



Minimal Invasive Flapless Implant Surgery: A Case Report

Nisha¹, Sumit Singh Phukela^{2*}, Elakshi³, Omkar Shetty⁴, Jaiveer⁵, Reshu⁶

¹Private Practitioner, Ex PG Department of Prosthodontics, Faculty of Dental Sciences, SGT University, Gurugram, HR

²⁻⁶Department of Prosthodontics, Faculty of Dental Sciences, SGT University, Gurugram, HR

*Email Id: sumit.phukela@sgtuniversity.org

ABSTRACT

Lederman developed the flapless surgical technique in the late 1970s. For tooth extractions and site preservation, flapless techniques have already been tried, and they have demonstrated decreased morbidity. For immediate implants, surgeons have also thought of using a flapless technique in order to protect the vascular supply. Over the past few years, dental radiographic imaging has made large technological advances leading to more predictable implantology. Flapless surgery includes flapless implant placement without surgical trauma. Consequently healing of the wound is faster and uneventful. In flapless surgery the absence of flap and suturing greatly simplifies the surgery, shortening its duration in most of case. The absence of suture within the majority of cases contributes equally to the simplest postoperative appearance of the surgical area. Flapless Implant surgery has improved crestal bone levels and osseointegration compared with surgical flap elevation technique. In the present case report we have shown minimal invasive flapless implant surgery.

Keywords: *Implant, Flapless, Healing and Crestal bone level*

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INTRODUCTION

Dental implant therapy has been highly successful treatment modality and is considered to be a reliable approach for replacing missing teeth. The surgical protocol of Implant placement has undergone many changes since the beginning of usage of Dental Implants.[1]The original Branemark protocol required a flap with a two stage approach. Dental implants that are inserted after reflecting flaps have been observed to have some bone resorption. This is because of the unexpected change in the vascularization of the bone periosteum following flap reflection.[2]The flap designs for implant surgery have changed during the previous 30 years, and more recently the idea of placing implants without elevating the flap and exposing the bone structures has been proposed. For tooth extractions and site preservation, flapless techniques have already been employed, and they have demonstrated lower morbidity. In addition, in order to maintain the vascular supply and preexisting soft tissue shapes, surgeons have also thought about using a flapless technique for immediate implants.[3]

Recent years have seen significant technology advancements in dental radiography imaging, such as newly created dental implant treatment planning software that enables 3D evaluation of possible Implant Sites. These recent improvements have helped flapless implant surgery to be more widely used.[4]According to several experimental studies, preventing flap reflection when placing dental implants avoids the area's vascularization from changing, which in turn improves the behavior of the mucosa, periosteum, and peri implant bone. As a result, the atraumatic approach reduces crestal bone resorption and also affects the cosmetic outcomes.[5-7]In the flapless surgical approach, the soft tissue on the crestal bone at the implant site is removed using a round tissue punch, allowing the osteotomy to begin right away. In contrast to procedures involving big flaps, which are compelled to be planned broadly in order to prevent flap necrosis, flapless technique simply involves a little hole on the mucosa, blood supply is scarcely disturbed. Flapless surgery has a number of potential advantages, including the preservation of both soft and hard tissue, a reduction in surgical time and the need for sutures, a decrease in procedural bleeding, and patient-level issues such as discomfort and edema.

CASE REPORT

A patient of age 55 years complained of lost teeth (numbers 46, 47) at right lower first and second molar (**Figure 1**).



Figure 1: Pre operative picture

Following a preliminary intraoral examination, the patient was given the choice between a fixed partial denture and an implant-supported prosthesis. He chose the latter because it was more predictable and gentler on his teeth. The patient's informed permission was then obtained. The patient had no notable medical history, was a nonsmoker, and was in good general condition. He exhibited good gingival and periodontal health, according to the intraoral examination. The buccolingually and mesiodistally sufficient width of the remaining ridge was surrounded by a healthy keratinized mucosa. A radiographic test revealed enough bone height. Following clinical and radiological measurements of the bone, it was chosen to use a tooth-supported guided surgical stent (Figure 2-3) during a flapless operation to implant root forms with a standard-sized diameter.



Figure 2 Surgical stent



Figure 3 Surgical stent placed in mouth

To access the bone during the procedure without lifting the flap, the gingival tissue was punctured with a tissue punch while the patient was under local anaesthesia. The osteotomy was started using a pilot drill at the punch site, and the final osteotomy was constructed via successive drilling. After final osteotomy preparation, the implant was placed with a final torque of 45 N/cm² using a torque measuring wrench with good primary stability parallel to the roots of the adjacent teeth. (Figure 4,5).



Figure 3 Post operative intra oral view



Figure 4 Post operative radiographic view

To manage infection and postoperative discomfort, postoperative advice were provided. The patient was given prescriptions for an antibiotic and analgesics for three days. After two days, the patient was called back for a regular examination; there was only minor local discomfort. Using the same punch and stent, a stage 2 procedure was carried out three months later. A final impression was made utilizing polyvinyl siloxane impression material and a closed-tray impression technique after the second stage of surgery had been completed for two weeks. Both the finished prosthesis's aesthetic and functional results were good) (Figure 6 and 7).



Fig 5: Prosthetic rehabilitation intraoral **Fig 6 .Prosthetic rehabilitation radiographic view**

Every two months, the patient was called back for follow-up care to evaluate the implant and any crestal bone level changes. The crestal bone level did not significantly change on a radiograph after six months, and the patient was happy with the prosthesis both aesthetically and functionally.

In our case study, a guided surgical stent was created for placement of implant. These computed CT images were used to accommodate the intended prosthesis while taking into account the jawbone anatomy. data emphasized the use of surgical guides for the placement of Implant in the optimal position, during the presurgical planning phase. Avoiding the creation of a mucoperiosteal flap results in reduced chance of scar tissue formation. Leaving the periosteum intact preserves the blood supply thus, reducing the possibility of crestal resorption. Flapless Implant surgery preserves soft tissue and do provide better esthetic results when indicated for immediate or delayed single-tooth Implants, as it is quicker and less traumatic. The supporting tissues provides a protective seal and anchorage to the Implant as well as maintainits health and vitality too. The formation of this preliminary soft tissue seal with the implant plays a crucial role in its' long-term prognosis. Bacterial invasion is also prevented through this biologic seal, thereby avoiding the destruction of the peri-implant tissues and implant failure especially in the first 6 weeks[8-9]. Despite these advantages, the flapless technique still has a number of potential downsides. These may include the surgeon's reduced ability to see anatomical landmarks and significant anatomical structures, the potential for thermal trauma to the bone as a result of inadequate external irrigation during osteotomy preparation with guided surgery[10], a diminished ability to access the bony outlines for alveoplasty, a difficulty to identify the ideal vertical endpoint of the implant placement (too shallow/too deep), and an inability to regulate the circumferential soft tissues to assure the perfect dime shape, although lack of keratinized gum does not affect the long-term success of implants [11-13], the most widely accepted tendency at the moment is that failure rates are higher when there is little to no keratinized gum around the implant.[14-16]

CONCLUSION

The flapless approach used in Implantology is a type of minimally invasive surgery that has attracted a lot of attention recently. Its benefits include little damage to both soft tissue and bone, a quicker recovery after surgery, and high patient satisfaction levels. Restricted vision during drilling and placement, however, raises the danger of drilling in the wrong place or injuring nearby buildings, but this risk can be reduced with proper preoperative planning. This surgical technique enables patients to gain from enhanced implant care when used cautiously and in the right circumstances.

REFERENCES

1. Roman G. (2001). Influence of flap design on peri-Implant interproximal crestal bone loss around single-tooth Implants. *Int J Oral Maxillofac Implants.* 16(1):61-7.
2. Brodala N. (2000). Flapless Surgery and Its Effect on Dental Implant Outcomes. *Int J Oral Maxillofac Implants.* 24:118-25.
3. Oh TJ, Shotwell JL, Billy EJ, Wang HL. (2006). Effect of flapless Implant surgery on soft tissue profile: A randomized controlled clinical trial. *J Periodontol.* 77:874-882.

4. Kumar M, Shanavas M, Sidappa A, Kiran M. (2015). Cone beam computed tomography: know its secrets. *J Int Oral Health*. 7(2):64-8.
5. Fortin T, Bosson J L, Isidori M, Blanchet E. (2006). Effect of flapless surgery on pain experienced in Implant placement using an image guided system. *Int J Oral Maxillofac Implants*. 21:298-304.
6. Jeong S, Choi B, Li J, Kim H, Ko C. (2007). Flapless Implant surgery: An experimental study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 104:24-8.
7. Malo P, Nobre MD. (2008). Flap vs. flapless surgical techniques at immediate Implant function in predominantly soft bone for rehabilitation of partial edentulism: A prospective cohort study with follow-up of 1 year. *Eur J Oral Implantol*. 1:293-304.
8. Job S, Bhat V. (2008). An insight into flapless Implant placement technique. *The Journal of Indian prosthodontic society*. 8(3):140-143.
9. Becker W, Goldstein M, Becker BE, Sennerby L, Kois D, Hujuel P. (2009). Minimally Invasive Flapless Implant Placement: Follow-Up Results From a Multicenter Study. *J Periodontol*. 80(2):347-52.
10. Blanco JI, Alves CC, Nunez V, Aracil L, Munoz F, Ramos I. (2010). Biological width following immediate Implant placement in the dog: flap vs flapless surgery. *Clin Oral Implants Res*. 21(6):624-31.
11. Wennström JL, Bengazi F, Lekholm U. (1994). The influence of the masticatory mucosa on the peri-implant soft tissue condition. *Clin Oral Implants Res*. 5:1-8.
12. Van Steenberghe D. (1988). Periodontal aspects of osseointegrated oral implants modum Brånemark. *Dent Clin North Am*. ;32:355-70.
13. Esposito M, Hirsch JM, Lekholm U, Thomsen P. (1998). Biological factors contributing to failures of osseointegrated oral implants. (I). Success criteria and epidemiology. *Eur J Oral Sci*. 106:527-51.
14. Block MS, Kent JN. (1990). Factors associated with soft- and hard-tissue compromise of endosseous implants. *J Oral Maxillofac Surg*. 48:1153-60.
15. Warriner K, Buser D, Lang NP, Karring T. (1995). Plaque-induced peri-implantitis in the presence or absence of keratinized mucosa. An experimental study in monkeys. *Clin Oral Implants Res*. 1995;6:131-8.
16. Buser D, Weber HP, Lang NP. (1990). Tissue integration of non-submerged implants. 1-year results of a prospective study with 100 ITI hollow-cylinder and hollow-screw implants. *Clin Oral Implants Res*. 1:33-40.

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