



Case Report

Direct Ozone Gas Infiltration to treat tonsilloliths in a 12-year-old female: A Case Report

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Keywords

*Tonsilloliths,
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Abstract

The use of ozone has been well documented in scientific studies for the treatment of inflammation and infection in the tonsils. However, little research has been done on the effects of ozone for the reduction and eradication of these tonsilloliths. Tonsilloliths are the hard white or yellow stone-like formations that are located on the tonsils. A 12-year-old female was seen in my office presenting with bilateral tonsilloliths on her tonsils. She was treated with three direct ozone gas injections of 2ml at 10 µg/ml on each tonsil biweekly for six weeks. A marked reduction of tonsillolith production was noticed after the initial dose of the ozone gas....

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Background

The main function of the palatine tonsil is to help in stopping the spread of bacteria from the mouth into the throat. As mucus and food pass over the tortuous desquamated cells of the tonsils, they can begin to form a plaque. These plaques are made up of microorganisms and cellular debris which then begin to calcify and form a tonsillolith, more commonly known as a tonsil stone. They occur in both patients with or without a history of inflammatory disorders of either the tonsils or adenoids (6,8,11).

Ozone has long been recognized to induce moderate oxidative stress when interacting with lipids. This interaction increases endogenous production of antioxidants, local perfusion, and oxygen delivery, as well as enhancing immune responses (2,4). Its mechanisms of actions are unique insofar as they may address the emerging discoveries of factors related to pathogenesis of disorders and other conditions. These include oxygenation, immune modulation, anti-infective properties, and anti-inflammatory properties (2).

However, caution must be exercised as ozone gas acts as an irritant to the airway, particularly to the lungs. This is due to the fact that it causes the muscles in the airways to constrict, thus trapping air in the alveoli. Because ozone gas can irritate the airways, it is important that the practitioner takes every reasonable precaution to ensure that the patient never inhales the gas (1,3).

Case Presentation

A 12-year-old female patient of record came in with the chief complaint of halitosis and regurgitation of tonsillar stones at the rate of one stone per week initially. The patient reported that over the course of a month, the production and regurgitation of stones increased to twice per week.

The initial exam revealed rubor and slight swelling of the palatine tonsils. No stones were present on this day. Applied 20% Benzocaine topical anesthetic. An initial course of bilateral ozone gas infiltration directly into her tonsils. Using medical grade ozone generated by Longevity Resources Inc, Canada each tonsil was injected at three sites: the upper, middle and lower third of the tonsil. The total amount of ozone gas injected into each tonsil was 2ml at 10 µg/ml.

Approximately 5 weeks later, the patient's father contacted the office and reported the first reappearance of the stone. The patient was brought back for an examination. Upon the clinical examination, the tonsils displayed the same rubor and inflammation present at the initial exam. Once again, there was no visible or radiographic evidence of the tonsilloliths. However, the patient was asked to sketch the approximate size of the recent liths relative to the size of the ones regurgitated prior to the ozone therapy. The sketch indicated an approximately 30% decrease in the size of the tonsillolith.

More significantly, the frequency of the tonsillolith production decreased from approximately 9 stones per month to 2 stones per month on average. This represents a four-fold decrease in the body's production of these tonsilloliths.

The patient is currently receiving increased injections at the rate of one injection every two weeks. This treatment plan is intended to be performed for a period of 6 weeks and evaluated bi-monthly.

Discussion

Tonsilloliths are considered common in the United States with more than 200,000 cases reported each year. These stones can often be seen intraorally with the naked eye (see Figure 1), but sometimes require lab testing or imaging (see figure 2) to be identified. When a plaque gets large enough, it could break off and sometimes be regurgitated by the patient (5,6,10).

Figure 1

Clinical photograph of a patient with small, superficial tonsilolith in the left tonsillar crypt (arrow) (10).

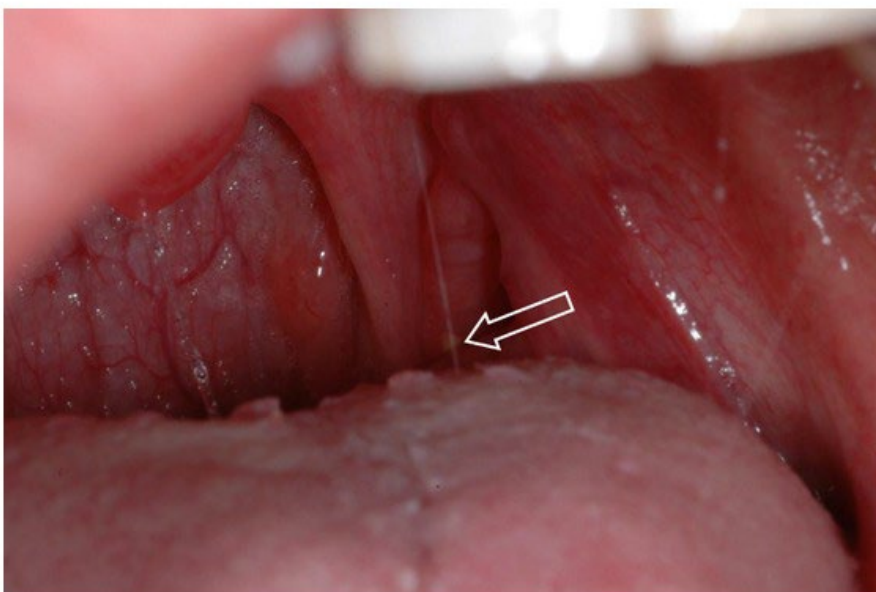


Figure 2

Multiple, well-defined, and bilateral calcifications in the angle-ramus region of the mandible (circle and arrow) in a 67-year-old female (10).



Studies on the morphology and activity of tonsilloliths have demonstrated oxygen respiration, denitrification, and acidification on exposure to sucrose. One study demonstrated that while the tonsilloliths were affected, it had little impact on the tonsils themselves (10). That is due to the fact that tonsilloliths exhibit a biofilm structure and form chemical gradients through physiological activity. Because the entire tonsil is not compromised due to the presence of tonsilloliths, one should carefully consider limited or targeted therapies as opposed to complete tonsillectomies.

At present, the only non-invasive therapy to treat tonsilloliths are palliative ones. There are no direct treatment options that are noninvasive and nonsurgical. These include a complete tonsillectomy, laser cryptolysis or coblation cryptolysis. As recent studies have demonstrated the function and beneficial characteristics of our tonsils, careful consideration has been given to their preservation (9). Surgical intervention has become the exception and not the norm.

Because ozone therapy can induce moderate oxidative stress when interacting with the lipid cell surface of the body, it can act directly on the biofilm. This interaction increases endogenous production of antioxidants, local perfusion, and oxygen delivery, as well as enhancing immune responses. As a result, a decrease in the growth of the tonsilloliths is observed with minor momentary injection site pain and no major side effects noted after treatment. In the event of recurrent tonsillitis a monthly application of a minor autohemotherapy (using ISCO3 guidelines) can be considered in order to induce an immune stimulation (7).

Conclusion

This safe treatment of ozone for the reduction and elimination of tonsilloliths was evident just several days after treatment, as the patient reported no new stone production. The benefit of the treatment is two-fold. First, because the treatment is minimally invasive and can be done non-surgically. Second, with over 200,000 annual cases in the alone, the benefit of this procedure will affect the lives of many.

Competing Interests

Dr. AJ Boyajian declares that he has no competing interests.

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