

# Are Tonsil Stones the Cause of Your Bad Breath?

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## STORY AT-A-GLANCE

- › Tonsil stones, also known as tonsilloliths, are whitish, smelly accumulations of bacteria and cellular debris that develop in the tonsils' grooves, or "crypts"
- › A primary problem caused by tonsil stones is halitosis, or bad breath
- › Tonsil stones contain many varieties of anaerobic bacteria associated with the production of volatile sulfur compounds, which explains tonsil stones' rotten egg smell
- › A water flosser, directed toward the stones, can be effective for removal, as can gargling with salt water or diluted apple cider vinegar
- › Oil pulling is another option that may help to soften and loosen the stones, while improving oral health and reducing bad breath at the same time

Tonsil stones, also known as tonsilloliths, are whitish, smelly accumulations of bacteria and cellular debris that develop in the tonsils' grooves, or "crypts." As food particles and other debris collect, they harden into calcified stone-like masses that may feel and look like a piece of popcorn stuck in your throat.

If the tonsil stones are small – and they usually are – they may cause little to no issues. But if they are large or numerous, they can cause discomfort and even ear pain.<sup>1</sup> The No. 1 problem caused by tonsil stones, however, is halitosis, or bad breath.

## Tonsil Stones Often Lead to Bad Breath

Tonsil stones cause bad breath because they're composed of foul-smelling bacteria. When researchers with Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences in Japan looked into the composition of the bacterial flora in tonsil stones, they found many varieties of anaerobic bacteria, including Eubacterium, Fusobacterium, Megaspheera, Porphyromonas, Prevotella, Selenomonas and Tannerella.<sup>2</sup>

All of them are associated with the production of volatile sulfur compounds, which explains tonsil stones' rotten egg smell. "These results support the tonsillolith as an origin of oral malodor," the scientists wrote.<sup>3</sup> Another study, published in *Otolaryngology – Head and Neck Surgery*, found that tonsil stones are "not just a stone but a living biofilm."<sup>4</sup>

"Morphologically, tonsilloliths were similar to dental biofilms, containing corn-cob structures, filaments and cocci [bacteria with a spherical shape]. Microelectrodes showed that the microorganisms respired oxygen and nitrate," the team explained. In addition to bad breath, tonsil stones may be associated with chronic sore throat, cough, a foul taste in the mouth and dysphagia, or difficulty swallowing.<sup>5</sup>

Though they can often be removed at home mechanically using a water flosser or cotton swab, or via vigorous gargling, larger tonsil stones may require surgical removal.<sup>6</sup>

## **Tonsillectomies on the Rise for Tonsil Stones Due to 'TikTok Tonsils'**

A tonsillectomy involves removing your tonsils, which are located on each side of the back of your throat. It's one of the most common ambulatory surgeries performed in the U.S., most often due to recurrent tonsillitis or obstructive sleep-disordered breathing.<sup>7</sup>

Although tonsils have long been deemed expendable – to the extent that they were routinely recommended for removal in healthy children<sup>8</sup> – they play an important role in immune system function, helping to defend against infection and pathogens. Even the

U.S. National Institutes of Health National Library of Medicine published content that states, "The immunologic function of the tonsils is noteworthy."<sup>9</sup>

Tonsillectomy also comes with a risk of significant side effects, including potentially fatal hemorrhage<sup>10</sup> and increased long-term risk of respiratory, allergic and infectious diseases.<sup>11</sup> As such, the decision to get a tonsillectomy shouldn't be taken lightly – especially for a condition like tonsil stones, that can typically be treated with far less-invasive means.

Social media, however, seems to be driving a rise in tonsillectomies to treat tonsil stones. In 2021, two doctors with Lewis Katz School of Medicine at Temple University, Philadelphia, reported a "doubling in referrals to our [pediatric otolaryngology] clinic for the complaint of tonsil stones without an obvious reason."<sup>12</sup>

The increase began during the COVID-19 pandemic and usually involved teenaged girls who were "very distressed about their condition," even though few had visible stones. Writing in the Ear, Nose & Throat Journal, the doctors noted that they were clued in to the possible underlying cause of trend when one teen's mother whispered, "It's TikTok."<sup>13</sup>

*"In response to our patient's mother's clue, we searched "tonsils stones" in TiKToK and 3 other social media databases. We found a plethora of videos. Most were intraoral "selfies" of teenagers showing large tonsillar concretions or debris-filled tonsillar crypt with do-it-yourself techniques for management ... In the case of tonsil stones, anxiety-provoking images cause worry and may lead to unnecessary surgery with its attendant risks."*

In another study, published in Cureus, researchers with Loyola University analyzed visits and tonsillectomies for tonsil stones at their institution, along with TikTok videos on tonsil stones.<sup>14</sup> They found the average number of patients coming in for tonsil stones increased steadily from one per month in 2017 to 3.3 a month in 2021. TikTok videos on tonsil stones also increased during this time, leading the scientists to conclude:<sup>15</sup>

*"Rates of patients seeking tonsillectomy for tonsil stones increased from 2016 to 2021 in conjunction with the rising popularity of TikTok. Given the numerous*

*TikTok videos featuring tonsil stones, we believe that this social media platform may be influencing the number of patients seeking evaluation for tonsil stones."*

## **What Causes Tonsil Stones?**

It's unknown why some people develop tonsil stones and others do not, but recurrent tonsillitis, sinus infections and the shape of your tonsils may play a role. You're more likely to develop tonsil stones if you have large tonsils, and they tend to show up after an illness, such as strep throat, in some people.

If you suffer from dry mouth, which can be caused by many prescription medications, this also increases your risk because it allows anaerobic bacteria to thrive. It's also possible that poor dental hygiene is a risk factor.

One study found that missing teeth and apical periodontitis was significantly more common in people with tonsil stones than without. Cases of periodontal bone loss between one-third and two-thirds of the optimal bone height were also significantly higher in those with tonsil stones.<sup>16</sup>

Tonsil stones were long considered to be relatively uncommon, but research suggests they're "more common than previously suggested."<sup>17</sup> When scientists evaluated images of 2,710 patients who had a head and neck CT scan, the prevalence of tonsil stones was 15.1% for men and 13.1% for women.<sup>18</sup>

## **How to Get Rid of Tonsil Stones**

There are multiple ways to easily dislodge tonsil stones. A water flosser, directed toward the stones, can be effective for removal, as can gargling with salt water or diluted apple cider vinegar. Try a mixture of about one-third cup of apple cider vinegar mixed with warm water as needed.

Oil pulling is another option that may help to soften and loosen the stones, while improving oral health and reducing bad breath at the same time. All you need to try this

method is a small amount of coconut oil – 1 tablespoon for adults and 1 teaspoon for a child – and a bit of patience. If you've never tried oil pulling before, start slowly with one or two minutes a day, gradually working your way up to 20 minutes:<sup>19</sup>

*"In the oil pulling procedure, the oil has to be kept in the mouth for the duration of 20 minutes, preferably in the morning before breakfast. The quantity for adults is equal to a tablespoon, for children to a teaspoon.*

*The oil, during the rinsing, has to be pulled and forced in between all the teeth and brought to contact to all the parts of the mouth. At the end of this procedure, if it has been performed properly, the aspect of the oil should be thin, viscous, and milky. Afterward, it has to be spat out and the mouth has to be rinsed with warm water."*

If the tonsil stones haven't come out after you've tried gargling or oil pulling, try coughing deeply. Sometimes this is all it takes to send the stone out of your mouth. You can also use a cotton swab to dislodge tonsil stones, taking care that the stone doesn't fall back into your throat. Be careful using this method in children to avoid a potential choking hazard.

Do not attempt to remove a tonsil stone with a sharp object like a toothpick, as you could accidentally puncture your throat or cause bleeding. Also, be aware that tonsil stones may fall out on their own with no intervention needed.

Proper attention to oral health also makes sense, including not only regular brushing, flossing and trips to a biological dentist but also attention to your oral microbiome. Avoid chemical mouthwashes that disrupt the microbes in your mouth and use oil pulling instead.

## **What Else Works for Bad Breath?**

In up to 85% of cases, bad breath originates in the mouth, typically as a result of gingival and periodontal diseases, as well as tongue coating. Another 10% of bad breath cases

are caused by disorders having to do with the ears, nose or throat, while 5% are gastrointestinal or endocrinological in nature.<sup>20</sup>

When bad breath stems from a problem in the mouth, the bad odor is the result of a combination of pathological microbes. Tonsil stones may be a contributing factor, but it's not the only one. As noted in the International Journal of Oral Science:<sup>21</sup>

*"Microbial degradation in the oral cavity is the main cause of oral malodor. Due to this process, volatile sulphur compounds (VSCs) are formed. The most important VSCs involved in halitosis are hydrogen sulphide (H<sub>2</sub>S), methyl mercaptan (CH<sub>3</sub>SH) and dimethyl sulphide (CH<sub>3</sub>)<sub>2</sub>S. These VSCs are mainly produced by Gram-negative anaerobic oral bacteria.*

*... Most of the responsible microorganisms in halitosis are involved in periodontitis. So, there is a positive correlation between bad breath and periodontitis: the depth of the periodontal pockets is positively correlated to the height of the VSC concentrations in the mouth."*

The simple action of chewing fibrous foods helps to naturally cleanse the mouth, reducing tongue coating and bad breath along with it. In fact, in a study of 20 people who ate either a high-fiber or a low-fiber meal, the high-fiber – chewing-intensive – group had a greater reduction in bad breath both immediately after the meal and 2.5 hours later.<sup>22</sup>

Tongue coating refers to the "grayish-white deposit" on the tongue, which is made up of bacteria, dead epithelial cells, blood metabolites, postnasal secretions and saliva. Regularly using a toothbrush or a tongue scraper to wipe away tongue coating can help reduce tongue coating and bad breath.<sup>23</sup> Regular oil pulling is also a natural breath freshener.

While a healthy lifestyle, including a diet based on fresh, whole foods, is essential to a clean mouth with no bad odors, if you need a natural quick fix that may even have some longer term benefits, consider peppermint oil. Peppermint oil extract may be more

effective than the mouthwash chemical chlorhexidine in preventing development of biofilm that may lead to cavities and bad breath.<sup>24</sup>

## Sources and References

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- <sup>1, 6, 9, 10</sup> National Library of Medicine, StatPearls, Anatomy, Head and Neck, Tonsils July 17, 2023, Tonsilloliths
- <sup>2, 3</sup> *Microbes Infect.* 2006 Aug;8(9-10):2384-9. doi: 10.1016/j.micinf.2006.04.023. Epub 2006 Jun 30
- <sup>4</sup> *Otolaryngol Head Neck Surg.* 2009 Sep;141(3):316-21. doi: 10.1016/j.otohns.2009.05.019
- <sup>5</sup> *ISRN Dent.* 2014; 2014: 839635
- <sup>7, 14, 15</sup> *Cureus.* 2023 Apr; 15(4): e37957
- <sup>8</sup> Harvard Health Publishing September 18, 2023
- <sup>11</sup> *JAMA Otolaryngol Head Neck Surg.* 2018 Jul 1;144(7):594-603. doi: 10.1001/jamaoto.2018.0614
- <sup>12, 13</sup> *Ear, Nose & Throat Journal* September 26, 2021
- <sup>16</sup> *Med Princ Pract.* 2022 May; 31(2): 149–155
- <sup>17, 18</sup> *Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi.* 2017 Aug 7;52(8):604-607. doi: 10.3760/cma.j.issn.1673-0860.2017.08.009
- <sup>19</sup> *Eur J Dent.* 2020 Oct; 14(4): 558–565, Oil Pulling and Coconut Oil
- <sup>20, 21</sup> *Int J Oral Sci.* 2012 Jun; 4(2): 55–63
- <sup>22</sup> *Swiss Dent J.* 2016;126(9):782-795
- <sup>23</sup> *Int J Environ Res Public Health.* 2022 Jan; 19(1): 108
- <sup>24</sup> *Phytotherapy Research,* Sep 2008;22(9):1162-7