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Original Research

Clinical evaluation of placement of implant by Flapless Technique

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ABSTRACT:

Background: To evaluate clinical placement of implant by flapless technique. **Materials & methods:** A total of 20 subjects were enrolled. The mean age group was 35.67 years. Digital IOPARs were taken post operatively. The evaluation of pain on VAS scale was done with reports taken in the evening from day of surgery (D0) to 3 days after surgery to report the level of pain. The results were analyzed using SPSS software. **Results:** The mean difference in the bone loss for baseline to 1-month time period for the flapless surgery was 0.02 ($p = 0.001$*). The mean difference in the bone loss for the first month to the second month was 0.01 for flapless ($p = 0.05$*).The mean difference in bone loss for the second to the third month was 0.004 ± 0.005 for flapless. **Conclusion:** Flapless implant surgery results in lesser loss of marginal bone.

Keywords: implant, flapless surgery, bone loss.

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INTRODUCTION

Dental implants facilitate mastication, phonation, and esthetics and are one of the most common treatment modalities used for the rehabilitation of missing teeth. To provide support for the dental prosthesis, implants form a direct connection with the surrounding bone known as "osseointegration." [1]Enhancing patient comfort and predictability of treatment with precise pre surgical treatment planning have been the goals of evolving implant dentistry. [2]Implant-supported restorations have become the primary treatments for missing teeth with great prognosis.[3,4] However, the long-term clinical performances of dental implants could be affected by many factors, such as clinicians' experience, hard and soft tissue conditions of patients and surgery procedures.

Gaining access to the alveolar bone is an indispensable step of the implant surgical procedures. The traditional way to expose the bone was the flap technique with mucosa incision and flap elevation, which makes the surgery field more visible and allows guided bone regeneration. There are some flap surgical options depending on incision sites, whereas most of them would have the risks of leaving scars on the gingiva, and even disrupting vasculature. Besides, horizontal incision may also impair the normal gingival papillae form. [5]

The flapless surgical approach was introduced in the late 1970s by Ledermann to overcome the bone resorption process. Studies comparing the crestal bone height using the flapless and the flap surgical techniques are minimal.[6]Flapless technique is a modified way to conduct implant procedures and it did not involve horizontal or vertical incisors for immediate and delayed implant placement. [7]Usually, the flap elevation step was omitted or the entrance to bone was created by a tissue punch device, drill preparation or immediate implant placement (IIP).[8] Flapless procedure is considered as a more non-invasive approach to alveolar bone as there is no incision to cut the blood supply from bone membranes or soft tissues. Insufficiency of blood supply may result in poor bone regeneration or integration around implants.[9] There are some drawbacks of this technique though. The lack of visibility may result in a compromised implant placement. Since the punch devices are commonly narrower than implants, possible overheating during preparation is worth noting. [10] Hence, this study was conducted to evaluate clinical placement of implant by flapless technique.

MATERIALS & METHODS

A total of 20 subjects were enrolled. Patients who were above 20 years of age with partially edentulous

jaw requiring single or multiple tooth replacement with a minimum of 5 mm of bone width and 8 mm height at the implant site, who were willing to comply with the treatment regimen and had not undergone extraction of not less than 6 months at the extraction site were included. The mean age group was 35.67 years. Digital IOPARs were taken postoperatively .The evaluation of pain on VAS scale was done with reports taken in the evening from day of surgery (D0) to 3 days after surgery to report the level of pain. The results were analyzed using SPSS software.

RESULTS

The mean difference in the bone loss for baseline to 1-month time period for the flapless surgery was 0.02 ($p = 0.001$*). The mean difference in the bone loss for the first month to the second month was 0.01 for flapless ($p = 0.05$*).The mean difference in bone loss for the second to the third month was 0.004 ± 0.005 for flapless.

Table 1: Mean difference of marginal bone loss at different time intervals in flapless surgery

Time	Mean value	P - value
Baseline to 1 month	.0210	.001*
1 month to 2 months	.0100	.05*
2 months to 3 months	.0048	.042*

The mean VAS score for the first day was 3.2 in flapless ($p = 0.001$*). The mean VAS score for the second day was 1.5 in flapless ($p = 0.001$*). The mean VAS score for the third day was 1.0 in flapless group ($p = 0.001$*).

Table 2: Mean VAS for flapless surgery

Postoperative days	Mean	P - value
VAS- day 1	3.2	.001
VAS- day 2	1.5	.001
VAS- day 3	1.0	.001

DISCUSSION

Management of edentulous spaces has been revolutionized by dental implants. Dental implant therapy has replaced most of the conventional methods of treating edentulous patients and has become a highly predictable treatment modality. Albrektsson et al. [11] in 1986 proposed certain criteria to assess success of implants. According to these criteria, bone loss of less than 0.2 mm annually following the implant's first year of function is stated as being essential for long-term success. [11]Hence, this study was conducted to evaluate clinical placement of implant by flapless technique.

In the present study, the mean difference in the bone loss for baseline to 1-month time period for the flapless surgery was 0.02 ($p = 0.001$*). The mean difference in the bone loss for the first month to the second month was 0.01 for flapless ($p = 0.05$*).The mean difference in bone loss for the second to the third month was 0.004 ± 0.005 for flapless. A study by Divakar KT et al, studied the clinical advantages of flapless implant surgery over conventional flap technique of implant placement by assessing the marginal bone loss in 1 month, 2 months and 3 months postoperatively, pain assessment, number of analgesics taken by the patients postoperatively and the postoperative swelling between two groups. The parameters assessed were marginal bone loss (interproximal bone height), pain assessment by a 10-cm visual analog scale, swelling assessment by modification of tape measuring method by Gabka and Matsumara and the number of analgesics tablets taken every postoperative day from the day of surgery to 6 days after surgery. They showed that the mean difference in the bone loss for baseline to the third month for the flap group was 0.34 ± 0.05 and for the flapless group was 0.03 ± 0.004 ($p = 0.000$***). [12]

In the present study, the mean VAS score for the first day was 3.2 in flapless ($p = 0.001$*). The mean VAS score for the second day was 1.5 in flapless ($p = 0.001$*). The mean VAS score for the third day was 1.0 in flapless group ($p = 0.001$*). Another study by Lahoti K et al, studied and compared the crestal bone level with both the techniques were included. 23 studies were included. Statistically significant difference in crestal bone level was found between flapless and flap surgery with mean difference of −0.14 (flapless placement versus flap surgery; 95% CI: −0.24 to −0.03; P = 0.01*). The difference in crestal bone level between the 2 groups was not statistically significant with a mean difference of –0.05(Guided flapless placement versus flap surgery; 95% CI: −0.10 to 0.00; P=0.06). Meta-analysis of the freehand flapless surgery with flap surgery generated a mean difference of −0.20 which was found to be statistically significant (Freehand flapless placement versus flap surgery; 95% CI: −0.37 to −0.03; P=0.02*).[13]The degree of gingival presentation is regarded as an important aspect of aesthetic effect after implantation and graded as a component in the "pink aesthetic scores".[14,15] PPI was measured only in three studies that compared the delayed implant surgeries and only two of them compared it in the aesthetic regions. The flapless approach has led more gingival papillae presentation compared with the flap one and the difference was quite significant. The vertical distance from the alveolar crest to contact area of two adjacent crowns is considered as the most significant factor for gingival papillae presentation.[16] When the distance was lower or equal to 5 mm, the papillae was presented in 98% of the ceases. With the vertical distance rising, PPI continuously reduced. [17,18] Job et al. [19] observed a crestal bone loss of 0.06 mm with "flapless" technique and 0.4 mm "with flap" technique over a period of 3 months. Nickenig et al. [20] found that radiographic evaluation of marginal bone levels adjacent to implants showed comparable results with flapless (0.7–2.4 mm) and flap surgery (2–3 mm) during the healing period. The cumulative success rate for implants placed using a flapless one-stage surgical technique varied from 74.1% to 100% after a 10-year

period in a retrospective analysis done by Campelo and Camara. [21]

CONCLUSION

Flapless implant surgery results in lesser loss of marginal bone and also results in better patient comfort.

REFERENCES

1. Brånemark PI, Adell R, Breine U, Hansson BO, Lindström J, Ohlsson A. Intra-osseous anchorage of dental prostheses. I. Experimental studies. Scand J PlastReconstrSurg 1969;3:81-100.
2. Lindeboom JA, van Wijk AJ. A comparison of two implant techniques on patient-based outcome measures: A report of flapless vs. conventional flapped implant placement. Clin Oral Implants Res 2010;21:366-70.
3. Pjetursson BE, Thoma D, Jung R, Zwahlen M, Zembic A. A systematic review of the survival and complication rates of implant-supported fixed dental prostheses (FDPs) after a mean observation period of at least 5 years. Clin Oral Implant Res. 2012;23(Suppl 6):22–38.
4. Romeo E, Storelli S. Systematic review of the survival rate and the biological, technical, and aesthetic complications of fixed dental prostheses with cantilevers on implants reported in longitudinal studies with a mean of 5 years follow-up. Clin Oral Implant Res. 2012;23(Suppl 6):39–49.
5. Hutchens LH, Beauchamp SD, McLeod SH, Stern JK. Considerations for Incision and Flap Design With Implant Therapy in the Esthetic Zone. Implant Dent. 2018;27(3):381–7.
6. Ledermann PD. VollprothetischeVersorgung des atrophierten problem–UnterkiefersmitHilfe von CBS implantaten. Quintessenz. 1977;12:21–26.
7. Campelo L, Camara J. Flapless implant surgery: a 10-year clinical retrospective analysis. Int J Oral Maxillofac Implants. 2002;17(2):271–6.
8. Sclar AG. Guidelines for flapless surgery. J Oral MaxillofacSurg . 2007;65(7 Suppl 1):20–32.
9. Jeong SM, Choi BH, Li J, Kim HS, Ko CY, Jung JH, et al. Flapless implant surgery: an experimental study. Oral Surg, Oral Med, Oral Pathol, Oral Radiology, Endod. 2007;104(1):24–8.
10. Sclar A. Guidelines for flapless surgery. J Oral MaxillofacSurg . 2007;65:20–32.
11. Albrektsson T, Zarb G, Worthington P, Eriksson AR. The longterm efficacy of currently used dental implants: a review and proposed criteria of success. Int J Oral Maxillofac Implants. 1986;1:11–25
12. Divakar TK, GideanArularasan S, Baskaran M, Packiaraj I, Dhineksh Kumar N. Clinical Evaluation of Placement of Implant by Flapless Technique Over Conventional Flap Technique. J Maxillofac Oral Surg. 2020 Mar;19(1):74-84.
13. Lahoti K, Dandekar S, Gade J, Agrawal M. Comparative evaluation of crestal bone level by flapless and flap techniques for implant placement: Systematic review and meta-analysis. J Indian ProsthodontSoc 2021;21:328-38
14. Jemt T. Regeneration of gingival papillae after single-implant treatment. Int J Periodontics Restorative Dent. 1997;17(4):326–33.
15. Cosyn J, Thoma D, Hämmerle C, De Bruyn H. Esthetic assessments in implant dentistry: objective and subjective criteria for clinicians and patients. Periodontol. 2017;73(1):193–202.
16. Tarnow D, Magner A, Fletcher P. The effect of the distance from the contact point to the crest of bone on the presence or absence of the interproximal dental papilla. J Periodontol. 1992;63(12):995–6.
17. Tarnow D, Elian N, Fletcher P, Froum S, Magner A, Cho S, et al. Vertical distance from the crest of bone to the height of the interproximal papilla between adjacent implants. J Periodontol. 2003;74(12):1785–8.
18. Roccuzzo M, Roccuzzo A, Ramanuskaite A. Papilla height in relation to the distance between bone crest and interproximal contact point at single-tooth implants: a systematic review. Clin Oral Implants Res. 2018. https://doi.org/10.1111/clr.13116.
19. Job S, Bhat V, Naidu EM. In vivo evaluation of crestal bone heights following implant placement with ‘flapless’ and ‘with-flap’ techniques in sites of immediately loaded implants. Indian J Dent Res. 2008;19:320–325.
20. Nickenig HJ, Wichmann M, Schlegel KA, Nkenke E, Eitner S. Radiographic evaluation of marginal bone levels during healing period, adjacent to parallel-screw cylinder implants inserted in the posterior zone of the jaws, placed with flapless surgery. Clin Oral Implants Res. 2010;21:1386–1393.
21. Campelo LD, Camara JR. Flapless implant surgery: a 10-year clinical retrospective analysis. Int J Oral Maxillofac Implants. 2002;17:271–276.