

To Flap or Not To Flap: Decision Making in Periodontal Therapy

Harish Kumar VV¹, Santhosh VC², Sunanda Sudhakaran³, Aishwarya Pradeep⁴

¹Professor and Head, Department of Periodontology, KMCT Dental College, Calicut, Kerala

²Professor, Department of Periodontology, KMCT Dental College, Calicut, Kerala

³Senior Lecturer, Department of Periodontology, KMCT Dental College, Calicut, Kerala

⁴Post Graduate Student, Department of Periodontology, KMCT Dental College, Calicut, Kerala

Corresponding Author: Dr Aishwarya Pradeep, Post Graduate Student, Department of Periodontology, KMCT Dental College, Calicut, Kerala

Abstract

Decision-making in periodontal therapy plays a crucial role in determining treatment outcomes and long-term periodontal stability. Periodontal management generally follows a phased approach, beginning with non-surgical periodontal therapy and progressing to surgical intervention when indicated. Although flap surgery improves access to root surfaces and alveolar bone, it is not required in every clinical situation. The dilemma of whether to perform flap surgery is particularly relevant in cases with moderate to advanced periodontal destruction. This review discusses the rationale, indications, and clinical parameters guiding the choice between flap and non-flap periodontal therapy, while integrating the contemporary P4 Medicine model to promote evidence-based and patient-centered periodontal care.

Keywords: Flap surgery, Non-surgical Periodontal therapy, Periodontal pocket, Periodontitis

How to cite this article: Kumar HVV, Santhosh VC, Sudhakaran S, Pradeep A. To flap or not to flap: decision making in periodontal therapy. JRDC 2025;8(1):59-61. doi.org/10.67091/JRDC.2025.8113.

Source of funding: Nil **Conflict of Interest:** None

INTRODUCTION

Periodontal disease is a persistent inflammatory condition that is initiated by dental plaque biofilm and is modified by the host's immune response and environmental factors.^[1] The key objectives of periodontal therapy are to eliminate inflammation, reduce probing pocket depth, and prevent further attachment loss.^[2] Non-surgical periodontal therapy (NSPT), mainly consisting of scaling and root planning, is widely accepted as the fundamental aspect of periodontal treatment and is routinely used as the first phase of therapy.^[3] However, complete resolution of periodontal pockets may not always be possible with non-surgical therapy alone, particularly in sites with deep pockets, furcation involvement, or complex root anatomy.^[4] Surgical periodontal therapy, particularly flap procedures, was designed to overcome these limitations by providing enhanced access and visibility for effective debridement.^[5] Thus, the decision to “flap or not to flap” necessitates a structured clinical judgment rather than a routine surgical procedure. It is centered around the patient management P4 model- Participation, Prediction, Prevention and Personalization.^[6]

Role and effectiveness of non-Surgical periodontal therapy

Non-surgical periodontal therapy focuses on disrupting and eliminating subgingival biofilm and calculus, which helps to alleviate inflammation and decrease probing pocket depth. NSPT has shown reliable and positive results in shallow and moderately deep periodontal pockets.^[7] Clinical studies indicate that probing depths of up to 5 mm typically respond favorably to careful non-surgical treatment alone.^[8] The benefits of NSPT include its minimal invasiveness, reduced post-operative discomfort, lower treatment costs, and higher patient acceptance.^[3] However, despite these advantages, the effectiveness of non-surgical therapy diminishes in deep periodontal pockets, teeth with furcation involvement, and areas with root concavities, where achieving complete calculus removal may be challenging without surgical intervention.^[4]

Rationale and objectives of flap surgery

Flap surgery allows for direct visualization and access to the root surfaces and the underlying alveolar bone, which

facilitates comprehensive debridement and the correction of osseous irregularities.^[5] Surgical intervention is typically considered when residual periodontal pockets measuring 6 mm or more remain after initial non-surgical therapy.^[9] These residual deep pockets pose a higher risk of disease progression and tooth loss if not treated.^[10] Additionally, flap procedures enable the use of regenerative or resective techniques when appropriate.^[11] Nevertheless, surgical therapy comes with increased costs, extended healing times, and higher patient morbidity, making it essential to carefully evaluate the risk-benefit ratio prior to proceeding with the intervention.^[12]

Clinical Parameters Influencing the Decision

Assessing pocket depth is the most vital clinical factor influencing the choice between flap and non-flap treatment options.^[7] Shallow pockets typically respond well to non-surgical interventions, whereas deeper residual pockets often necessitate surgical procedures to ensure periodontal stability.^[9] Additional significant considerations include furcation involvement, vertical bone defects, and restricted access for instrumentation.^[4] According to the World Health Organization (WHO) Oral Health Fact Sheet, patient-related factors such as oral hygiene practices, tobacco use, systemic health status, and individual preferences play a significant role in the risk assessment and planning of periodontal treatment. The long-term effectiveness of periodontal therapy heavily relies on commitment to ongoing supportive periodontal care, regardless of the initial treatment approach.^[13]

Overview of evidence of flap vs non-flap therapy

Studies that evaluate surgical versus non-surgical techniques reveal that both approaches achieve similar results in shallow periodontal pockets, whereas flap surgery provides enhanced pocket reduction in deeper regions.^[7] Long-term stability of periodontal health after therapy is influenced more by effective plaque control and ongoing supportive periodontal maintenance than by the specific choice between surgical and non-surgical procedures, with regular maintenance reducing reinfection and helping preserve treatment outcomes over time.^[13] These insights endorse a phased treatment model, starting with non-surgical therapy, followed by a re-evaluation to assess the need for surgical options.^[3]

Application of P4 medicine model in Periodontics

Current periodontal practices are increasingly reflecting the principles of P4 Medicine, which focus on Prediction, Prevention, Personalization, and Participatory care.^[6]

- Predictive periodontics focuses on pinpointing areas that are more susceptible to disease progression by analyzing clinical indicators like residual pocket depth, bleeding on probing, and risk factors associated with the patient. Persistent deep pockets after non-surgical treatment can indicate potential future attachment loss and may warrant surgical intervention.^[10]
- Preventive periodontics is centered on the early management of disease. When inflammation is resolved and pocket depth is reduced as a result of non-surgical therapy, it is often feasible to avoid surgical intervention, reinforcing the principle of prevention instead of overtreatment.^[3]
- Personalized periodontics emphasizes that treatment strategies must be individualized based on the distinct characteristics of each patient. Factors including smoking, systemic health conditions, oral hygiene adherence, aesthetic expectations, and patient anxiety are key in deciding if a surgical or non-surgical approach is the most appropriate.
- Participatory periodontics emphasizes the significance of patient engagement in the treatment planning process. By informing patients about treatment alternatives, anticipated results, and maintenance needs, it fosters collaborative decision-making and enhances long-term adherence.^[12]

Consequently, the determination to either flap or not flap should be seen as a dynamic, patient-oriented process influenced by P4 principles, rather than just a technical decision.^[6] A logical clinical approach begins with extensive non-surgical periodontal therapy for every patient, followed by careful reassessment. Locations that exhibit adequate pocket reduction and lack of inflammation can be maintained without surgery.^[3] On the other hand, ongoing deep pockets with bleeding on probing, particularly in complex anatomical areas, support the need for flap surgery.^[9] This strategy minimizes unwarranted surgical procedures while safeguarding periodontal stability and achieving long-term success.

CONCLUSION

The decision to flap or not to flap in periodontal therapy should be individualized, evidence-based, and guided by clinical findings and patient-specific factors. The choice to employ flap surgery should not be based solely on pocket depth, but on a thorough understanding of defect morphology, anatomical considerations, esthetic demands, and the patient's systemic health and compliance. Non-surgical periodontal therapy remains the cornerstone of periodontal treatment and is sufficient in many clinical situations. Surgical flap procedures should be reserved for sites that fail to respond adequately to initial

therapy. Incorporation of the P4 Medicine model further strengthens clinical decision-making by promoting predictive, preventive, personalized, and participatory periodontal care, ultimately improving long-term outcomes while minimizing patient morbidity. Individualized treatment planning, supported by evidence-based principles and sound clinical judgment, remains essential. With advancements in minimally invasive techniques, regenerative materials, and microsurgical approaches, contemporary periodontal therapy emphasizes precision and preservation of soft and hard tissues. Future decision-making frameworks should integrate these evolving modalities with patient-centered outcomes to optimize long-term periodontal stability and tooth survival.

REFERENCE

1. Kinane DF, Stathopoulou PG, Papapanou PN. Periodontal diseases. *Nat Rev Dis Primers*. 2017;3:17038.doi:10.1038/nrdp.2017.38
2. Pihlstrom BL, Michalowicz BS, Johnson NW. Periodontal diseases. *Lancet*. 2005;366(9499):1809-1820.doi:10.1016/S0140-6736(05)67728-8.
3. American Academy of Periodontology. Comprehensive periodontal therapy. *J Periodontol*. 2011;82(7):943-949.doi:10.1902/jop.2011.117001.
4. Waerhaug J. Healing of the dento-epithelial junction following subgingival plaque control: as observed on extracted teeth. *J Periodontol*. 1978;49(3):119-134.doi: 10.1902/jop.1978.49.3.119.
5. Kirkland O. The Suppurative Periodontal Pus Pocket; Its Treatment by the Modified Flap Operation. *Journal of the American Dental Association*. 1931;18:1462-1470.
6. Heitz-Mayfield LJ, Lang NP. Surgical and non-surgical periodontal therapy. *Periodontol* 2000. 2013;62(1):281-231.doi: 10.1111/prd.12008.
7. Cobb CM. Non-surgical pocket therapy: Mechanical. *Ann Periodontol*. 1996;1(1):443-490.doi: 10.1902/annals.1996.1.1.443
8. Badersten A, Nilveus R, Egelberg J. Effect of non-surgical therapy.I. Moderately advanced periodontitis.*J Clin Periodontol*. 1981;8(1):57-72.doi: 10.1111/j.1600-051x.1981.tb02024.x.
9. Serino G, Rosling B, Ramberg P, Lindhe J. Initial outcome and long-term effect of surgical and non-surgical treatment of advanced periodontal disease.*J Clin Periodontol*. 2001;28(10):910-916.doi: 10.1034/j.1600-051x.2001.028010910.x.
10. Matuliene G,Pjetursson BE, Salvi GE, Schmidlin K, Brägger U, Zwahlen M, et al. Influence of residual pockets on progression of periodontitis and tooth loss:results after 11 years of maintenance.*J Clin Periodontol*. 2008;35(8):685-695.doi: 10.1111/j.1600-051X.2008.01245.x.
11. Cortellini P,Pini Prato G, Tonetti MS. Periodontal regenerationof human infrabony defects.*Periodontol* 2000. 2015;68(1):282-307. doi:10.1902/jop.1993.64.4.254.
12. Needleman I, Almond N, Leow N, Phillips J. Outcomes of periodontal therapy: Strengthening the relevance of research to patients. A co-created review. *Periodontol* 2000. 2023 Feb 14. doi: 10.1111/prd.12483.
13. Manresa C, Sanz-Miralles EC, Twigg J, Bravo M. Supportive periodontal therapy (SPT) for maintaining the dentition in adults treated for periodontitis. *Cochrane Database of Systematic Reviews*. 2018(1).doi: 10.1002/14651858.CD009376.pub2.