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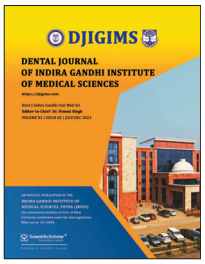

Review Article

Unraveling Liver Clot and its Management in Periodontal Surgery

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ABSTRACT

Surgical procedures may disrupt the clotting mechanism, leading to uncontrolled bleeding post-operatively, sometimes in patients with systemic diseases. Uncontrolled bleeding may occur due to various reasons, and it can usually be managed by placing pressure packs or closure of the surgical site. As we know, hemostasis arrests bleeding, but sometimes, the clot may increase in size, leading to liver clot formation. In some instances, bleeding may occur due to secondary hemorrhage or venous hemorrhage, which may end up in the formation of a liver clot. It is named so because it appears similar to liver tissue. This review article explains various etiologies, histopathological features, and the management of liver clots that occur after periodontal surgery.

Keywords: Complication after periodontal surgery, Currant Jelly clot, Liver clot, Secondary hemorrhage after flap surgery

INTRODUCTION

Periodontal surgery helps in the correction or elimination of developmental, anatomical variations, or disease-induced defects of the periodontium.[1] Among periodontal surgeries, flap surgery plays a crucial role in the reduction of pocket depth in subjects with periodontitis.[2] Sequelae following surgical procedures include pain, bleeding, infection, hypersensitivity, and recession.[2]

One of the challenges in controlling bleeding after surgery is the high vascular nature of tissues, dislodgement of the clot, presence of foreign bodies, and any infection or trauma, due to poor wound healing capacity in subjects with systemic illness or grafts that interfere with clot organization.[1] This will lead to secondary hemorrhage, which typically occurs 24 hours after surgery.[2]

In rare instances, secondary hemorrhage can result in 'Liver clot' formation. Venous hemorrhage also plays a role in liver clot formation.[3] The nature of venous hemorrhage is non-pulsatile and has a darker hue.[2] It is otherwise known as 'Currant Jelly Clot'. It appears as a dark reddish jelly-like appearance, which is primarily comprised of hemoglobin derived from erythrocytes entrapped within the clot.[4,5] Under the microscope, the liver clot contains a fibrous band surrounded by erythrocytes.[4,5]

Etiology

Liver clot is mainly caused by venous hemorrhage without a pulsating quality.[1] Interruption to the secondary hemostasis leads to incomplete fibrin clotting that forms liver clots, infections,

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foreign bodies, any intrinsic trauma, bone graft, or restorative dressing materials. It can also be due to the lack of vascular constriction.[6]

Hemorrhage is common after periodontal surgery.[3] It can be from mild leakage to heavy bleeding that can lead to life-threatening complications. Post-surgical bleeding is rare since the primary closure of soft tissue after surgery is self-limiting.[3]

Other causes for abnormal blood clots may be liver diseases, renal diseases, genetic disorders, fibrinolysis, disseminated intravascular coagulation, Pharmaceuticals, leukemia, and problems associated with hemostasis.[7] It may be due to the intake of several drugs, like antiplatelet drugs and anticoagulants.[7]

Histopathology

The histopathological examination revealed a fibro-cellular connective tissue stroma, characteristic of granulation tissue. This stroma is characterized by disorderly arranged thick and thin bundles of collagen fibers with a few spindle-shaped fibroblasts. Focal areas exhibited irregular basophilic masses, varying caliber of blood vessels with engorged red blood cells, and areas of hemorrhage.[8] A mild to moderate inflammatory cell infiltrate was also observed, comprising neutrophils, lymphocytes, and plasma cells. The presence of granulation tissue indicates a healing response to injury or inflammation. The composition of the tissue, including collagen fibers, fibroblasts, and blood vessels, is consistent with this diagnosis.[8]

Management

Laser therapy can be used to remove the blood clot and promote tissue healing through bio-stimulation.[1] High-speed suction and curettage help in the management of liver clot removal. After removal, the site is curetted, irrigated with betadine and saline, and protected with a periodontal pack. Sutures are typically not necessary.[2] These combined techniques led to better results, promoting efficient healing and minimizing complications.

Jayakrishnan R *et al.*[2] treated Liver Clot by using normal curettage followed by irrigation with betadine and saline and isolated with the periodontal pack.[2] Gaurav Bakutra *et al.*[3] treated liver clots using high suction speed and curettes to remove the clot there is no hemorrhage during follow-up. The patient was recalled after 1 week, and the healing was eventful.[5]

CONCLUSION

Surgical procedures may result in severe complications that may be life-threatening, too. Dentists must inform the patient regarding post-operative complications, and they should get informed consent from the patient. The clotting mechanism plays a major role in wound healing procedures. Any issue with the mechanism can extend both bleeding and clotting times. Rarely, it may end up as a liver clot. Normally, prolonged bleeding may be managed by placing ice packs or by placing a hemostatic agent, whereas management of liver clots involves curettage, using high-volume suction.

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