

Severe Hemorrhage during an Incisional Biopsy: A Report of a Case

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Abstract

Background: Surgical procedures under local anesthesia are routinely employed by the dentist and are susceptible to significant complications which demand immediate care from the dental professional.

Report: This report presents a case of severe arterial hemorrhage during a simple removal of a lesion during an incisional biopsy.

Summary: In the event of severe arterial hemorrhage in a conventional dental office, manual compression for containing the hemorrhage and use of an adequate light source to correctly visualize the origin of the bleeding is recommended. If visible, the dental surgeon must attempt to perform vascular ligation or an occlusive suture. If the hemorrhage cannot be controlled after these measures, the patient must be transported to a hospital while continuing local compression during transit.

Keywords: Surgical complication, arterial hemorrhage, incisional biopsy, oral pathology, oral surgery

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Introduction

Incisional biopsy conceptually consists in the removal of pathological tissue along with some adjacent normal tissue for histopathological analysis.^{1,2} This procedure is indicated to either make or confirm the diagnosis of intraoral lesions and to assist with the selection of appropriate treatment and aftercare in terms of postoperative control in cases of malignant neoplasms. Like any surgical procedure, an incisional biopsy is susceptible to interurrences and complications. Hemorrhage, whether venous or arterial, may be cited as an example which results from the rupture of blood vessel (anatomic or pathologic) integrity³ requiring immediate attention.

This paper presents a case of severe hemorrhage during an incisional biopsy procedure as well as during lesion removal.

Case Report

Diagnostic Information

A 21-year-old female patient presented with a complaint of an asymptomatic gingival swelling. The lesion was located in the alveolar ridge in the mandibular right third molar region. The patient reported the evolution of a lesion over a period of one month. The swelling started following extraction of the right mandibular third molar along with frequent bleeding, especially after meals, but with partial spontaneous healing.

Extraorally, the patient presented facial swelling on the right side (Figure 1). Intraorally, a normal and elastic mucosa was observed along with a nodule reaching 4 cm in the largest diameter with a rubber-like consistency extending from the second bicuspid to the retromolar region (Figure 2). The lesion was recovered by a



Figure 1. Extraoral aspect showing facial swelling of the right mandible.

pseudomembranous material with ulcerated, necrotic, and erythematous points, and displayed the negative impression of the antagonist teeth.

Radiographic examination revealed an image of bone lysis, compatible with the alveolar space of the third molar (Figure 3). The patient revealed good oral hygiene. There was no medical history of addictions, previous pathologies, medical treatments, allergies, and the patient had a normal family history.

Differential diagnosis consisted of a mesenchymal neoplasm (sarcoma or lymphoma), peripheral giant cell granuloma or pyogenic granuloma. Due to the size, evolution and the possibility of a malignant neoplasm, the treatment of choice consisted of immediate incisional biopsy under local anesthesia.

Incisional Biopsy

While harvesting the vestibular portion of the lesion during the incisional biopsy, a severe arterial hemorrhage occurred with an estimated blood loss of one liter. Local compression and placement of an arterial ligature controlled the bleeding. The patient complained of dizziness and was hospitalized for diagnostic investigation and clinical control with total blood and crystalloid reposition. Routine exams did not reveal any additional information.

Digital angiography with selective catheterization of the right carotid artery and its ramifications was performed. Morphofunctional parameters exhibited no abnormalities, which excluded the possibility of an unusual vascular proliferation (Figure 4).



Figure 2. Intraoral view of the pseudomembranous nodule.



Figure 3. Posterior-anterior radiographic examination revealed an image of bone lysis, compatible with the alveolar space of the lower third molar.



Figure 4. Digital arteriography with selective catheterization of the right carotid artery and its ramifications. Morphofunctional parameters exhibited normality without abnormal vascular proliferation.

Histological Examination

Histological sections stained with hematoxylin and eosin revealed a fragment of ulcerated mucosa, covered by fibrinous hemorrhagic exudate. The connective tissue presented with a proliferation

of vascular spaces and a mixed inflammatory infiltrate. In focal regions the presence of multinucleated giant cells associated with amorphous exogenous material and eosinophils was noted. Calcified material was also noticed.

The remaining epithelium exhibited exocytosis, acanthosis, and atrophy. This histological analysis pointed to a foreign body reaction (Figure 5). Thus, a new surgical approach for total removal of the lesion was planned.

Treatment of the Lesion

Following a comprehensive patient evaluation a second surgery was performed under general anesthesia. Arterial hemorrhage occurred again during the procedure making it necessary to expose and ligate the right inferior alveolar artery to stop the bleeding.

After lesion removal, a layer of Ethicon® bone wax (Johnson & Johnson, New Brunswick, NJ, USA) was introduced in the cavity through the alveolus along with a fragment of adipose tissue harvested from the cheek then followed by the placement of another layer of bone wax (Figure 6). The wound was sutured with Ethicon® Vicryl 2-0 (Johnson & Johnson, New Brunswick, NJ, USA) suture material.

The post-operative period was uneventful, and the patient was discharged in three days (Figure 7).

Histopathological examination revealed a foreign body reaction probably due to periodontal calculus from the previous exam. The patient remains under a two-year follow-up and still presents with a sensorial deficit in the right mandibular nerve which started after the arterial ligation was placed.

Discussion

Hemorrhage during orthognatic surgeries in the presence of great arterial and venous malformation and during placement of implants and removal of hemangiomas have been described.⁵⁻⁸ However, significant hemorrhage during incisional biopsies are rarely described.

Lamberg, in 1979, reported the case of a death of a 12-year-old patient who suffered successive hemorrhages following extractions of two deciduous teeth due to a hemangioma.⁸

Hemorrhages are classified according to location (internal, external), type of the vessel (arterial, venous), moment (primary, secondary), and the volume of lost blood (Class I, II, III, and IV).^{3,9}

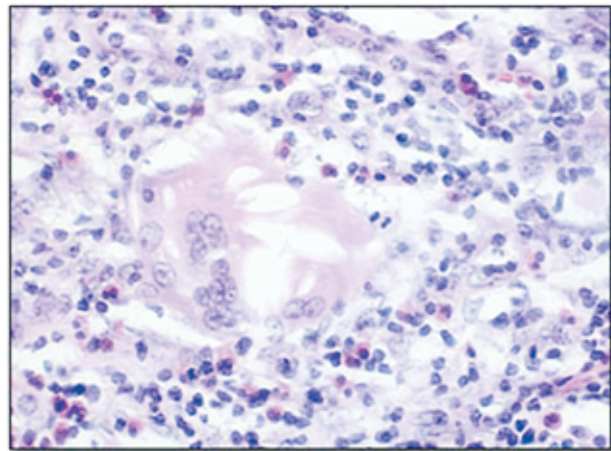


Figure 5. Histological sections revealed the presence of multinucleated giant cells associated with amorphous exogenous material and eosinophilia. (H-E stained 100X).



Figure 6. Fragment of adipose tissue harvested from the cheek and placed in the surgical wound.



Figure 7. Two-week post-operative evaluation revealing normal healing.

The American College of Surgeons, based on Advanced Trauma Life Support (ATLS®), defines hemorrhage as the most common cause of shock in the trauma patient (hypovolemic shock) and classifies it according to total volume of the blood loss as follows:

- Class I: up to 15%
- Class II: between 15-30%

- Class III: between 30-40%
- Class IV: greater than 40%

This classification is important since it evaluates the need for volemic reposition in severe cases. Depending on the hemorrhage class, volemic reposition is performed according to previously established protocols.

In the present case, the patient suffered a Class II arterial, external, and primary hemorrhage presenting low tissue perfusion, tachycardia, and dizziness. The estimated blood loss and the need of reposition were determined by the trauma surgery team. The patient needed volemic reposition of total blood only after the incisional biopsy but not after the subsequent removal of the rest of the lesion.

Foreign body reactions are specific types of chronic inflammatory events. This term usually describes tissue reactions caused by foreign bodies of chemical or mechanical origin. It is usually associated with infections when there is generation of a severe inflammatory reaction.¹⁰ Such a diagnosis was not expected in this case.

However, the earlier dental history revealed a preexistent surgical extraction with no suture of the alveolar mucosa or postoperative control. This could have generated the granulation tissue further sustained by the inferior alveolar artery resulting in a consequent tumoral mass.

Summary

Incisional biopsy is an invasive procedure presenting inherent surgical risks and may cause severe interurrences and complications. In the present case, resolution was immediate since it took place in the ambulatory patient service of a hospital for politraumas with a streamlined emergency care structure and trained teams.

In the event of such an occurrence in a conventional dental office we recommend manual compression for containing the hemorrhage and use of an adequate light source to correctly visualize the origin of the bleeding. If visible, the surgeon must attempt to perform either a vascular ligation or an occlusive suture. If the hemorrhage could not be controlled after these measures, the patient must be transported to a hospital with continued local compression during transit.

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