

Is multiple tooth extraction combined with alveoplasty beneficial in patients undergoing prosthodontic rehabilitation or not? A retrospective clinical study

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ABSTRACT

Purpose

Alveoplasty supports long-term prosthodontic success by creating an ideal foundation while preserving bone structure. This study's purpose was to analyze the benefits of multiple tooth extraction combined with alveoplasty in patients undergoing prosthodontic rehabilitation.

Methods

It was a retrospective study that included 101 patients who visited our institute for prosthodontic rehabilitation from December 2023 to June 2024. Patients were divided into two groups, Group A multiple teeth extraction (> 3 teeth in two quadrants of dental arch) with alveoplasty and Group B denoted as multiple teeth extraction without alveoplasty irrespective of gender and age. The relevant data were collected from hospital records retrospectively which include demographic information (name, age, gender), number of teeth extracted, multiple teeth extraction combined with alveoplasty or not, and complications in the 7th postoperative day follow-up visit. Statistical analysis was done by SPSS version 2.3 software.

Results

The Mean age of the study population was . Out of this 100 multiple teeth extraction patients with alveoplasty group male: female ratio was 58:42 and with alveoplasty group male: female ratio Postoperative pain VAS score > 6 noticed in 10 patients of Group A and 20 patients in Group B. Delayed healing was noticed in 5 patients of Group A and 15 patients in Group B. Infection was noticed in 3 patients of Group A and 10 patients in Group B.

Clinical Significance

Our study results revealed that multiple teeth extraction combined with alveoplasty may improve postoperative outcomes by minimizing pain, better wound healing, and reducing infection risk. Overall, multiple teeth extraction combined with alveoplasty appears beneficial in enhancing the success of prosthodontic rehabilitation.

Keywords: Alveoplasty, Multiple tooth extraction, Prosthodontic rehabilitation, Postoperative outcomes, Wound healing.

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Introduction:

Prosthodontic rehabilitation often requires the removal of multiple teeth to create an adequate foundation for dentures or other prosthetic appliances. However, without further modification of the alveolar ridge, patients may face issues with prosthetic fit, comfort, and stability. Alveoplasty, a procedure to reshape and smooth the bony ridge post-extraction, has been suggested as a means to improve these outcomes.¹ By refining the ridge contour, alveoplasty is intended to reduce potential points of irritation, enhance prosthesis stability, and support a more favourable healing environment.² Previous research has highlighted the potential benefits of alveoplasty for patients preparing for prosthetic appliances². Studies indicate that patients who undergo alveoplasty experience fewer complications, including postoperative pain, infection, and delayed healing, compared to those

who only undergo tooth extractions.³ These findings suggest that a well-contoured alveolar ridge plays a critical role in improving prosthetic fit and minimising discomfort, supporting a smoother adaptation to dentures or other prosthetics.⁴

Building on these insights, the present study aims to assess the impact of combining multiple tooth extractions with alveoplasty on postoperative complications.⁵ Specifically, it examines whether alveoplasty reduces the incidence of pain, infection, and delayed healing, thus enhancing the overall success of prosthodontic rehabilitation.⁶ By comparing outcomes between patients who received alveoplasty and those who did not, this study seeks to further clarify the role of alveoplasty in optimising prosthetic outcomes and post-surgical recovery.

Materials and methods:

This study included 101 patients who visited a Saveetha dental college for prosthodontic

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rehabilitation from December 2023 to June 2024. Patients are divided into two groups with alveoplasty and without alveoplasty. The study included both male and female patients who underwent multiple tooth extractions and alveoplasty. This study was a retrospective cohort analysis conducted to evaluate the benefits of combining alveoplasty with multiple tooth extractions in complete denture patients. The relevant data were Collected from hospital records

retrospectively which includes details and it includes, Demographic information (age, gender), Number of teeth extracted, Whether alveoplasty was performed and Complication rates post-surgery. This study was analysed by SPSS VERSION 2.3 software. Data was analysed by CHI- SQUARE test with BAR CHART. The chi-square test was conducted to determine if there was a significant association between gender and the type of procedure performed.

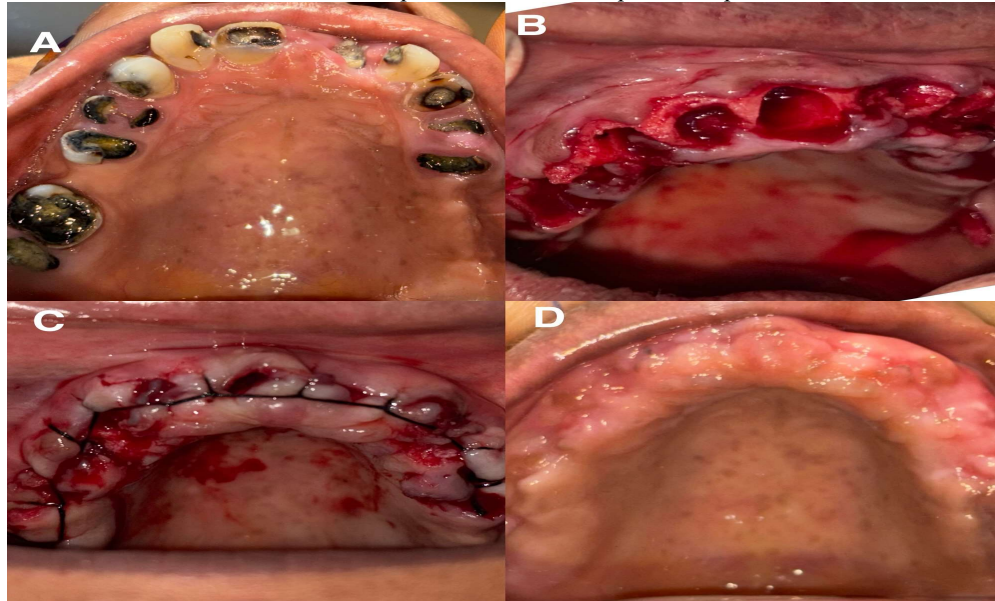


Figure 2 illustrates the representative case of group A (multiple tooth extraction combined with alveoplasty). A denotes the Pre operative extraction, B denotes multiple tooth extraction combined with alveoplasty, C denotes wound closure of the site and D denotes the post operative healing after 2 weeks.

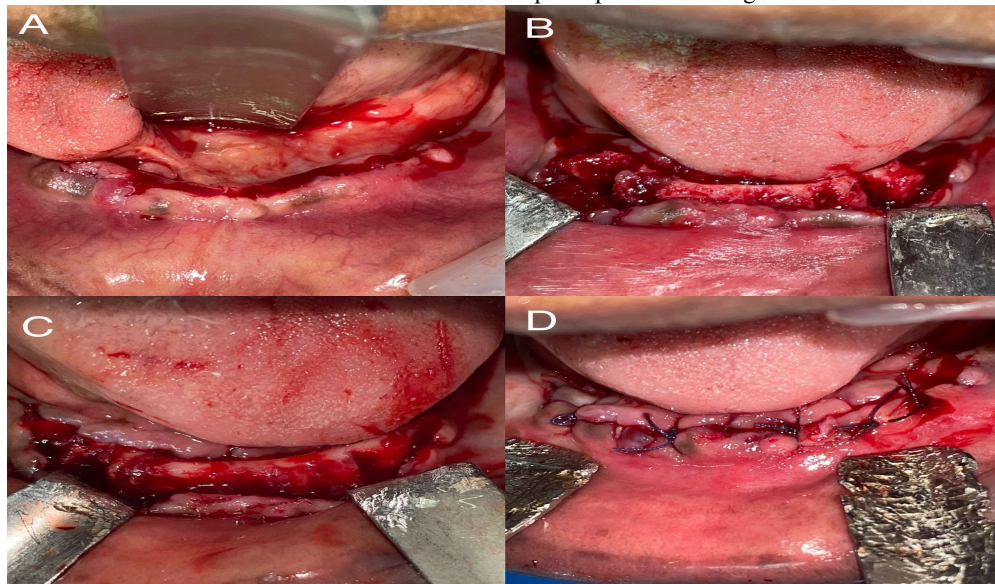
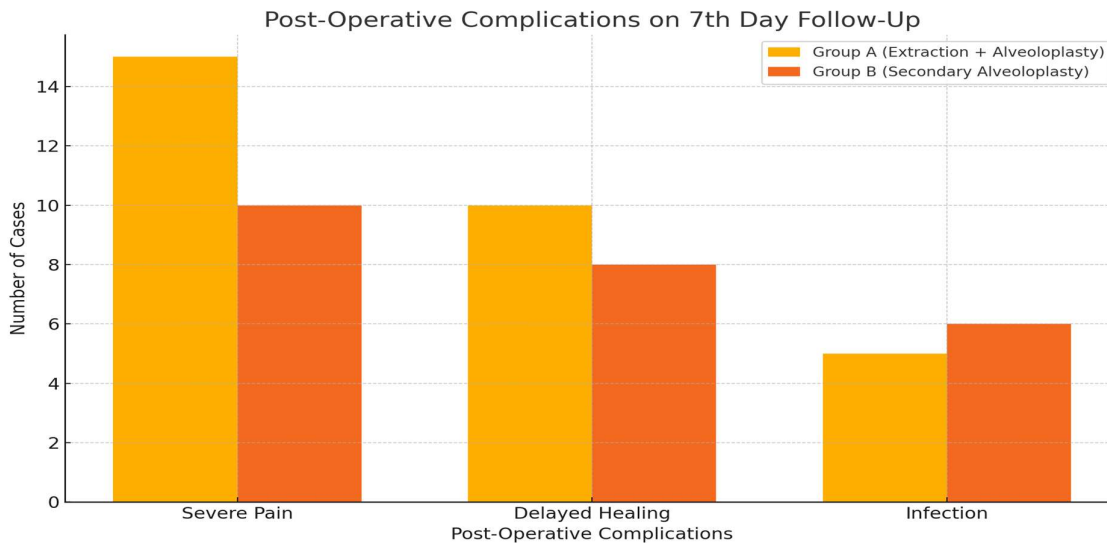


Figure 1 illustrates the representative case of group B (alveoplasty in the secondary stage). A denotes the Surgical incision of the site, B denotes Intra operative alveoplasty, C denotes post operative alveoplasty of the site and D denotes wound closure with suture.

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Results:



The above graph compares postoperative complications on the 7th day follow-up for two groups: Group A (Multiple tooth extraction combined with alveoplasty) and Group B (Alveoplasty performed in the secondary stage post-extraction). It highlights the number of cases experiencing severe pain, delayed healing, and infection, providing a clear visual distinction of outcomes between the two treatment approaches.

Post operative complications in 7th day follow up. Severe pain, Delayed healing, Infection

Discussion:

The combination of multiple tooth extractions and alveoplasty has garnered attention in the field of prosthodontics due to its potential to enhance treatment outcomes. Studies indicate that alveoplasty effectively modifies the alveolar ridge contour, resulting in a more favorable shape for prosthetic rehabilitation.¹ For instance, Sadeghi et al. (2017) demonstrated that alveoplasty significantly improves ridge contour and increases the surface area available for prosthesis support.⁷ This reshaping of the alveolar ridge is crucial for achieving optimal denture fit, thereby enhancing stability and retention, which are often challenging in patients with irregularly shaped ridges.⁴

Retention and stability of prosthetic devices are significantly influenced by ridge morphology.⁸ A systematic review by MacEntee (2008) found that well-defined and stable ridges provide better retention and overall patient satisfaction with complete dentures.^{9,10} When tooth extraction is coupled with alveoplasty, the resultant improvement in ridge shape directly contributes to enhanced retention and stability of prosthetic appliances.¹¹ This is particularly important for patients transitioning to complete dentures, as issues with denture movement can severely affect their quality of life.¹²

In addition to immediate benefits, this combined approach also has long-term implications for future implant therapy.¹³ Research by D'Amico et al.

(2019) highlights the necessity of ridge preservation techniques, such as alveoplasty, in preparing the site for successful implant placement.^{14,15} By addressing the bone contours and volume at the time of extraction, clinicians can create a more favourable environment for future implants, which can significantly improve the success rate of these procedures.¹⁶ This proactive strategy not only prepares the ridge for implants but also minimises bone loss commonly associated with tooth extraction.¹⁷

Moreover, the integration of multiple tooth extractions with alveoplasty can lead to reduced postoperative complications and enhanced aesthetic outcomes. O'Leary et al. (2014) found lower rates of complications, such as infection and delayed healing, when these procedures were performed together.⁵ By streamlining the surgical process and addressing both functional and aesthetic concerns, this integrated approach ultimately contributes to improved patient satisfaction and overall treatment success in prosthodontic rehabilitation.

Conclusion: The study concludes that performing alveoplasty in conjunction with multiple tooth extractions is advantageous for patients undergoing prosthodontic rehabilitation. Alveoplasty reduces postoperative complications, including pain, delayed healing, and infection, thereby facilitating a smoother recovery process and improving the stability and comfort of prosthetic appliances. These

findings underscore the importance of alveoplasty in achieving optimal outcomes in prosthodontic care, making it a recommended practice in suitable cases.

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Conflict of Interest:

The authors declare that there is no conflict of interest in the present study.

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Ethical statement:

Study protocol was approved by the institute ethical committee.

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