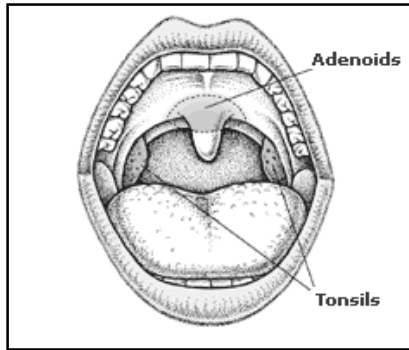


# Tonsil and Adenoid Surgery: Frequently Asked Questions

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## What are tonsils?

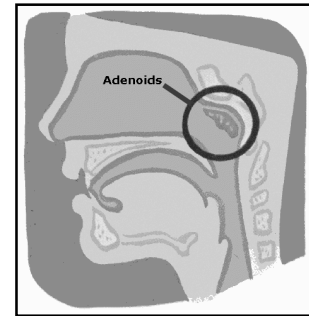


The tonsils are two lumps of tissue, each about the size and shape of a large olive, in the back of the mouth on either side of the tongue. When they are small (as in young babies and many adults) they are barely visible. Children often have larger tonsils, and they can be big enough to touch each other ("kissing" tonsils). The tonsils are *lymphoid* tissue, that is, the type of tissue that the body uses to fight infections. They are a small portion of the body's defense systems- lymphoid tissue is present in the lining of the nose, mouth and throat (as well as elsewhere throughout the body). The tonsils are just two lumps of this tissue that stick out enough to be seen in the back of the mouth.

## What are adenoids?

"Adenoids" is the name given to a third lump of lymphoid tissue that sits between the tonsils, higher up in the back of the mouth. This tissue cannot be seen without special instruments or x-rays, since it is hidden behind the roof of the mouth. It is located right behind the nose (in an area called the *nasopharynx*), and if it is large enough, it can block air from flowing through the nose.

Adenoids are not present in newborn infants, but grow in around age one. They peak in size during early childhood, and usually have shrunk away to the point where they are barely visible by the teenage years.



## How do tonsils and adenoids affect sleep?

The tonsils and adenoids form a ring of tissue in the back of the throat. If the tonsils and adenoids are large, they narrow the airway and reduce the flow of air into and out of the lungs.

Generally, even if the tonsils and adenoids are very large, they do not cause breathing difficulties while a child is awake- although they may cause lesser symptoms such as a stuffy nose, "nasal" speech or mouth breathing. During sleep, however, the muscles of the throat relax. The combination of relaxed muscles and a narrow airway causes collapse of the throat and the child will be unable to breathe (apnea). After a few seconds of struggling, the child is partially aroused from sleep (although not completely awake). The muscle tone returns, and the throat opens- often with a gasp. A child may go through many of these cycles in an hour, resulting in a disturbance of normal sleep patterns, known as obstructive sleep apnea (OSA).

## What is the difference between snoring, sleep disordered breathing and OSA?

When it is severe, OSA can result in serious conditions such as heart strain, abnormalities in heart rhythm, growth disturbance, behavioral problems and concentration difficulties. Lesser degrees of sleep disturbance can cause bedwetting, or daytime sleepiness (since the sleep is not as restful as it could be). Sleep disturbance can also occur even without complete apnea, if the child is struggling to breathe against resistance and airflow is reduced. The term Sleep Disordered Breathing (SDB) refers to the whole spectrum of these breathing problems, including OSA.

Snoring is the sound of vibrating soft tissue in the back of the throat, caused by partial airway blockage. Childhood snoring is often the result of large tonsils and adenoids. Adults who snore usually have a long soft palate (extra tissue in the roof of the mouth) or nasal obstruction (such as allergies or a deviated septum). Obesity can also cause snoring. While the sound can be disturbing to others, snoring itself is not harmful if there is no OSA.

While most children with SDB have enlarged tonsils and adenoids, there are other conditions which will result in persistent symptoms even if the tonsils and adenoids are removed. These include obesity, a small jaw, a big tongue, a variety of congenital skull abnormalities, or neurological problems causing poor muscle tone. Nevertheless, the vast majority of children with SDB improve after removal of the tonsils and adenoids (tonsillectomy and adenoidectomy, or T&A). While this usually is obvious immediately after surgery, some children will not show the full benefit of improved airflow until several days have passed and the swelling has gone down.

### ***What is the difference between a sore throat, "strep throat" and tonsillitis?***

A sore throat can be caused by a number of problems, but is usually the result of infection with a virus. Less often, it is caused by a bacterial infection. "Strep throat" is an infection by one particular type of bacteria- *Streptococcus pyogenes*. Although other bacteria can cause throat infections, most doctors will try to specifically diagnose the "strep" bacteria so that antibiotic treatment can be given. In rare cases, these infections can result in damage to the heart or kidneys.

If the tonsils are infected with a bacteria, they will usually get large, turn red, and have some yellowish-white debris on the surface. Appearances can be misleading, since there are some viruses which cause this (e.g. mononucleosis). On the other hand, the "strep" bacteria can be present in a normal looking throat. The only way to be sure is to do a throat culture, although there are other tests which may suggest a bacterial infection.

### ***What can be done for recurrent sore throats?***

Since most sore throats are caused by viruses which are easily spread (especially in crowded day care or school settings), it makes sense to be careful about exposing a child to others who are sick. Bacterial infections can be treated with antibiotics, but there is no benefit to treating a virus with these drugs.

If a child is very severely affected with recurrent sore throats, particularly if they involve tonsillitis, a doctor may recommend T&A. This eliminates recurrent tonsillitis and its risks, (although no operation can prevent anyone from catching a cold, and an occasional illness with throat pain may still occur).

### ***What does it mean if my child is feeling better, but the strep test is still positive?***

There is a condition known as the "carrier state", in which the child is feeling fine, but a throat culture still shows the presence of the "strep" bacteria. While this is somewhat controversial, most pediatricians do not treat children who are carriers with antibiotics or surgery except in unusual circumstances. They do not seem to be at high risk for developing heart or kidney damage, and are generally not considered to be very contagious.

### ***What are the risks of T&A?***

The surgery is done under general anesthesia, and this is often frightening for children and parents. However, modern pediatric anesthesia is extremely safe. It is given by a trained professional with extensive experience, in a well monitored setting. There is time before the surgery for you to speak with the anesthesiologist and ask any questions. Lesser degrees of anesthesia (like sedation) may actually be more dangerous than general anesthesia, and are inappropriate for T&A. Even though children may become frightened during the administration of the anesthetic, after the operation they usually do not remember anything about the time just before they went to sleep.

The most common significant risk is bleeding after surgery. It usually takes about two weeks for the throat to heal completely, and bleeding can be seen at any time before then. When it happens, however, it is usually about 5-10 days after the operation when the "scab" in the back of the throat separates. Bleeding that is enough to be noticed happens in about 2-4% of patients. Significant bleeding after adenoidectomy alone is extremely rare. Postoperative bleeding from the tonsillectomy site often stops by itself, but occasionally it may be necessary to cauterize the vessel. Some adolescents and adults may allow this to be done without anesthesia, but most children will not permit a thorough examination and cautery while awake.

The soft palate (roof of the mouth) keeps air from flowing backwards from the mouth to the nose during speech and swallowing. After T&A, there is more room in the back of the throat, and the voice will usually be "whiny" (in contrast to the "clogged" sound before surgery). Some patients will even have swallowed liquids coming up out of the nose. With time, this improves as the palate compensates for the larger space. Very rarely, this can persist and require further treatment.

Occasionally, a child will have pain after surgery that is so severe that he or she will not be able to drink enough liquid and will become dehydrated. If this happens, the child may need to be readmitted to the hospital overnight for stronger pain medication and intravenous fluids.

### ***Don't you need your tonsils and adenoids?***

Since the tonsils are immune tissue, it would seem logical to think that removing them might reduce the body's ability to fight infection and tumors. However many studies have been done over the years to look at rates of these conditions in patients with and without tonsils. There have *not* been any consistent findings of decreased immune function or increased disease rates following T&A. Tonsils and adenoids are the "tip of the iceberg" of the immune system, so removing them does not significantly reduce the immune function of the body.

### ***How is T&A done?***

Tonsillectomy and adenoidectomy is done through the mouth, and there are no cuts or sutures anywhere on the skin. The tonsils may be removed with a knife and scissors, with an electric cautery, or with one of several new devices which cut tissue with less heat and damage to the surrounding area. While a few surgeons use a laser, I do not feel that the additional risk of using this device is balanced by any major decrease in pain or bleeding after surgery.

The tonsils are visible when the mouth is opened, and are removed while looking directly at them. They are also encapsulated, which means that they can be removed from their beds in the wall of the throat as one piece of tissue. The adenoids, on the other hand, are not visible directly and must be seen with a mirror placed in the back of the throat. They are **not** encapsulated, so they are **always** "shaved" down with a curette or powered shaving instrument, and come out in pieces. Enough tissue is taken to unblock the back of the nose, but there is **always** a small amount of adenoid tissue left at the end of the surgery. Any attempt to remove all of the adenoids would not only be unsuccessful, but would risk damage to nearby structures and severe scarring of the back of the throat. It is extremely rare for the little bit of adenoid tissue left after surgery to grow back enough to cause problems.

I use one of two techniques for removing tonsils, depending on the reason for the operation. In cases of recurrent infection, I almost always use a device known as a Coblator<sup>®</sup>. This is a surgical tool that uses an electric current to create a very small energy field which disrupts tissue bonds. The result is that the tonsil can be dissected from its bed with very little bleeding and minimal heat damage to the surrounding tissue. This results in a less painful recovery compared to other methods of completely removing the tonsil.

For patients having surgery for breathing problems at night, another option is the intracapsular (or "partial") tonsillectomy. With this approach, the tonsils are shaved down, like the adenoids described above. A small amount of tonsil tissue is left behind and cauterized with an electric current. The advantage of this operation is that healing is usually less painful than the operation where the tonsils are removed completely. There is also some evidence that bleeding may be less

likely during the healing process. The tradeoff is that in very rare cases, the small amount of tonsil tissue left behind may enlarge again, possibly causing recurrent symptoms. For this reason, I do not do the partial tonsillectomy in cases of recurrent infections.

It is important to understand that the reason for leaving a small amount of tonsil tissue behind in the partial tonsillectomy is not because that little bit of tonsil tissue is serving a needed purpose for the immune system. You have a lot of this tissue all around the throat, so even when the tonsils are completely removed there is no additional risk of infections. The reason for leaving it behind is to help make the recovery more comfortable.

Each patient is different, so I always discuss all reasonable options with patients and their parents before deciding on the best approach in any given situation.

### ***Does my child need to stay overnight in the hospital after surgery?***

In the past, all children undergoing this surgery stayed overnight for observation. This is not usually done today unless there is an exceptional reason for admission (such as severe sleep apnea, age under 3, or underlying medical problems). In fact, this does not reduce the safety of the operation, since the most common complication (bleeding) does not usually occur until 5 days after surgery. If a child is breathing, sleeping, and drinking well after a few hours in the recovery room, they are safe to go home. Certainly, any child may be admitted to the hospital from the recovery room if there is any problem requiring observation.

### ***What can my child eat after T&A?***

Some surgeons recommend strict dietary guidelines after surgery. While this is an individual preference, I do not advise any restrictions except to avoid "sharp" foods for the first two weeks (such as pretzels or chips) which might cause bleeding. Immediately after anesthesia, a child may feel nausea, and rich foods like milk may cause vomiting. However, this feeling usually resolves after a few hours. Ice cream is good, since it is cold (reducing pain), liquid (preventing dehydration) and rich in calories (important since a child may not be eating well).

### ***What should I expect after T&A?***

T&A is a fairly painful procedure, and a bad sore throat may linger until healing is complete in about two weeks. Some children bounce back fairly quickly, but older children, adolescents and adults usually have a more difficult time. The pain seems to peak after a few days, and then gradually subside. Patients also may have a bad taste in their mouths and bad breath as the scab breaks up and falls off. Ear pain is very common, since the same nerves bring sensation to the throat and the ears. This does not mean that the ears are infected.

Antibiotics are not necessary, but pain control is important. One good option is acetaminophen (Tylenol®). Codeine can be added to Tylenol, but research does not show that this improves the pain relief significantly. More important, recent studies have shown that a small percentage of children (for genetic reasons) are prone to metabolizing codeine extremely quickly, resulting in the risk of serious side effects. These can even be life-threatening in very rare cases. While it may be possible in the future to screen for this gene, at present this is not done routinely, especially since codeine doesn't improve pain control very much.

**Aspirin should not be used for two weeks before and after surgery** as it can cause bleeding, as can dietary supplements containing fish oil, garlic or other herbs. In the past other "NSAID" drugs like ibuprofen (Motrin® or Advil®) were also avoided because of concerns about bleeding, but recent research has shown that they are safe and effective for pain relief after tonsil surgery. Currently I recommend Tylenol every four hours, or ibuprofen every six to eight hours. **The best approach** is to combine these drugs, alternating Tylenol and ibuprofen every three hours. In some older patients, I occasionally recommend pain relievers with narcotics, but these must be used carefully, and should not given to patients who are groggy or sleepy.

Active bleeding (with bright red blood) is potentially serious, and the child should immediately go to the emergency room for evaluation. For this reason it is very important that the patient have easy

access to a hospital in the two weeks after surgery. Activities such as air or ship travel, camping and hiking are not allowed. School and/or camp does not need to be restricted, and a child can return to class as soon as he or she is feeling well enough to go back. Make sure that the school or camp nurse knows about the recent surgery, and who to call if bleeding occurs.

If a child is not drinking enough after surgery, they may become dehydrated. As long as they are taking in enough fluids, eating is less of a concern in the first weeks after surgery. Calories can be supplemented by giving liquids such as milk shakes to the extent that they are tolerated. A dehydrated child may feel excessively tired or dizzy, have a dry mouth, and urinate less often. If this is the case, they should be seen by their pediatrician or surgeon, who may recommend admission to the hospital for intravenous fluid therapy.