

# Multidisciplinary Approach and Patient-Centered Care for Preserving Natural Teeth

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## ABSTRACT

This case report highlights the successful preservation of a compromised dental bridge in a 35-year-old patient using a combined endodontic-periodontal approach. The decision to retain the bridge, rather than opting for extraction and implant placement, was influenced by the patient's age, ongoing bone remodelling dynamics, and preference for preserving natural tooth structure. Advanced diagnostic imaging, particularly cone-beam computed tomography (CBCT), played a critical role in diagnosis and treatment planning. A multidisciplinary, patient-centered approach involving periodontists, endodontists, and restorative dentists ensured comprehensive care. The successful outcome underscores the importance of integrating conservative treatment modalities with advanced technology to achieve long-term success and patient satisfaction. This case aligns with the growing trend in dentistry to prioritize tooth preservation over more invasive procedures, particularly in younger patients.

**Keywords:** Tooth Preservation, Endodontic-Periodontal Approach, Cone-Beam Computed Tomography (CBCT), Patient-Centered Care.

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## INTRODUCTION

The preservation of natural teeth and dental prostheses, such as bridges, remains a cornerstone of modern dentistry, even in an era dominated by dental implants. This case report highlights the successful preservation of a compromised dental bridge in a 35-year-old patient using a combined endodontic-periodontal approach. The decision to retain the bridge, rather than opting for extraction and implant placement, was influenced by several factors, including the patient's age, the dynamic nature of bone remodeling in younger individuals, and the patient's preference for preserving natural tooth structure. This discussion will explore the rationale behind this treatment approach, compare it to extraction and implant placement, and emphasize the importance of advanced diagnostic tools, interdisciplinary collaboration, and patient-centered care in achieving successful outcomes.

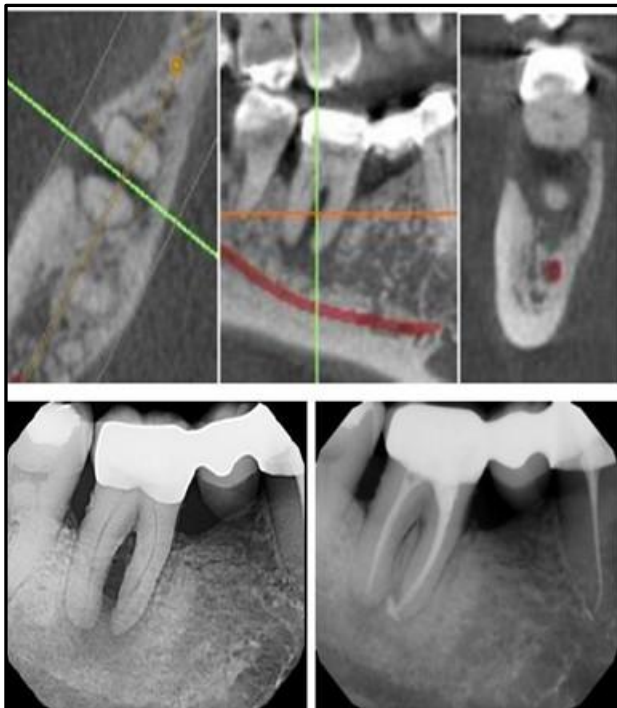
## MULTIDISCIPLINARY APPROACH AND PATIENT-CENTERED CARE

The success of this case was largely attributed to the multidisciplinary approach involving periodontists, endodontists, and restorative dentists. This collaborative effort ensured that both the periodontal and endodontic aspects of the patient's condition were addressed comprehensively. The patient's preference for preserving the existing bridge was a central factor in the treatment

decision, highlighting the importance of shared decision-making in modern dental care. As Clark and Levin (2019) argue, the preservation of natural teeth remains relevant even in the era of dental implants, particularly when patient preferences and specific clinical conditions align with conservative treatment options.<sup>1</sup> The patient-centered approach in this case is consistent with the findings of D Re et al. (2017), who emphasize that patients often prefer to preserve their natural teeth when given the choice, even if the alternative is a more technologically advanced solution like dental implants. This preference is often driven by psychological factors, cost considerations, and the desire to avoid invasive procedures.<sup>2</sup> In this case, the patient's satisfaction with the preserved bridge's functionality and aesthetics two years post-treatment further underscores the value of patient-centered care. Recent studies have further emphasized the importance of patient-centered care in dental treatment planning. According to a 2023 study by Glick et al., patient involvement in decision-making significantly improves treatment outcomes and satisfaction, particularly in complex cases involving both endodontic and periodontal issues (Glick et al., 2023).<sup>3</sup> This aligns with the approach taken in this case, where the patient's preference for preserving the bridge was a key factor in the treatment decision.

### PATIENT AGE AND TREATMENT DECISIONS

The patient's age played a significant role in the decision to preserve the existing bridge. Younger patients, such as the 35-year-old in this case, often present unique challenges for implant placement due to ongoing bone remodeling and growth. As Chandki and Kala (2012) discuss, the dynamic nature of bone in younger individuals can affect the long-term stability of dental implants, making conservative treatment modalities a more viable option.<sup>4</sup> The combined endodontic-periodontal approach used in this case offered a conservative yet effective solution, avoiding the potential complications associated with implant placement in younger patients. Moreover, the decision to preserve the bridge aligns with the broader trend in dentistry to prioritize tooth preservation whenever feasible, especially in younger patients. This trend is supported by the findings of Abella et al. (2023), who highlight the predictors of success in tooth retention versus extraction and implant placement periodontally compromised teeth.<sup>5</sup> Their research suggests that conservative approaches, when appropriately applied, can yield long-term success and patient satisfaction. A 2022 study by Papapanou et al. further supports the importance of considering patient age in treatment planning.<sup>6</sup> The study found that younger patients with periodontally compromised teeth often benefit more from conservative treatments, as their bone remodeling processes can lead to better healing and regeneration outcomes compared to older patients. This finding is particularly relevant to the case at hand, where the patient's age and bone dynamics were key factors in the decision to preserve the bridge.



**Fig 1: Before and 2 years after treatment. 3 D and post treatment imaging showing a successful outcome for a bridge, which was diagnosed as hopeless and treatment planned for extraction and implant placement.**

### ADVANCED DIAGNOSTIC IMAGING

The use of cone-beam computed tomography (CBCT) imaging was instrumental in the successful outcome of this case. CBCT provided critical three-dimensional information about the extent of

periodontal and periapical pathology, enabling precise diagnosis and treatment planning. As Chen et al. (2022) note in their meta-analysis, CBCT has become an invaluable tool in endodontics, particularly in complex cases where traditional two-dimensional imaging may fall short.<sup>7</sup> In this case, CBCT imaging allowed the dental team to accurately assess the extent of bone loss and plan the combined endodontic-periodontal treatment accordingly. The follow-up CBCT imaging two years post-treatment confirmed successful healing, with no evidence of new bone loss or progression of periapical lesions. This outcome highlights the importance of advanced diagnostic tools in achieving long-term success in complex dental cases. The integration of CBCT imaging with conservative treatment modalities, as demonstrated in this case, represents a significant advancement in modern dental care. Recent advancements in imaging technology have further enhanced the diagnostic capabilities of CBCT. A 2023 study by Bornstein et al. demonstrated that the use of artificial intelligence (AI) in conjunction with CBCT imaging can improve the accuracy of diagnosing periodontal and periapical pathologies, leading to more precise treatment planning and better outcomes.<sup>8</sup> This technological advancement could further enhance success of combined endodontic-periodontal approaches in future cases.

### COST-EFFECTIVENESS OF TOOTH PRESERVATION

While this case report does not include a specific cost analysis, the decision to preserve the existing bridge is likely offered a more cost-effective solution compared to extraction and implant placement. Nagpal et al. (2024) found that tooth preservation can be a cost-effective alternative to implants in patients with severe periodontal disease, particularly when considering the long-term maintenance costs associated with implants. In this case, the preservation of the bridge not only met the patient's aesthetic and functional needs but also likely reduced the overall financial burden associated with more invasive treatment options.<sup>9</sup> A 2023 study by Listl et al. further supports the cost-effectiveness of tooth preservation. The study found that, over a 10-year period, the costs associated with maintaining natural teeth through conservative treatments were significantly lower than those associated with implant placement and maintenance.<sup>10</sup> This finding is particularly relevant to the case at hand, where the decision to preserve the bridge likely resulted in long-term cost savings for the patient.

### COMPARISON TO EXTRACTION AND IMPLANT PLACEMENT

The decision to preserve the compromised bridge rather than opting for extraction and implant placement was influenced by several factors, including the patient's age, the potential challenges of implant integration in younger individuals, and the patient's preference for preserving natural tooth structure. While dental implants have become a popular solution for tooth replacement, they are not without limitations. As Schwarz et al. (2021) discuss, implant therapy in the era of peri-implantitis presents significant challenges, including the risk of infection, implant failure, and the need for ongoing maintenance.<sup>11</sup> In contrast, the combined endodontic-periodontal approach used in this case offered a conservative yet effective solution, avoiding the potential complications associated with implant placement. Furthermore, the preservation of natural teeth and dental

prostheses aligns with the growing trend in dentistry to prioritize conservative treatment modalities whenever feasible. This trend is supported by the findings of Trombelli et al. (2020), who reported high levels of patient satisfaction with tooth preservation treatments, particularly when compared to implant placement.<sup>12</sup> In this case, the patient's satisfaction with the preserved bridge's functionality and aesthetics two years post-treatment further underscores the value of conservative treatment approaches. A 2023 study by Heitz-Mayfield et al. further highlights the limitations of implant therapy, particularly in younger patients. The study found that younger patients are more likely to experience complications such as peri-implantitis and implant failure due to the dynamic nature of their bone remodeling processes.<sup>13</sup> This finding reinforces the decision to preserve the bridge in the case at hand, as it avoided the potential risks associated with implant placement in a younger patient.

## CONCLUSION

This case report demonstrates the successful preservation of a compromised dental bridge using a combined endodontic-periodontal approach, guided by advanced diagnostic imaging and a patient-centered, multidisciplinary approach. The decision to preserve the bridge, rather than opting for extraction and implant placement, was influenced by the patient's age, the dynamic nature of bone remodeling in younger individuals, and the patient's preference for preserving natural tooth structure. The successful outcome of this case highlights the importance of integrating advanced diagnostic tools, such as CBCT, with conservative treatment modalities to achieve long-term success and patient satisfaction in complex dental cases. The findings of this case are supported by the broader literature on tooth preservation versus extraction and implant placement. As Clark and Levin (2019) argue, the preservation of natural teeth remains relevant even in the era of dental implants, particularly when patient preferences and specific clinical conditions align with conservative treatment options. The use of CBCT imaging, as highlighted by Chen et al. (2022), has become an invaluable tool in modern dentistry, enabling precise diagnosis and treatment planning in complex cases. Furthermore, the cost-effectiveness of tooth preservation, as discussed by Nagpal et al. (2024), offers a compelling argument for conservative treatment modalities in appropriate cases.

In conclusion, this case underscores the importance of a multidisciplinary, patient-centered approach in modern dental care. By prioritizing tooth preservation and utilizing advanced diagnostic tools, dental professionals can achieve successful outcomes that meet both the clinical and personal needs of their patients. As the field of dentistry continues to evolve, the integration of conservative treatment modalities with advanced technology will remain essential in achieving long-term success and patient satisfaction.

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