



Review Article

Post-surgical care in surgical periodontics

Amit Mani¹, Shubhangi Mani², Shivani Sachdeva¹, Jasleen Kaur Sodhi^{1,*},
Hiral R. Vora¹, Sonali Gholap¹

¹Dept. of Periodontology, Pravara Institute of Medical Sciences, Loni, Maharashtra, India

²Dept. of Orthodontics, Pravara Institute of Medical Sciences, Loni, Maharashtra, India



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ABSTRACT

The patient's post-surgical management is just as critical as the surgical treatment planning and management of the patient. Patients who do not receive proper and contemporary post-surgical instructions, or who do not follow them, are at higher risk for complications such as pain, swelling, and infection, as well as the possibility of altered healing of both the oral soft tissues and supporting osseous structures. During postoperative phase, the three most important factors to consider are the patient comfort, wound stability and plaque control. These are achieved through a combination of good surgical technique and careful postoperative care of the surgical site. Thus, surgeon's professional obligation is to ensure that patients receive consistent verbal and written instructions that describe activities during the critical early healing period after the surgery. Furthermore, the surgeon must have a thorough understanding of the instructions given to the patient, as well as the reasoning behind them.

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1. Introduction

Periodontal diseases are a heterogeneous group of diseases caused by the interaction between supragingival and subgingival biofilms and therefore the host inflammatory response. Their treatment comprises of non-surgical and surgical approach provided counting on the severity of the disease. The understanding and adherence to the postoperative care and instructions are factors that influence the recuperation process after any surgery.¹

The understanding, implementation and therefore the subsequent implementation of postoperative guidelines are factors that influence the recovery from any surgery. Some authors state that instructing patients about postoperative care not only reduces postoperative morbidity, but also improves the standard of life during recovery period. During postoperative phase, the three most important factors to consider are the patient comfort, wound stability and plaque

control. While most of the literature provide information on how to handle patients after a surgical procedure, there is little information available that deals specifically with such situations and their possible outcomes. A complication may be a disease or disorder arising as a consequence of another disease. Ideally, there should be no complications after any surgery. But still some complications are avoidable whereas some are inevitable under certain circumstances. Most commonly occurring complications include post periodontal surgery include postoperative pain, bleeding, swelling, root hypersensitivity, delayed healing, trismus, bruising, taste changes.

2. Patient management and instructions after surgery

The patient's post-surgical management is an imperative step in achieving the desired post-operative results. Patients who do not apprehend proper post-surgical instructions or who disregard them are at risk for unpleasant consequences. The periodontal surgeon has to hold the responsibility to

* Corresponding author.

E-mail address: drjasleensodhi@gmail.com (J. K. Sodhi).

ensure that written and oral instructions are given prior to releasing the patient, in order to prevent any surgical procedure-related complications. It is important for the patient to follow all post-surgery instructions in order to minimise the risk of complications.

2.1. Post-surgical bleeding and swelling management

For several hours after surgery, there may be leakage or oozing from torn blood vessels. Following the surgery, a small amount of bleeding is to be expected. A small amount of saliva mixed with blood, on the other hand, may be misinterpreted by the patient as a large amount of blood and a sign of haemorrhage. As a result, a patient who has been informed in advance will not make that mistake. Blood leakage into surrounding tissues and the resulting inflammatory response can cause minor swelling of the oral and facial tissues. These are minor, common side effects that do not require treatment and should not cause concern for the surgeon or the patient.¹

Extravasation of partially formed intravascular clots in severed blood vessels, which is caused by increased haemostatic pressure as blood flow returns to normal and then exceeds normal flow during the rebound phenomenon, is a common cause of minor bleeding during the early postoperative hours. If the bleeding persists, subsequently, active measures to stop the bleeding are needed.

2.1.1. Local pressure

1. The source of bleeding should be identified and local pressure should be applied. Application of vasoconstrictor may be combined with pressure application to control bleeding.
2. Applying pressure to the soft tissues causes tissue compression, which aids in the occlusion of vessels in the soft tissues, which occurs when fibrin strands contract, become firm, and seal the vessel from further blood leakage.
3. Minor bleeding from a localised area can usually be managed with firm finger pressure onto a moistened gauze pad or flannel placed over the bleeding site during the first 12–18 hours after surgery for 10-15 mins.

2.1.2. Swelling

1. Swelling is the result of inflammation in the operated area.
2. It generally appears within 24 hours of the surgery and may increase for another 24 hours.
3. It generally starts reducing by the third day and usually subsides by fourth post-operative day.
4. Persistent swelling may be due to persistent inflammation or bleeding, so removal of cause of inflammation is indicated.²

A. Cold application

1. The ice pack is applied for about 20 minutes and then removed for another 20 minutes. This regimen will be started inside the surgeon's office before dismissal and will then be repeated for 6–8 hours after surgery.
2. Using cold fomentation continuously is preferred rather than intermittent because it activates a physiologic mechanism that protects surface tissues from frostbite, resulting in an increased blood flow at the operated site.
3. Intermittent ice pack application is advised to be terminated after 8 hours because reduced blood flow is no longer desirable and may thwart the tissue healing by interfering with the inflammatory response.

B. Moist heat application

1. Ecchymosis may occur where there may be the presence of external, facial discoloration or swelling when the blood leaks into the surrounding tissues from the vessels damaged during the surgery.
2. Applying moist heat to the facial tissues overlying the surgical site is recommended after 18-24 hours the surgery. If done immediately, it could lead to increased tendency of bleeding and swelling.
3. When ecchymosis develops, moist heat can help promote fluid exchange and speed the resorption of discolouring agents from the tissues for up to a week or longer after surgery.
4. The best way to apply moist heat is to wet a small cotton towel with hot tap water and hold it against facial tissues for 30 minutes or as often as your daily schedule allows.
5. After every 10–15 minutes, soak the towel with hot water again. The hot towel can also be wrapped in a plastic bag and placed on the face, with an electrical hot pad holding it in place. This will maintain a constant temperature throughout the application period.³

2.2. Post-surgical pain prevention and management

Periodontal surgery that involves the opening of a flap, gingival grafts, or gingivectomy/frenectomy procedures can induce post operative pain. Pain experienced within the first three days after surgery is considered normal and will gradually fade as the healing process progresses. Extensive and lengthy surgical procedures, as well as the wearing off of local anaesthesia, can cause postoperative discomfort.

On the first postoperative day, there is usually a significant reduction in pain, followed by a gradual, progressive decrease in discomfort on each subsequent day. Only a small percentage of patients experience pain that can't be relieved with mild analgesics. Analgesic therapy should be started prior to surgery because it is easier to

prevent pain than it is to remove it. Nonsteroidal anti-inflammatory drugs (NSAIDs) are preferred, with the initial dose timed so that the chosen analgesic reaches peak blood levels before the local anaesthetic wears off. For periodontal surgery, for example, 500–600 mg of acetaminophen or 800 mg of ibuprofen are given orally just before the injection of lidocaine with a vasoconstrictor.³ Since lidocaine-induced local anaesthesia with 1:50 000 epinephrine/adrenaline lasts 1.5–2 hours, oral analgesic dosages should be repeated every 4 hours on surgery day and every 4–6 hours on the first and second postsurgical days.^{4–8}

Long-acting local anaesthetics like bupivacaine or etidocaine, which provide 6–8 hours of local anaesthesia, are another option for post-surgical pain relief. When compared to shorter acting agents, the return of sensation is much more gradual, the onset of discomfort is less dramatic, and therefore less anxiety is produced as sensations grow very gradually.⁹ Mild analgesics should be prescribed as part of the post-surgical regimen rather than left to the patient's discretion. Following periodontal surgery, patients rarely need narcotic analgesic therapy. Some surgeons prefer to give patients a narcotic prescription with the suggestion that the narcotic should only be used if the non-narcotic drug prescribed is ineffective.¹⁰

Lokken et al.¹¹ have shown that starting presurgical ibuprofen therapy delays the onset and reduces the intensity of post-surgical pain to a greater extent than traditional oral analgesics.

2.3. Antibiotic and post-surgical infection considerations

Post-operative infection is a complication that occurs when proper sterilisation and disinfectant protocols are not followed. It's more likely related to teeth with endodontic involvement (endodontic – periodontal lesion), flap displacement and bone exposure, sutures and impacted calculus particles, and tissue laceration and impaired vascularization. Antibiotics are rarely needed as a result of this. If an infection occurs, signs and symptoms include increased and progressive swelling and pain, which may or may not be associated with suppuration, fever, and lymphadenopathy 36–48 hours after the procedure.^{12,13}

Antibiotic therapy is started immediately, and the patient is closely monitored to ensure that the antibiotic chosen is effective. Penicillinase-resistant antibiotics, extended-spectrum antibiotics such as ampicillin and amoxicillin, cephalosporins, azithromycin, clarithromycin, or clindamycin, or a combination of the above, are increasingly being used. However, penicillin remains the drug of choice. For example, Amoxicillin 500mg every 8 hours for one week can be prescribed to provide antibiotic coverage during the initial healing process. A cephalosporin or clindamycin may be used as an alternative to penicillin in patients who are allergic to it. For example, Azithromycin

250 mg, Clindamycin 150 mg or Doxycycline 100 mg can be used as an alternative for patients allergic to penicillin. Thus, patient should always be asked if they have any known drug allergies or if she is pregnant.¹⁴

2.4. Supportive therapy after surgery

Proper dietary and fluid intake, oral hygiene, and activity restriction are all part of supportive treatment. Although supportive therapy is more difficult for medically compromised patients, the uncompromised patient also needs specific instructions for supportive therapy in the first 3–5 days after surgery.

2.4.1. Dietary and fluid intake

Patients need both a source of energy and a source of protein. Energy comes from carbohydrates, proteins, and fatty acids. Impaired protein metabolism, delayed angiogenesis, and impaired wound contraction all contribute to delayed wound healing in severely malnourished patients. Wound healing necessarily involves the use of energy. As a result, the patient's nutritional status has an impact.

Although protein can be used as an energy source, its primary function is to promote cellular proliferation and protein synthesis; therefore, using protein as an energy source is considered harmful. Bone healing is vital in a lot of maxillofacial surgery. Protein has been shown to play an important role in a decrease in circulating T and B lymphocytes, as well as impaired neutrophil phagocytosis, are common causes. All of the above may occur as a result of a lengthy rehabilitative period.¹⁵ When a patient's energy needs rise as a result of surgery, trauma, or another medical condition, caloric intake must rise as well as fracture repair strength. Malnourished patients are also more susceptible to infection. When the body cannot get enough calories, it enters into catabolism to get the energy and substrates it needs to stay alive.

To prevent injury to the operated site in the early days, the patient should be advised to eat only semi-solid foods, followed by adequate dietary food intake.

2.4.2. Oral hygiene

Oral hygiene maintenance plays an important role for successful periodontal procedure. The following instructions should be tend to the patient:

1. Teeth which have not been involved in the surgery should be brushed and flossed as previously instructed. Teeth within the operated area should be gently brushed and flossed only after 24 hours. A little amount of bleeding is expected, but removal of plaque is important for enhancing healing.
2. In cases where resorbable membrane has been used for GTR or emdogain to realize regeneration, the patient is suggested to not brush or floss within the operated area

for few weeks after surgery.

To enhance plaque control, the patient is suggested to use mouth rinses as follows:

1. Warm salt water that is half teaspoon per cup of warm water can be used for twenty-four hours after surgery with the frequency of 2-3 rinses each day.
2. Mouthwash containing chlorhexidine is commonly used 24 hours after surgery. The desired results are obtained by rinsing for one minute with one or two tablespoons of 0.12–0.20 percent CHX solution twice a day (mornings and evenings).^{16,17}

2.4.3. Dental hypersensitivity

Root hypersensitivity is most commonly caused by root surface exposure to the oral environment as a result of recession or root surface instrument. Scaling and root planning procedure can remove 20-50 micrometres of cementum, thus exposing dentinal tubules to external stimuli. It has shown that flap surgeries with osseous reduction end in highest degree of discomfort with exposure of bone which may cause dentinal hypersensitivity

1. In such cases, reassure the patient that it is a standard side effect related to the character of periodontal surgery, especially pocket reduction surgery.
2. Encourage the patient to use a desensitizing agent, such as toothpaste containing potassium nitrate (e.g., Sensodyne®) or arginine and calcium carbonate (e.g., Colgate® Sensitive Pro-Relief™).
3. Consider applying a chair-side fluoride varnish or dentinal tubule sealer (e.g., Super Seal®) to assist reduce symptoms, if the dentinal hypersensitivity doesn't get away after 1–2 months.
4. Schedule monthly visits until a significant improvement are often seen.¹⁸

2.4.4. Periodontal dressing

Periodontal surgical dressing is employed to guard the surgical site and keep you comfortable. The dressing usually hardens during a few hours. In most cases the dressing is left within the mouth for a period of 7-14 days for patient comfort and for shielding the operated area from trauma or irritation.

In the event that a periodontal dressing is used, the patient should be informed of its protective function and urged to keep it from breaking. In the areas of the mouth not affected by the surgery, the patient is advised to follow normal oral hygiene practises. Brushing is advised only on the biting surfaces of the teeth in places where there is dressing.

2.4.5. Important Patient Restrictions

Exercise

For healthy patients, activity restriction simply entails minor changes in daily activity levels. For the first 1–2

days after surgery, avoid any activity that significantly raises blood pressure, such as jogging or any strenuous form of exercise.

This is to prevent intravascular clots from dislodging in severed blood vessels due to increased hydrostatic pressure. On the third day after surgery, a slow, gradual return to the patient's regular strenuous exercise level will begin, with normalcy returning within one week. Patients who are medically compromised or who are elderly may need to limit their activities for longer periods of time.

1. The patient should be asked to chew on the non-operated side if surgery is done on one quadrant. So that no injury occurs at the operated site.
2. The patient should be advised to not have any carbonated drinks after surgery as it may hamper the healing process by interfering with the clot formation. Avoid drinking of juices or other drinks by using straws.
3. Patient should be advised to stop all the habits like smoking and tobacco chewing after surgical procedure because it can delay healing at the surgical site.^{19,20}

3. Conclusion

To reduce postoperative pain, proper treatment planning and management are necessary. After periodontal surgery, always provide written postoperative instructions and detailed oral postoperative instructions with emergency contact information to reach the dentist directly. Since it is difficult to predict how a patient will react to postoperative pain, analgesics should be used on a regular basis to prevent and manage pain. NSAIDs and a narcotic combined with a non-narcotic agent are regularly prescribed for longer or more extensive periodontal surgeries, and will, in most cases, provide adequate pain management.

It is important to consider that postoperative care frequently varies from patient to patient based on type of surgery, wound healing and patient's ability to achieve an acceptable level of oral hygiene. Following these principles an adequate healing and desired results can be ensured.

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None.

5. Conflicts of Interest

All contributing authors declare no conflict of interest.

References

1. Guyton AC. Textbook of Medical Physiology. In: 11th Edn. St Louis: Mosby; 2005.
2. Costich ER, Hayward JR. Hemorrhage; its prevention and therapeutic control. *Dent Clin North Am.* 1958;3:195–210.

3. Lindorf HH. Investigation of the vascular effect of newer local anesthetics and vasoconstrictors. *Oral Surg Oral Med Oral Pathol*. 1979;48:292–7. doi:10.1016/0030-4220(79)90026-4.
4. von Graffenried B, Nüesch E, Maeglin B, Hägler W, Kuhn M. Assessment of analgesics in dental surgery outpatients. *Eur J Clin Pharmacol*. 1980;18(6):479–82. doi:10.1007/bf00874659.
5. Seymour RA, Rawlins MD. The efficacy and pharmacokinetics of aspirin in postoperative dental pain. *Br J Clin Pharmacol*. 1982;13:807–10.
6. Seymour RA, Williams FM, Ward A, Rawlins MD. Aspirin metabolism and efficacy in postoperative dental pain. *Br J Clin Pharmacol*. 1984;17(6):697–701. doi:10.1111/j.1365-2125.1984.tb02406.x.
7. Nespeca JA. Clinical trails with bupivacaine in oral surgery. *Oral Surg Oral Med Oral Pathol*. 1976;42:301–7.
8. Gordon SM, Dionne RA. Prevention of pain. *Compend Contin Educ Dent*. 1997;18:239–52.
9. Requa-Clark B, Holroyd SV. Nonopioid (nonnarcotic) analgesics. In: Holroyd S, Wynn R, Requa-Clark B, editors. *Clinical Pharmacology in Dental Practice*. 4th Edn. St Louis: The CV Mosby Co; 1988.
10. Vogel RI, Gross JI. The effects of nonsteroidal anti-inflammatory analgesics on pain after periodontal surgery. *J Am Dent Assoc*. 1984;109(5):731–4. doi:10.14219/jada.archive.1984.0181.
11. Lokken P, Olsen I, Bruaset I, Norman-Pedersen K. Bilateral surgical removal of impacted lower third molar teeth as a model for drug evaluation: A test with ibuprofen. *Eur J Clin Pharmacol*. 1975;8(3-4):209–16. doi:10.1007/bf00567117.
12. Pack PD, Haber J. The Incidence of Clinical Infection After Periodontal Surgery: A Retrospective Study. *J Periodontol*. 1983;54(7):441–43. doi:10.1902/jop.1983.54.7.441.
13. Powell CA, Mealey BL, Deas DE, McDonnell HT, Moritz AJ. Post-Surgical Infections: Prevalence Associated With Various Periodontal Surgical Procedures. *J Periodontol*. 2005;76(3):329–33. doi:10.1902/jop.2005.76.3.329.
14. Ruben MP, Kon S, Goldman HM, Alpha K, Bloom AA. Complications of the Healing Process After Periodontal Surgery. *J Periodontol*. 1972;43(6):339–46. doi:10.1902/jop.1972.43.6.339.
15. Badwal RS, Bennett J. Nutritional considerations in the surgical patient. *Dent Clin North Am*. 2003;47(2):373–93. doi:10.1016/s0011-8532(02)00110-6.
16. Asboe-Jørgensen V, Attström R, Lang NP, Løe H. Effect of a Chlorhexidine Dressing on the Healing After Periodontal Surgery. *J Periodontol*. 1974;45(1):13–7. doi:10.1902/jop.1974.45.1.13.
17. Berman CL, Jaffin RA, Greenstein G. The Chlorhexidine Question. *J Periodontol*. 1984;55(11):668–9. doi:10.1902/jop.1984.55.11.668.
18. Greenstein G, Berman C, Jaffin R. Chlorhexidine: An Adjunct to Periodontal Therapy. *J Periodontol*. 1986;57(6):370–6. doi:10.1902/jop.1986.57.6.370.
19. Curtis JW, McLain JB, Hutchinson RA. The Incidence and Severity of Complications and Pain following Periodontal Surgery. *J Periodontol*. 1985;56(10):597–601. doi:10.1902/jop.1985.56.10.597.
20. Gutmann J. Surgical endodontics: post-surgical care. *Endod Topics*. 2005;11:196–205.

Author biography

Amit Mani, Professor and HOD

Shubhangi Mani, Professor

Shivani Sachdeva, Reader

Jasleen Kaur Sodhi, Post Graduate

Hiral R. Vora, Post Graduate

Sonali Gholap, Post Graduate

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