Less Morbidity with Flapless Implant

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FLAPLESS IMPLANT PLACEMENT REQUIRES PUNCH REMOVAL OF THE GINGIVA WITHOUT flap reflection, suggesting this technique will be less invasive, and with less tissue destruction, than comparable alternative techniques.

**Methods**

Eleven implants were placed with flapless (FL) technique and 11 implants were placed with full-thickness flap (FT) technique in split mouth technique. FL technique was done with dermal tissue puncture, while FT was performed with crestal incision, including the papillae. Patients were followed-up postoperatively for clinical and morbidity evaluation in both groups.

**Results**

There was no pain, and there were only mild signs of inflammation, at the sites of flapless implant placement in the 11 patients studied. In contrast, there were complaints of mild to moderate pain and signs of inflammation at the site of full-thickness flap implant placement in the 11 patients studied. In addition, there was gingival overgrowth over the healing cap noted in this group.

**Conclusions**

FL technique may be recommended for the apprehensive or hyperalgesic patient because of the absence of pain it conveys, as well as the decreased postoperative swelling. Periosteal disruption is responsible for the patient’s morbidity postoperatively.

**Introduction**

Implant treatment is becoming more widely known by patients and, consequently, patients’ expectations of receiving this type of treatment are evolving. In response, there is a growing variety of surgical techniques that convey dif-
Implant placement with soft-tissue flap elevation, which assists in better visualization of the bone sites, is still the mainstay of the surgical technique, as it ensures that the important anatomical landmarks (e.g., foramina, lingual undercuts, maxillary sinus) are clearly identified and protected; nevertheless, the flap elevation facilitates implant placement and maximizes bony contact while minimizing the risk of bone fenestration. However, flaps are associated with some degree of morbidity and discomfort and require suturing. There are situations in which flap elevation may not be necessary since the amount of bone is more than adequate and the risk of complication is minimal. Under these circumstances, flapless implant placement may be indicated.3

There is evidence to suggest that a flapless or mini-invasive procedure can preserve bone vascularization because it will not disrupt the periosteum of the alveolar bone. Periosteal stripping is said to kill a significant amount of osteoprogenitor cells, resulting in a reduced osteogenic reaction and limiting the healing response.4 On the other hand, the full-thickness flap (mucoperiosteum), in contrast to the flapless technique, gives better vision and less chance of bone perforation.3,5

A previous study, documented in a prior issue of this publication, revealed patients complained of mild pain at the full-thickness flap site for a few days, which was relieved by simple analgesia. In comparison, at the flapless site, no patient complained of pain postoperatively and the patients described it as normal.7,8 Beyond this, gingival hyperplasia, or overgrowth, extending above the healing cap was noted postoperatively at the full-thickness flap site.9 This study compares the flapless and full-thickness flap procedures, with special emphasis on specific morbidities and the patient’s subjective assessment of the two treatment types post-implant placement.

Subscription rates: U.S., $599 per year. Add $17.95 for shipping & handling. Students, $320 per year. To receive student/resident rate, order must be accompanied by name of affiliated institution, date of term, and the signature of program/residency coordinator on institution letterhead. Orders will be billed at the regular rate until proof of student status is received. Outside U.S., add $30 per year, total prepaid in U.S. funds. Discounts are available for group subscriptions, multiple copies, site-licenses or electronic distribution. For pricing information, call Tria Kreutzer at 404-262-5482. Missing issues will be fulfilled by customer service free of charge when contacted within one month of the missing issue date. Back issues, when available, are $100 each. For 18 issues will be fulfilled by customer service free of charge for shipping & handling. Students, $320 per year. To receive student/resident rate, order must be accompanied by simple analgesia. In comparison, at the flapless site, no patient complained of pain postoperatively and the patients described it as normal.7,8 Beyond this, gingival hyperplasia, or overgrowth, extending above the healing cap was noted postoperatively at the full-thickness flap site.9 This study compares the flapless and full-thickness flap procedures, with special emphasis on specific morbidities and the patient’s subjective assessment of the two treatment types post-implant placement.
Methodology

Surgical Placement of Implant for Full-thickness Flap Technique

Under local anaesthesia (mepivacaine hydrochloride 2% with adrenaline 1:100,000, Scandost [Septodont, France]), a mid-crestal incision technique was performed longitudinally along the crest of bone through the gingiva and periosteum. A no. 15 blade was used to cut intrasulcular incisions. The papillae were cut completely into buccal and palatal papillae, with effort made not to thin the papillae (see Figure 1). Vertical incisions were not included in the flap design.

The mucoperiosteal flap was carefully reflected with Mitchell’s trimmer, with special care taken not to tear the periosteum or to perforate the flap. Then, the crestal bone was exposed.

The full-thickness flap can be reflected to allow inspection of bone contours on the buccal side during drilling, especially at the sites where perforation might occur, conveying additional visual confirmation of work.

A fine atraumatic Glyconate monofilament absorbable suture, size 4-0 (BRAUN, AESCLAP AG, CO.KG) with cutting needle was then utilized for closure. Secured, primary wound closure was achieved with interrupted suturing to the adjacent papillae.

Surgical Placement of Implant for Flapless (Punch) Technique

After giving the patient local anesthesia, a manual disposable biopsy tissue punch (Nobel Biocare, Goteborg, Sweden) was used to make a circular excision through the soft tissue and periosteum (Figure 2).

This soft-tissue/periosteum circle was removed and discarded (Figure 3). The diameter of exposed alveolar bone depends on the diameter of the puncher utilized (Figures 4 and 5).

1-week follow-up:

The 1-week follow-up visit is best used for the following:

• Clinical examination of the operated site: If there is any swelling or erythema, this is documented. Assessment of the patient’s discomfort at the operation site is also noted and documented.
• Hygiene monitoring and motivation.
• Assessment of inferior mental nerve and other subjective criteria such as pain and use of analgesic agents (type, strength, frequency)
• Check for the absence of peri-implant infection with suppuration.

Results

All the patients in this study were recalled after 7-10 days postopera-
tively for clinical and morbidity evaluation; postsurgical wound healing was uneventful in all cases.

The results from the clinical comparison between flapless and full-thickness flap are as follows:

- All patients enrolled in this study complained of mild to moderate pain at the full-thickness mucoperiosteal flap sites for a few days. This pain was relieved by simple analgesia. All 11 patients reported no pain at the flapless site and subjectively described the area as feeling “normal.”
- Swelling of the gingiva was noted surrounding the implants at the full-thickness flap sites; this subsided after 1 week postimplant placement. There was no postoperative swelling noted at the flapless sites.
- Patients were disturbed by the stitches during the healing period, caused by food accumulation and inflammation at the full-thickness flap sites.
- Gingival overgrowth was noted to have grown above the healing cap postoperatively at the full-thickness flap sites and subsequently subsided by the next follow-up visit (Figure 6). No gingival overgrowth at the flapless sites was noted, and the gingiva around the healing caps remained normal in shape and color in this group (Figure 7).

Discussion

Flapless insertion of dental implants prevents complications arising from soft-tissue elevation, such as pain, perforation of the flap, edema, and gingival overgrowth around the implant. None of the patients described any pain at the site of the flapless procedure, and they subjectively described it as normal in comparison with full-thickness flap site, which was uniformly described as having mild to moderate pain for which some patients took analgesic medications. These findings are in accordance with other studies that found significant differences in subjective pain measurements between the flapless and conventional flap procedure groups. The pain decreased faster in flapless groups, and a larger number of patients felt no pain in the flapless group.6,7

Our data are also consistent with other studies in which minimal postoperative discomforts on the flapless side were mentioned.8-12

In other studies, the patients mentioned that the flapless implant placement was more comparable to a restorative procedure, due to the absence of symptoms such as postoperative pain, swelling, or discomfort.9,13
There are also other studies that compare full-thickness flap groups with flapless groups; however, these were done on animal models in which the pain assessment could not be carried out.  

In our study, none of the patients had signs of postoperative sensory changes in the lower lip or chin region due to good preoperative assessment of the alveolar ridge height that required 10 mm implant length placement and location 2 mm away from the inferior alveolar nerve. As a result, we were able to perform flapless drilling and implant placement without injuring important anatomical structures.

Incorrect angulations of implant drills can cause perforation of the cortical plates, usually on the buccal aspect, resulting in dehiscence or fenestration of the bone. Perforation of the buccal plate in flapless technique is generally detected by palpation or by observation of implant threads through the soft tissue.  

None of the patients in this study had cortical bone perforation or dehiscence at the buccal or palatal side.

A major advantage of the nonsubmerged procedure is that it can be performed in one minimally invasive surgical intervention, but one of the complications that was found in this study resulting from nonsubmerged crestal incision was peri-implant gingival overgrowth in the first week after the implant was placed; however, this subsided spontaneously within a few weeks. This finding is not atypical; in fact, it is consistent with other studies that used nonsubmerged crestal incision. Other studies found that peri-implant mucosal overgrowth (hyperplasia) occurs in more than 30% of the nonsubmerged implants, some extensive enough to necessitate subsequent peri-implant soft-tissue correction in the first postoperative month.

In earlier postoperative weeks, peri-implant hyperplasia and gingival overgrowth may occur, presumably as a result of swelling, especially when the fresh soft-tissue wounds are located near the implant, as is the case with the crestal incision.

It is obvious from this study that full-thickness flap or periosteum elevation during flap reflection is responsible for the pain and the postoperative swelling described by patients. It is not the bone drilling for the implant socket preparation that led to inflammation or pain.

**Conclusions**

The flapless technique is recom-
mended for the apprehensive patient because of the absence of pain it conveys, as well as decreased postoperative swelling.

REFERENCES


Studies Highlight Loss of Empathy Among Dental Students During Training

By Arun Garg DMD, and Ghislaine Guez, MD, MBA

THE DEFINITION OF EMPATHY IS HARD TO pin down, and even harder to measure and assess. Still, it is a component of health care professionalism and a unique communication facilitator that makes those with empathy successful in establishing and developing trust and engaging with patients. Similarly, the absence of empathy can be felt but is difficult to describe. Despite the ethereal nature of this very human quality, it is a sought-after attribute in health care providers; indeed, medical and dental school curricula usually dedicate some component of their teaching programs to professionalism and ethics, of which empathy is a part.

Empathy is defined by the Merriam-Webster Dictionary as “the action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another of either the past or present without having the feelings, thoughts, and experience fully communicated in an objectively explicit manner, also, the capacity for this.” From a health care standpoint, empathy refers to “an understanding of the inner experiences and perspectives of the patient as a separate individual, combined with a capability to communicate this understanding to the patient,” as defined by Hojat et al.2,3

Measuring the capacity to feel and communicate another person’s point of view offers unique challenges. A variety of methods is available to attempt to measure empathy: through
patient ratings, peer reviews, psychometric tests, and observation. Two scales have been created that offer a standardized system to measure empathy in the health care professional. The Jefferson Scale of Physician Empathy (JSPE) and the Patient-Practitioner Orientation Scale (PPOS) have been used toward this goal. The Jefferson Scale of Physician Empathy was designed specifically for use in the physician, as opposed to the general population. There are several versions, and one is designed for the student-doctor in training. This scale has been validated for use in practicing physicians, medical students, as well as dental students as a means to measure empathy in these populations. The Patient-Practitioner Orientation Scale looks at whether a practitioner tends to lean more toward patient-centered care or disease/doctor-centered care.

Two studies, one published within the last year and one from 2005, look at empathy among dental students. In the older study by Sherman and Cramer, the authors sampled 130 dental students in all years of study at the University of Washington School of Dentistry. The Jefferson Scale of Physician Empathy Health Professionals Version was used to measure empathy, and mean empathy levels were calculated and further subdivided by race, gender, year of training, and marital status. There was a preponderance of males as compared to females in this study, which was similar to the ratio of enrolled males to females in dental schools across the country. Of note, there was a significant decline between the first and second years of dental school training, which corresponds with the dental student’s first exposure to direct clinical patient care. The authors’ results mirrored those from studies of medical students and residents; that is to say, there is a decline in empathy after the conversion of classroom care to actual patient care. The authors go on to state that the “paradoxical” relationship between increased patient care exposure and decreased levels of empathy can be explained by increased technical demands during the clinical years, the growing pressures of needing to obtain work or fellowship training as years progress, and even, perhaps, the sense of belonging to a privileged group (such as physicians or dentists) and subsequent separation from the needs of the patient. The authors also note that their study is reliable and valid, and document an interesting piece of information: Although not statistically significant, there was an increase in empathy during the fourth year of dentistry training, and students received specific training in ethics and professionalism during this time. Study drawbacks included the fact that this was a self-reported measurement scale only and that the nature of the study was cross-sectional rather than longitudinal, and cohort effects may have been in place.

In the second study by authors Beattie, Durham, Harvey, Steele, and McHanwell, the authors examined self-reported empathy levels in the first year and after exposure to the clinical encounter and training in /exposure to behavioral sciences. In this study, the authors enrolled all first-year undergraduate dental students at the School of Dental Sciences at Newcastle University in England to complete a survey that consisted of both the Jefferson Scale of Physician Empathy and the Patient-Practitioner Orientation Scale (PPOS). To the authors’ knowledge, the PPOS portion had never been used in a dental environment but had been validated for use in a health care setting. In the 66 students who completed both questionnaires (the one at the outset of training, and the other after behavioral training and clinical experience), results point to an increase in empathy after special training, which is a different result than the previously described study. That is to say, “teaching empathy” may have worked to actually increase empathy. These results are limited to observational experience rather than direct clinical context, a difference from the prior study and not in keeping with other studies on empathy levels throughout training. Further, the proportion of women to men in the newer study is inverted; more women participated in the recent study than in the Sherman and Cramer study.

The concept of empathy in the health care setting is an important piece of the patient-care puzzle — and one that remains to be completely elucidated and understood. Certainly, studies have documented fewer lawsuits, healthier patient-physician relationships, and a perceived notion of better care on behalf of the patient when providers demonstrate more of an empathetic connection with a patient. Can there be too much empathy on behalf of the health care provider? Well, in fact, yes, there can be. As described in a recent article in Scientific American aptly titled “Why Doctors Should Be More Empathetic — But Not Too Much More,” the authors describe two experiments: In one experiment, doctors were subjected to images of a patient undergoing needle insertion as part of acupuncture and their brains were scanned with MRI; in the second experiment, in the same scenario, event-related potentials (ERPs) were measured. Physicians showed less response in pain regions involved with empathy for pain on MRI and had no early empathy response via ERP. Are physicians uncar ing individuals at baseline, the authors wondered, or does something happen that erodes the early empathetic response that non-health care professionals continue to demonstrate? The authors state that the very nature of medical training and intrinsic demands of the profession are responsible for the change in empathy levels seen in most studies. Suppressing the early
response to seeing another individual in pain actually protects the practitioner so that he or she may continue to do their work in an effective manner. In conclusion, the authors state that the balance between experiencing empathy and remaining effective in highly stressful situations is the crucial aspect of teaching empathy and professionalism, and that achieving a healthy balance in this arena should be the ultimate goal.

References