Abstract

Periodontal surgical procedures could present challenges to the body's clotting mechanism. One such challenge is the uncontrolled hemorrhage that can lead to a life-threatening complication. Hemorrhage can be classified into primary, intermediate, and secondary hemorrhage. Significant post-operative bleeding is not very common as it is generally self-limiting due to the primary closure of the soft tissues following periodontal surgical procedures. This is a case of a 20-year-old systemically healthy male patient who reported with an unusual condition of the formation of a “liver clot” also known as “currant jelly clot” after 6 days following a semilunar coronally repositioned flap for root coverage.

Keywords: Currant jelly clot, hemorrhage, hemostasis, liver clot, periodontal plastic surgery

Introduction

Periodontal plastic surgical procedures are performed to correct or eliminate developmental, anatomic, traumatic, or disease-induced defects of the gingiva or alveolar mucosa. Hemorrhage is a common sequel after periodontal surgery that lasts for a short period of time. It can range from a minor leakage or oozing at the site of any traumatic injury or surgical procedure to extensive bleeding, leading to a life-threatening complication. Significant post-operative bleeding is not very common as it is generally self-limiting due to the primary closure of the soft tissues following periodontal surgical procedures. Prolonged bleeding is usually associated with oral surgical procedures, particularly tooth extractions that results in an “open wound.”

The most common challenges faced by the dentist following any surgical procedure include those related to bleeding, infection, and delayed wound healing. Periodontal surgical procedures could present challenges to the body's clotting mechanism. One reason for such a challenge would be the highly vascular nature of the oral mucosa. At times, patients tend to move their tongue toward the surgical area which results in the dislodgement of the blood clot formed after surgery resulting in secondary bleeding. Finally, salivary enzymes can also play a role in breaking down the blood clot preventing the organization of the clot as well as ingrowth of granulation tissue.

This case report depicts a unique and uncommon case of the formation of a “liver clot” also known as “currant jelly clot” after 6 days following a semilunar coronally repositioned flap for root coverage.

Case Report

A 20-year-old male patient was referred to the Department of Periodontology, JSS Dental College and Hospital, Mysuru, for the evaluation of recession on the maxillary right first premolar. Clinical examination revealed Miller Class 1 recession with an accessory frenal pull with respect to the tooth [Figure 1]. There was no significant medical history or history of any medication. A semilunar coronally repositioned flap was planned after Phase I therapy to cover the recession.

Surgical procedure

The patient underwent a routine blood investigation before the surgery and the values were found to be within the normal limits. Under local anesthesia of 2% lidocaine (adrenaline 1:80,000), a semilunar incision was made on the labial aspect of the maxillary first premolar parallel to the free gingival margin using a No. 15 blade. This was followed by an intracrevicular incision and both the incisions were joined by sharp dissection with a No. 15 blade resulting in a partial-thickness flap. A width of 3 mm was maintained from the gingival margin throughout the extent of incision to secure an optimal blood supply to the coronally repositioned tissue.
Semilunar partial-thickness flap was mobilized coronally to the level of the cementoenamel junction and the repositioned tissue was stabilized with light pressure on the receded root surface for 5 min [Figure 2]. The surgical area was then covered with periodontal pack and no sutures were given.

**Post-operative instructions**

Post-operative instructions were given to the patient after the hemostasis was obtained. He was asked to eat a soft diet and not to manipulate the surgical area with the tongue nor attempt to retract his lip and visualize the area. He was also instructed to refrain from brushing in the operated area for 2 weeks. The patient was advised to use 0.2% chlorhexidine mouth rinse twice daily for 1 week and analgesics consisted of paracetamol and aceclofenac twice daily for 3 days. The patient was recalled after 1 week for follow-up.

**Post-operative sequela**

Six days after the surgical procedure, the patient telephoned and reported back to the department with the complaint of “thick bloody tissue” on the operated site. On examination, a dark red, jelly-like mass was noted on the maxillary right posterior region associated with the surgical site and remnants of periodontal pack were embedded within the mass [Figure 3].

The mass was removed with tissue forceps [Figure 4]. Slight bleeding was noted after the removal of the clot. The area was irrigated with povidone-iodine and a pressure pack was applied with moist gauze. No further hemorrhage or post-surgical complication was noted. The obtained mass was given a diagnosis of “liver clot” or “currant jelly clot” based on the clinical appearance similar to the tissue of the liver. The patient was recalled after 1 week, wherein the healing was uneventful and at the 3rd week showing complete root coverage [Figure 5].

**Discussion**

Hemorrhage is defined as the escape of blood from the vessels.\(^4\) It can be classified into primary, intermediate, and secondary hemorrhage depending on its occurrence. During surgery, blood vessels get ruptured that result in primary hemorrhage. Intermediate hemorrhage occurs within 24 h after surgery when pressure pack is removed or due to vasoconstrictive agent.
Liver clot formation following semilunar coronally repositioned flap for root coverage

Liver clot formation following semilunar coronally repositioned flap for root coverage Nair and Shashikumar

Figure 5: Post-operative photograph after 3 weeks wherein healing is uneventful

dissipation. Any infection, foreign bodies, intrinsic trauma, bone replacement graft, or restorative dressing material can cause secondary hemorrhage after 24 h which interfere with the organization of blood clot.[6,7] This can lead to slow, oozing hemorrhage from the surgical wound to form a “liver clot.”

Hemorrhage is followed by the event termed as hemostasis. It is defined as the spontaneous arrest or prevention of bleeding at the site of an injury by physiological processes while maintaining the normal blood flow elsewhere in the circulation.[10] The two main components of hemostasis include the primary hemostasis (platelet aggregation and platelet plug formation) and the secondary hemostasis (deposition of insoluble fibrin by the proteolytic coagulation cascade). Hemostasis gets activated within seconds of an injury and remains localized to the injured site.

Blood coagulation and fibrinolysis usually take place after periodontal surgical procedure. These form an important part of the host defense mechanism.[6] Following an injury to the vessel wall, the blood vessels constrict. Platelets are activated and get adhered to the damaged subendothelial tissue at the injured site. This results in the formation of a temporary hemostatic plug. Plasma coagulation factors get stimulated by the platelets, leading to the generation of insoluble fibrin. This forms a mesh incorporated into and around the platelet plug, and the mesh serves to strengthen and stabilize the blood clot. Both components of hemostasis (primary and secondary) happen simultaneously and are mechanistically intertwined. The fibrinolysis pathway plays an important role in hemostasis which dissolves the blood clot once the integrity of the blood vessel has been restored.[3,10]

Platelets are the key factors in the process of blood coagulation and any imbalance in the hemostatic system can lead to pathological thrombosis formation, called thrombosis, or pathological bleeding.[6] Thrombocytopenia is a condition, in which a person has low platelet count and there is an inability of the blood to form clots.[11]

“Liver clots” or “currant jelly clots” are defined as a red, jelly-like clot that is rich in hemoglobin from erythrocytes within the clot and characterized by slow, oozing, dark (venous) blood.[12-14] It can also form due to venous hemorrhage that may not have a pulsating quality.[4] It represents incomplete fibrin clotting and has shown to be associated following extraction of mandibular third molars.[3,15] A biopsy of the liver clot confirmed the presence of a fibrinous band surrounded by erythrocytes.[4]

High-speed suctions or curettes can be used to remove liver clots. Irrigation with povidone-iodine and pressure pack with moist gauze is applied to the surgical area. Sutures are not generally required.[3] Laser therapy can also be utilized in removing the blood clot and in enhancing healing of the tissues by biostimulation.[10] Although the occurrence of a liver clot is rare, dental professionals should be skilled enough to prevent and manage such an event.

According to literature, “liver clot formation” occurs after 24–48 h.[10] However, this case describes the formation of liver clot that has occurred after 6 days.

This case is believed to be the second report of a “liver clot” formed after periodontal plastic surgical procedure.

Conclusion

Prolonged hemorrhage is always a matter of concern for both dental professionals and patients. Uncontrolled bleeding can delay wound healing and activate infection. Patients should be instructed to undergo blood investigations before surgical procedures and should be informed about the possible post-surgical complications that may occur.

Primary closure of any surgical wound should be confirmed with a maximum number of sutures necessary for the close adaptation of the wound margins.[4] Pressure packs for about 5–10 min, ice packs, vasoconstrictive substances such as epinephrine, procoagulants (botroclot, thrombin, and collagen), use of diode lasers, and electrosurgery are various techniques used to achieve coagulation.

Reports of liver clot formation after dental surgical procedures are limited. This is believed to be the second case reported following periodontal plastic surgical procedure utilizing a semilunar coronally repositioned flap for root coverage.

References