of compromised teeth.

Endodontics has been broadened concerning therapeutic options due to the innovations in instrumentation, irrigation, retreatment plans and regenerative materials. The above developments favor a preservation-based approach because of enhancing disinfection, managing cases that had not been successful before, and the long-term survival of the compromised teeth in the structure.

6. Contemporary Implantology in Compromised Dentition

6.1 Prosthetically Driven Planning and Timing of Implant Placement

The contemporary treatment of the implant is highly prosthetically-based, with the planning of treatment being based on the desired functional and esthetic results. Some important factors are occlusal design, positioning of the implants, the emergence profile, and the accessibility of the maintenance, and all these are critical to the success over the long term, particularly in compromised dentitions [28]. The schedule used in placing the implants is also a key factor in planning the treatment. There is also evidence on comparison of immediate and delayed placement of implants, although both have been found to reach positive long-term results with patients having periodontal compromises as long as proper case selection and site management is achieved [29].

6.2 Digital Workflow and Guided Implant Surgery

The use of digital technologies has contributed to the accuracy and predictability of implant therapy to a large degree. Digital processes enable three-dimensional evaluation of anatomic structures, planning virtual implants, and positioning prosthetically guided, thus enhancing precision and decreasing surgical variability [30]. Guided implant surgery, especially the one achieved with the full digital protocols, has shown high rates of placement accuracy and, therefore, is particularly useful in difficult cases when optimal placement and spatial positioning are the key factors [31].

6.3 Hard and Soft-Tissue Considerations

The conditions that are needed to have an effective implant therapy are those that are appropriate in bone volume and in good soft-tissue conditions. The lack of bone and soft-tissues is common in injured dentition, and the procedure of augmentation is required to improve the situation at the sites and enable the insertion of the implants. Such interventions are not only more likely to facilitate the process of implant stability and prevent such problems as tissue loss in the long term but also allow for establishing esthetic integration [32]. Moreover, the properties of peri-implant phenotype, including the thickness of soft tissues and keratinized mucosa, are especially significant in measuring the esthetic outcomes and predisposing factors to complications, which makes the need to pay special attention to the conditions of tissues and regulate them [33].

6.4 Complications and Risk Management

The complications are one of the critical issues in the field of implantology despite the improvement of the design of the implants and methods of surgery. These can be biological complications, and these are peri-implant inflammation, mechanical failures and problems with the prostheses, especially in those whose periodontal health is compromised or those with complex rehabilitative requirements. To reduce the number of failures and guarantee the success of implants in the long run, therefore, proper risk assessment, careful planning, and maintenance strategies are necessary [34]. Figure 3 depicts the modern process of implantation in subgingival dentition, from tissue management. Table 2 compares major contemporary advances in endodontics and implantology as may be applied in compromised dentition.

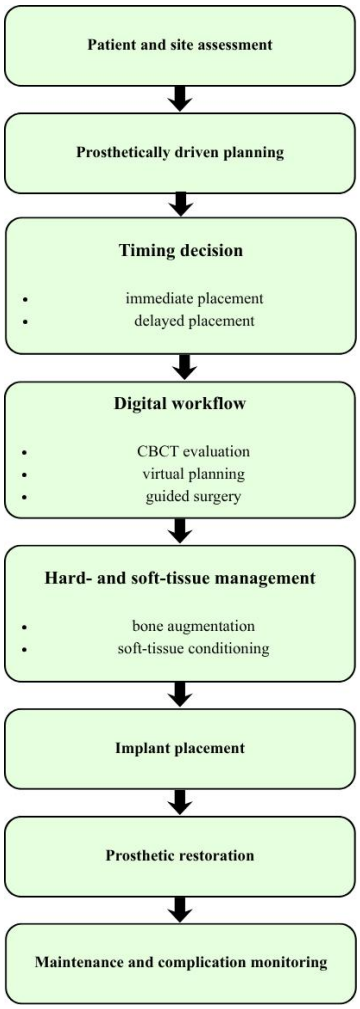

Figure 3. Contemporary implantology workflow in compromised dentition

Table 2. Contemporary therapeutic advances in endodontics and implantology

Domain	Endodontic advances	Implantology advances	Clinical significance
Treatment planning	Improved case selection and retreatment strategies	Prosthetically driven planning and timing protocols	Supports more predictable rehabilitation
Technical execution	Modern instrumentation and enhanced irrigation	Digital workflow and guided surgery	Improves precision and procedural efficiency
Biological enhancement	Regenerative procedures and bioactive materials	Bone and soft-tissue augmentation	Expands treatment possibilities in compromised sites
Management of complexity	Retreatment of failed cases and apical surgery	Management of deficient ridges and peri-implant phenotype	Increases feasibility in challenging cases
Long-term care	Preservation of strategic teeth	Maintenance of implant-supported restorations	Reinforces durability of treatment outcomes

A recent trend in implantology in compromised dentition is the transition toward precision-based, biologically informed and prosthetically directed. Clinicians can use digital technologies, tissue management plans, and mitigation measures to increase

the predictability and life span of an implant-supported rehabilitation.

7. Integrated Treatment Planning and Interdisciplinary Approaches

Management of compromised dentition is becoming more dependent on the integrated treatment planning of combining endodontic, periodontal, prosthodontic, and implant viewpoints. Through this interdisciplinary approach, clinicians are able to transcend the issue of isolated decision making but rather they are able to work out coordinated strategies that will lead to the best biological and functional results.

7.1 Strategic Assessment of Tooth Retention and Replacement

One of the key stages of the integrated planning is the assessment of the need to retain or replace a tooth as part of the overall rehabilitative plan. There has been evidence that the decision to replace teeth with implants is not always because of endodontic failure, but this has been as a result of the cumulative structural, periodontal or restorative constraints. This brings out the relevance of thorough evaluation prior to deciding on extraction [35]. Meanwhile, long-term evidence does show that endodontically treated teeth may show good survival in cases where they are properly treated, which justifies their further use in rehabilitation solutions [36].

7.2 Treatment Sequencing in Complex Lesions

The order of treatment has a major influence on the outcomes, especially when it comes to combined periodontal-endodontic lesions. There is also systematic evidence that various sequencing methods can affect healing and overall treatment effectiveness, and it is essential to plan sequencing across disciplines [37]. Rather than analyzing the conditions separately, clinicians should locate the primary causative agent of pathology and rank the sequence of measures in such a way to be as successful as possible in the treatment. In addition, such acute cases as endodontic emergencies must be treated immediately, and it can influence the course of treatment. The clinical practices are in line with facts that patient profile, symptoms severity and timely intervention are important in patient outcome and hence the importance of early stabilization of patients in an interdisciplinary setting [38].

7.3 Periodontal–Prosthodontic Integration

Principles of periodontal and prosthodontic should be incorporated so as to achieve long-term success of compromised dentition. The stability of the tissue and esthetics of natural teeth and implants is directly affected by the periodontal health, whereas the functional requirements and restorative endpoints are determined by the prosthodontic planning. Modern clinical practices focus on the concomitant inclusion of these factors in the bid to maximize the treatment outcome and keep the oral health [39].

The interdisciplinary treatment planning offers an organized approach to the complicated clinical situations. Combining endodontic, periodontal, prosthodontic, and implant factors, clinicians are able to make better decisions, better sequence of treating, and more predictable and long-lasting outcomes in patients with compromised dentition in compromised state.

8. Clinical Outcomes, Complications, and Comparative Effectiveness

8.1 Survival and Long-Term Outcomes

Both long-term survival rates of endodontically treated teeth and implant-supported prostheses are high. According to systematic reviews, there is no evidence that one of the two modalities is better than the other in terms of survival outcomes, and there is no universal evidence [40]. The review articles also highlight the point that long-term success highly relies on the proper selection of cases, the quality of treatment and maintenance, but not the superiority of either of the modalities [41].

8.2 Complications and Failure Patterns

Although there are similar survival rates, complications between endodontic and implant therapies are different. Endodontically treated teeth are more likely to experience complications like reinfection, persistent periapical pathology and structural fractures. On the contrary, implant-supported prostheses have been linked to biological complications such as peri-implantitis and mechanical and prosthetic failures [42]. The similarity of the nature of the complications in comparative systematic reviews proves that the frequency of their occurrence may be similar, and the risk assessment should be individualized [43].

8.3 Patient-Reported Outcomes and Quality of Life

Patient-reported outcomes and oral health-related quality of life have established themselves as vital parameters of measuring outcome of treatment. Endodontic therapy has been demonstrated as a great way of enhancing patient health by conserving the natural dentition and functional capacity, especially in controlling pain and preventing infections [44]. Likewise, the implant therapy is associated with high patient satisfaction and functional outcome. Comparative research indicates that the two treatment modalities are similar to each other in terms of quality-of-life outcome in cases where successful and there is little difference in patient satisfaction with time [45].

8.4 Comparative Effectiveness in Clinical Practice

The comparative effectiveness of endodontics and implant treatment should be placed in a wider clinical perspective. The two techniques are said to be stable, efficient, and the outcomes of the techniques are found to be dependent on the anatomical conditions, health, and well-being, the expertise of the operator and the maintenance policies in the long run [42]. Hence, the decision-making process must not be based on the information of survival but must incorporate the risks of complications, patient interests, and functional needs. Table 3 gives a concise comparison of the clinical profile of endodontically treated teeth and implant-supported prostheses.

Table 3. Comparative profile of endodontically treated teeth and implant-supported prostheses

Parameter	Endodontically treated teeth	Implant-supported prostheses	Clinical implication
Biological basis	Periapical healing and preservation of natural tissues	Osseointegration within alveolar bone	Reflects different healing mechanisms
Common complications	Reinfection, persistent apical disease, fracture	Peri-implantitis, marginal bone loss, prosthetic complications	Risk profile differs by modality
Patient-centered value	Retention of natural tooth and proprioception	Stable replacement of non-restorable teeth	Choice should reflect functional priorities
Maintenance needs	Periodic restorative and endodontic review	Long-term peri-implant and prosthetic maintenance	Both require ongoing follow-up
Best indication	Restorable tooth with favorable prognosis	Non-restorable tooth or poor salvage potential	Supports case-specific treatment selection

Endodontic and implant therapies are both valid and complementary therapies in the treatment of impaired dentition. Their consequences and shortcomings should be delicately grasped in order to design a treatment plan and gain the best long-term outcomes.

9. Emerging Trends and Future Directions

The existing technological and biomaterials maturation is rapidly transforming the image of endodontics and implantology, and introduces the opportunity of more specific, personalized and biologically inclined approaches to treatment. These emerging trends will even refine clinical decision making and refine the outcomes of the long-term treatment of compromised dentition. The application of artificial intelligence (AI) is already being introduced to the dental field, which has dangerous implications both in the field of implantology and endodontics. The use of AI-based systems in the area of implant dentistry is being explored, and they are likely to be applicable in the treatment planning, positioning of the implants, and determining the risks to enhance the precision of the diagnostic information and the effectiveness of the process [46]. Similarly, AI solutions have demonstrated effectiveness in endodontics related to endodontic diagnosis, endodontic anatomical variation identification, and endodontic predictive results, which can help in improved and objective clinical decision-making [47]. As the technologies continue evolving, they will become among the primary providers of standardization of care and reduce the difference in operations by operators.

Following the trends of digital technologies, advancement in biomaterials, and regenerative strategies is changing the possibilities of treatment. The creation of new scaffolds, bioactive materials, has, in large part, enhanced regenerative endodontic therapy, which, besides controlling infections, is capable of restoring tissue architecture and functions. The biomaterials are expected to support the proliferation of cells, their differentiation, and tissue repair, and they are expected to offer an alternative treatment approach compared to the conventional approaches [48]. This progress is part of the broader movement of biologically oriented treatment, which tries to preserve and to restore natural tissues. In addition, the concept of accuracy or individual dentistry is becoming increasingly popular. Off the one-size-fits-all principle, individualized dental medicine is concerned with the planning of dental treatment, which relies on the individual patient factors, including genetic profile, systemic health, risk assessment and lifestyle. This paradigm shift can be used to make the treatment process more streamlined to accommodate therapeutic strategies to the unique characteristics of the patient [49].

Personalized treatment, the incorporation of artificial intelligence, and regenerative biomaterials are major developments in the field of dental care. These new trends will help improve the diagnostic capacities, improve therapeutic accuracy, and justify more personalized and treatment of impaired dentition.

10. Conclusion

The concept of oral rehabilitation in compromised dentition is not to be discussed as an option between saving teeth and implants anymore, but rather as a process based on biological understanding, which is to pick the most suitable alternative to the corresponding site and the patient. The data examined in this article demonstrate that endodontic and implant therapies do not represent competing fields; on the contrary, they are complementary units of modern restorative care. Endodontic retreatment, regenerative treatment, bioactive materials, digitalized workflow in implantation, and tissue augmentation have enhanced the abilities of saving teeth and replace them. The accuracy of diagnosis, evaluation of restorability, periodontal and structural conditions, sequence in treatment, and maintenance are the key elements to clinical success in the future. It is also valuable that it is interdisciplinary and incorporates endodontic, periodontal, prosthodontic, and surgical in view to enhance predictable functional and esthetic outcome. Although implants cannot be eliminated with the non-restorable teeth, maintenance of natural dentition, which is strategically maintainable, provides a great biological and functional value. The further development of this decision-making system is likely to bring much more sophisticated technologies (regenerative therapy, artificial intelligence, precision dentistry, etc) and help provide more personalized care.

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