Case Report

Necrotic Ulcer on the Palate: As Sequelae of Local Anesthetic Administration: A Rare Case Report

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ABSTRACT

Anesthetic necrotic ulcer is a rare and uncommon condition occurring mostly in the hard palate possibly after a local anesthetic infiltration. The ulcer usually develops several days after the procedure. The ulceration is often deep and the margins are punched out, normally there will be a spontaneous but delayed healing. Treatment includes symptomatic relief and aid to heal. In this type of cases, the use of local anesthetic without epinephrine is recommended as it is attributed to be a possible cause of ischemia and secondary necrosis. Here, we report a case of anesthetic necrotic ulcer in a female patient on the left side of the hard palate region. The ulcer developed exactly at the site where local anesthesia was injected. The ulcer was persistent and showed a delay in healing, therefore she was treated conservatively. The ulcer healed completely after a period of 3 weeks.

Keywords: Hard palate, Ischemia, Local anesthesia, Necrotic ulcer, Vasoconstrictors

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INTRODUCTION

Palatal infiltration is a common method of depositing the anesthetic solution close to the apex of the involved tooth. This method of infiltration is usually free of complications but possible complication of the procedure may include needle breakage, prolonged pain, paraesthesia, hematoma, infection, edema, necrosis of tissue, and post anesthetic intraoral lesions. The post anesthetic ulcer occurs commonly in the palatal region as the mucosa is in close proximity to the underlying bone, thus leading to pressurized deposition of the local anesthetic solution and traumatic needle penetration. Other causes are a relatively poor blood supply, diabetes, and the possibility of reactivating the latent forms of a diseases like herpes which may all serve to promote tissue ischemia and lead to a necrotic lesion or ulcer.[1]

Anesthetic necrotic ulcer is a rare and uncommon condition occurring possibly after a local anesthetic infiltration. The ulcer usually develops several days after the procedure. The ulceration is often deep and the margins are punched out, normally there will be a spontaneous but delayed healing. Treatment of anesthetic necrosis is not usually required unless the ulceration fails to heal. Recurrence is uncommon but has been reported in some patients with the use of epinephrine-containing anesthetics. Hence, in these cases, use of local anesthetic agents without epinephrine is recommended.[2] Modern local anesthetic solutions are relatively non-irritating to tissues with the exception, perhaps, of skeletal muscle; however, ulceration and necrosis after the administration of local anesthetic has been documented.[3] Complications following rapid injection of local anesthetic solutions were also documented, especially those of which that have a vasoconstrictor have been reported. Ischemia resulting from incorrectly administered local anesthetic solutions may manifest in the form of tissue necrosis. Vasoconstrictors reduce the supply of oxygen to the injected tissue and promote the build-up of acidic by-products of metabolism. Local anesthetic solutions with vasoconstrictors are adjusted to a lower pH in order to preserve the vasoconstrictors; this, however, accentuates tissue acidity.[4] Management of patients with intraoral lesions following the administration of local anesthetic solution is normally very conservative and consists of reassuring the patient and prescribing analgesics and/or

topical antiseptic/anesthetic preparations. In many cases, healing occurs within ten days of the onset of the lesion. In certain instances, where ulceration has taken a prolonged course, surgical intervention has been deemed necessary.[5] Therefore, to minimize the occurrence of post anesthetic oral lesions the dentist should possibly follow a less traumatic needle penetration method and an alternative to lignocaine with epinephrine, mepivacaine, which does not contain a vasoconstrictor can be used for short surgical procedures like extractions.

CASE REPORT

A 40-year-old female patient reported to our dental hospital with a complaint of an ulcer in the left palatal region since 3 weeks. She had undergone extraction of left maxillary 2nd molar before 1 month under local anesthesia (LA). Aftermath, the patient noticed a painless ulcer in LA infiltration site a week later, which was refractory to the treatment of topical steroid gel and a course of antibiotics prescribed by her dental surgeon. She had no relevant medical and surgical history.

On examination, a well-defined ulcer was evident on the hard palate in relation to 27, with an approximate size of 2.5 mm, roughly oval in shape, with well-defined punched out margins, and a depth of 2 mm. The floor was covered by pseudomembranous slough, which on removal revealed a bleeding surface and non-tender on palpation.

A negative sensitivity test ruled out hypersensitivity reaction to the anesthetic solution (Figure 1). A complete hemogram and random blood sugar test was performed which revealed positive with 237 g%. Patient was prescribed an anesthetic antiseptic gel (Quadra gel oral topical ointment) and was asked to report after 1-week for review. She was referred to diabetic OP for the management of diabetes. After 1-week the patient reported with an improvement in her condition. 2 weeks later on her second visit, the examination showed the ulcer had partially healed. After a period of 3 weeks, the ulcer had healed completely with the mucosal surface showing epithelization (Figures 2-4).

Summary of the Case

The ulcer was noticed after 1-week exactly at the site where LA infiltration was given. The ulcer was persistent in size, deep with punched out margins, and painless due to possible ischemia caused by LA. The sensitivity test was negative indicating that the patient was not allergic to LA. Only symptomatic treatment was prescribed and the ulcer healed slowly taking a period of approximately 3 weeks. All these above features are suggestive of anesthetic necrotic ulcer of the palate due to the pressurized deposition of LA solution leading to ischemia.

Figure 1: Picture of sensitivity test for LA was negative

Figure 2: Picture of ulcer on 1st visit

Figure 3: Review after 2 weeks

DISCUSSION

Complications following the pressurized injection of local anesthetic solution particularly those containing a vasoconstrictor are documented. Ischemia resulting

Figure 4: Review after 3 weeks

from rapid administration of the local anesthetic solution may manifest as tissue necrosis although the exact cause is unknown and may vary from case to case. Vasoconstrictors in LA reduce the oxygen supply to the injected tissue and promote the build-up of acidic by-products of metabolism. Local anesthetic solutions with vasoconstrictors are adjusted to a lower pH in order to preserve the vasoconstrictors; this further accentuates tissue acidity. Thus, epinephrine contained in many local anesthetics may be a possible cause of ischemia and secondary necrosis.

Hypersensitivity reactions to local anesthetics may develop almost immediately after drug administration, moreover the advent of amide local anesthetics e.g., Lidocaine has greatly reduced the hypersensitivity.

The post local anesthetic intraoral lesions were normally treated conservatively with reassurance and topical antiseptic and anesthetic preparation. Normally, healing occurs spontaneously within ten days; occasionally surgical intervention was needed in protracted healing.[6]

Our patient with anesthetic necrotic ulcer of the palate following administration of LA reported after a period of 20 days, with a painless well-defined ulcer at the site of LA administration. Since the management needed to be conservative, biopsy was not performed. Ulcer was managed symptomatically with topical antiseptic and anesthetic gel and also the patient was reassured. After a period of 3 weeks, the ulcer healed completely showing epithelization. The clinical features of the ulcer are similar to that of necrotizing sialometaplasia (NS).

On considering the differential diagnosis, the most common post anesthetic palatal ulcer is NS, aphthous ulcer, and herpes ulcer. NS is a self-limiting, benign, inflammatory disease of the minor salivary glands. The majority of reported cases of NS affect the hard palate; other locations are along the upper respiratory tract, major salivary glands, oral mucosa, and tonsils. The etiology of NS relates to an ischemic event following local trauma induced by dental treatment or dental appliances, traumatic injuries, alcohol and tobacco use, and upper respiratory tract infections.[7]

The lesion presents itself as painful rapid progressive swelling that becomes centrally ulcerated; varying in diameter from 1 cm to 3 cm. Erythema at the periphery of the lesion is a frequent finding. Although cases are usually unilateral, occasional bilateral cases have been documented. The clinical presentation immensely resembles a malignant salivary gland tumor of the palate, like mucoepidermoid carcinoma or adenoid cystic carcinoma, the history and rapid progression of NS helps in their diagnosis.[8]

NS is considered to be a self-limiting disease. Although it may take 3-12 weeks to resolve, only supportive and symptomatic treatment is required in the majority of cases. Other than the option of a diagnostic biopsy, surgical intervention is rarely required in NS.[9] In our case, a painless ulcer, persistent in size with no peripheral inflammation is contradicting to the features of NS.

Recurrent aphthous stomatitis and/or herpes simplex can possibly develop following any traumatic insult to the tissues. Herpes simplex, although most commonly observed extra orally, can also develop intraorally on tissues attached to the underlying bone; e.g. hard palate. In our case, the ulcer was single, painless, persistent, and deep. This was not compatible to the features of herpes ulcer.

A single painless ulcer with a longer duration of more than 20 days is contradicting to the features of recurrent aphthous stomatitis.[10]

To minimize the incidence of palatal lesions following LA administration certain precautions are necessary.

- Minimal traumatic and due pressure is advisable in deposition of the LA solution
- The vasoconstrictors are included with local anesthetic to prolong the duration of action, Anesthetic solutions containing relatively high concentrations of epinephrine (i.e., 1:50,000; 1:30,000) should be used with caution.[11,12]
- As an alternative, anesthetic solutions not containing a vasoconstrictor, like 3% mepivacaine, may result in effective palatal anesthetic without complication. The mepivacaine that has less vasodilating activity than lidocaine, can be used reliably for procedures of short duration.[13,14]

CONCLUSION

The anesthetic necrotic ulcer of the palate, which is rarely reported, should be considered in the differential diagnosis of palatal ulcers. It is advisable to avoid undue pressure while administering LA in tissue firmly bound to the underlying bone or to avoid vasoconstrictor containing LA. Mepivacaine, which has a less vasodilation effect, can be considered as an alternative depending upon the duration of anesthesia required and the site to be injected.

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