



POST OPERATIVE COMPLICATIONS DUE TO FAULTY FLAP DESIGNS IN PERIODONTAL SURGERY

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Abstract

A complication is a disorder that develops as a result of another condition. Any procedure should, in fact, have no problems. However, certain issues can be avoided, and others are unavoidable in specific situations. Periodontal therapy is essential towards the maintaining of the complete dentition, from the most fundamental operations like scaling and root planing to more complex ones like flap surgeries and periodontal plastic surgeries. As clinicians, we must be able to determine the cause of these complications and manage them appropriately without putting patients through too much discomfort

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Introduction:

In order to achieve certain surgical goals (such as ridge augmentation), flap advancement is necessary.

Main closure without stress along the surgical incision. Flap advance could be a crucial component of other surgical procedures like root coverage, for example, procedures the coronal location of flaps when coapting the facilitation of mucogingival tissues using primary intention to heal, which is superior to secondary intention healing. Primary closure leads to a decline in pain and quicker recovery and has a crucial role in achieving desired results (e.g., bone regeneration).

Surgical treatment, in its different forms, is regarded as a staple in current periodontics

practise. Surgery is frequently indicated for pre-prosthetic dental augmentation, dental implant insertion, and oral plastic and reconstructive therapy, in addition to giving access for debridement and resolution either through resection or regeneration of severe periodontal abnormalities.

Periodontal surgical operations, by definition, bring with them the danger of developing complications. Following periodontal surgery complications can occur. The results of periodontal therapy may change as a result of these problems. Therefore, it becomes necessary for a clinician to know in detail about the complications in order to avoid it while performing periodontal surgery.

COMPLICATIONS

Inadequate Advancement of flap



Underpreparation of the flap during a surgery like ridge augmentation is a typical mistake that prevents tensionless closure. Primary closure won't be achieved if the tissue is not sufficiently loosened, or the sutures will need to be under excessive strain in order to seal the wound. This may result in suture necrosis and a suture line dehiscence. To avoid this dilemma, it is advisable to set up the flap for advancement prior to placing bone grafts and barriers. The expected breadth and height of the augmentation will decide how far the tissue has to be advanced. Before beginning a large GBR surgery, the buccal flap should typically be able to move 3 to 5 mm over the palatal/lingual tissue. Additional flap advancement may be necessary to allow the augmentation, and once the bone and barriers are in place, it may be necessary to release the tissue completely. After a GBR surgery, the enhanced ridge frequently contracts. Clinicians must first overbuild the augmentation since uneven shrinkage in height and breadth, which ranges from 39.1% to 76.3%, is to be anticipated.²

Moreover, rather than being determined by the predicted mid-buccal contour, the amount of the augmentation should be determined by the desired amount of the tissue in interproximal area at the eventual repaired location.

Echymosis and edema

After surgery, swelling can start as soon as a few hours later and last for 48 to 72 hours before reaching its peak^{3,4}. Edema may not spread evenly from the damaged location in all directions. The guidance of swelling by structures including bone, fascia, and muscle attachments is one potential explanation for this.⁵ The aforementioned tissue modifications can lead to pain and decreased function. Application of ice should be done by patients for

ten minutes on and ten minutes off after the surgical procedure up until going to bed that night⁶

Ecchymosis can develop close to the operation site, on the chest, the lower jaw, or even elsewhere. Ecchymoses have no impact on the outcomes and don't need treatment. They could worry the patient, in which case reassurance may be required. Incisions used to advance flaps should generally not extend too far into the submucosa. This helps to lessen postoperative bleeding and oedema.

Bleeding

A good case history can help prevent unexpected bleeding brought on by drug-related coagulopathy. If tissues are handled delicately, intraoperative hemostasis normally doesn't cause any complications. Sutures, pressure, and epinephrine in the anaesthesia may typically stop excessive bleeding. Too much exercise should be avoided after surgery. The epinephrine in the anaesthesia wearing off may be the cause of postoperative bleeding at the suture line. Usually, pressure for five minutes causes clotting.⁷

The flap must be reopened if hemostasis is not achieved. It's important to look for bleeding spots in both the soft and hard tissues. Blood vessels inside the flap should be tied off, and arteria nutricia inside the bone should have any bleeding reduced. Re-suturing the incision is necessary, and the flaps' coaptation should be examined by gliding a periodontal probe across the suture line. A hematoma should be evacuated and the wound resutured if it appears within the first 24 hours after surgical procedure and leads to any discomfort to the patient or flap gets deformed.



The surgeon must be ready to handle incidental injury to the larger palatine artery while doing a partial thickness palatal flap. Apply pressure to stop bleeding if the artery is damaged, then use a curved hemostat so the palatal flap can be clamped next to the site of the tissue break. If the bleeding artery is seen, cauterise it using an electric device or tie it off. If the bleeding vessel cannot be seen, further deep sutures may be required.

Infection

Erythema, oedema, soreness, and exudation are signs of infection after the first 72 hours. A culture should be done and an antibiotic should be provided if there is suppuration. Because there is fluctuance, it is necessary to cut the region and install a drain there for a few days.

Necrosis

Ischemia and subsequent tissue necrosis may occur if the blood flow to the flap is hampered. If this happens, it may be because of too-tight sutures, paracrestal incisions, or poorly designed flaps with narrow tissue borders that prevent a sufficient supply of blood. Escalated wound tension may also cause the flap borders to necrosis, which will cause a dehiscence in soft tissue.¹

Loss of the Vestibule

The vestibule next to the surgical site may be lost entirely or partially as a result of the advancement of the flap to cover a significant bone regeneration treatment. The mucogingival line between the surrounding tissues and the morphology of the vestibule are frequently changed by the tissue's coronal location. The patient may also experience severe occurrences of lip tethering . The vestibule has to be restored when the augmentation has healed. A split-thickness flap with tacking at the vestibule level, a subepithelial connective tissue graft or a

free gingival graft that may or may not be put over the connective tissue bed generated by the split-thickness flap, or laser treatment are all options for achieving this. It is acceptable to let patients know up front that treatment may involve several adjustments.¹

Delayed wound healing

Haemostasis, inflammation, proliferation, and remodelling are the four precise and meticulously designed processes that constitute the biologically normal process of wound healing in the human body. After periodontal surgery, surface epithelization takes place seven days later. Since dead necrotic tissue encourages bacterial growth, infection is the most common cause of a wound that takes longer to heal. Other causes include: suturing tight closure, suture track infection, hematoma, calculus, tooth fragments, and wound dehiscence (flap edges not approximated), as well as allergic reactions to periodontal pack, suture material and to graft material.

Conclusion

Its always better to have a thorough understanding of the anatomy of the area to be operated upon and also about the surgical technique that will be used in order to avoid complications which might occur post surgery. Complication management can become difficult both for clinician and the patient. Hence, it is better to avoid complications whenever possible.

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4

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Additions:

Complications: “a difficult factor or issue often appearing unexpectedly and

changing existing plans, methods, or attitudes”⁴ or “a secondary disease or condition developing in the course of a primary disease or condition.”⁴

In periodontology and implant dentistry they might be defined as “those unexpected interurrences occurring during or after the execution of a treatment procedure that have potential of modifying or jeopardizing the wound healing process and the anticipated effect of treatment.”

