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TONSILLECTOMY AND/OR ADENOIDECTOMY (1/22)

There is a large ring of lymphoid tissue throughout the throat that provides an immune function in the upper respiratory tract during childhood. The largest components of this ring include a pair of palatine tonsils that can be seen through the mouth on each side and the pharyngeal tonsil, commonly referred to as the adenoid, which is located in the upper throat behind the nose. All these tonsil tissues and the lymph nodes in the neck work together to "catch" and trap incoming infections. Unfortunately, the tonsil and adenoid may become the source of infection itself like a plugged filter or they can become so large as to obstruct the airway.

Each upper respiratory infection stimulates the tonsils and adenoid to enlarge to fight the next infection. Children now socialize at such a young age (daycare, preschool, etc.), they develop more infections when the immune systems are still immature and their airways are still small. This all contributes to the increased incidence of tonsils and adenoid enlargement at younger ages relative to their throat size than in the past. Usually tonsils and adenoids peak in size by 8 years of age, then begin to gradually shrink and atrophy by 12 years of age. By this age near complete facial and dental growth has occurred. Adolescents and adults with persistently enlarged tonsils are considered abnormal and usually result from chronic bacteria colonization of the tonsil crypts.

Tonsillectomy and adenoidectomy is the most commonly performed major surgical procedures in children. It is recommended for children with any of the following signs and symptoms:

- Tonsil (and/or adenoid) enlargement or hypertrophy causing upper airway obstruction (snoring, nasal congestion, chronic mouth breathing, restless or disrupted sleep, daytime tiredness and/or sleep apnea).
- Recurring throat infections requiring antibiotics (not necessarily strep throat).
- Low-grade chronic tonsil inflammation causing intermittent mild sore throats in the morning, bad breath, tonsil stones (tonsilliths), lymph node swelling in the neck, foreign throat sensation, or ear pain.
- Dental and facial growth disturbances from chronic mouth breathing (cross bite, open bites, high arched palate, facial elongation).
- Peritonsillar abscess.

Adenoidectomy alone is very effective for children with:

- Recurrent or chronic sinusitis.
- Recurrent middle ear infections or chronic fluid in the middle ear with hearing loss.
- Adenoid enlargement (hypertrophy) in very young children when tonsillectomy is not yet an option.

Numerous medical studies have definitively proven that removal of the tonsils and adenoids is helpful for the above problems without resulting in any negative impact on the immune system. Fortunately, there is ample other lymphoid tissue still remaining in the throat to perform its immune function (i.e., lingual tonsils on the back of the tongue, accessory tonsils on the back of the throat, and tubal tonsils near the Eustachian tube opening). On rare occasions, these tissues need to be removed at a different stage.

RISKS OF SURGERY

It is extremely important to notify your surgeon before surgery if the patient or anyone in the family has a tendency to bleed or has hemophilia. This includes frequent nosebleeds, easy bruising, excessive bleeding with previous tonsil, dental or other surgery, abnormally heavy menstrual periods, prolonged bleeding after cuts or scrapes, and previous blood transfusions.

The following complications have been known to rarely occur:

- Bleeding or hemorrhage (3-4% incidence).
- Dehydration requiring hospitalization (most common in children < 3 years old).
- Infection of the ear or throat.
- Lip, tongue or tooth injury.
- Anesthesia problems.
- Airway swelling.
- Excessive throat scarring.
- Permanent speech problems (nasal speech).
- Death.

PREOPERATIVE INFORMATION

The most common location to perform as an outpatient procedure is in an ambulatory surgical center. Please notify your surgeon if there is a family history of bleeding tendencies or if the child tends to bruise easily. **Do not administer any ibuprofen (Motrin, Advil, etc.), aspirin or other anti-inflammatory medication within two weeks before surgery** as it can add to more bleeding at the time of surgery, even though we will commonly prescribe ibuprofen after surgery. Acetaminophen (Tylenol) is not a problem before or after surgery. Blood tests are not routinely performed prior to surgery. In special circumstances your surgeon may order blood tests. We prefer to have the preoperative lab tests done in your own physician's

office along with a physical examination recorded on the surgical center's preoperative admission form, yet your doctor's electronic medical record of the office visit is sufficient. Please have the physical exam and results faxed to (815) 725-1248 in our office, faxed to the surgical center, and hand-carry a copy of the physical exam and lab results and give them to the surgical center staff on the day of the procedure. Please call our office if your child develops a cold, flu, fever, or any contagious illnesses within 7 days of surgery. If for any reason the surgery is canceled, call our office to reschedule the surgery as soon as possible.

The surgical center will call you the day before surgery after 12:30 p.m. to give you the information you need: what time the surgery is approximately scheduled, what time you will need to arrive at the surgical center, and what time your child must stop eating and drinking before surgery. It is very important that you follow these directions very carefully so that nothing will interfere with your child's surgery. **Information from the surgical center the day before surgery supersedes all information previously given, specifically in regard to the scheduled time of surgery.** There are many factors beyond our control, which many result in a change in the originally scheduled surgery time (urgent procedures, surgical equipment, surgical nursing, and operating room availability, etc.). Unfortunately, this is very common and should almost be expected.

RECOVERY

Most children undergoing this procedure are discharged from the surgical center within an hour after surgery. Occasionally, your surgeon will recognize a special circumstance that requires observation overnight in a hospital. This will be arranged in advance at the discretion of the surgeon and dependent on each patient's condition. Patients that are undergoing an adenoidectomy alone are almost always discharged home on the day of surgery.

SURGERY

The night before surgery, your child should be fed a light dinner—no fried or greasy foods. The surgical center staff will give specific instructions to you the day before surgery, yet often instruct the patient to have absolutely nothing to eat after midnight. Any variation from these recommendations may cause postponement or cancellation of the procedure. Please carefully follow these instructions, as the safety of the anesthesia will depend on your child having an empty stomach. You may stay with your child until they are brought to the operating room.

Surgery is done under general anesthesia so your child will be completely asleep during surgery. The anesthesiologists will manage this and discuss it with you prior to surgery. After the procedure, your child will initially be taken to the recovery room, then eventually a second stage recovery area where you will join your child. Likely an intravenous (IV) line will still be in place in case additional fluids or medications are needed.

POSTOPERATIVE CARE

Pain

Children who have undergone tonsillectomy usually have more pain for a longer period then those who have undergone an adenoidectomy alone. The complaint of pain will be different with each child, but may last up to 10-20 days. After the first couple days, the sore throat after surgery actually worsens before it starts to improve. It is common for the **third to sixth day after surgery** to be the most painful time since it takes this long for the normal bacteria in the throat to cause maximal inflammation to the wounds. Thereafter, the wound starts to heal and the soreness slowly subsides day by day.

Recovery includes painful swallowing, as well as neck aches and stiffness, headaches in the back of the head, and ear pain. The neck symptoms and headache are due to inflammation and spasm of the paraspinal muscles in the back of the neck attached to the region where the adenoid tonsil was removed. Excessive pain in this region usually is a sign of inadequate anti-inflammatory pain medication. The ear pain is usually "referred" from the throat and is not due to an ear infection.

Sometimes, the tongue and throat may be sore from the tongue retractor and the breathing tube used during the procedure. This discomfort will usually disappear over a few days. In addition to the prescribed pain medication, an ice collar or cold compress to the neck the first several days is soothing. Thereafter, warm liquids might be more soothing. Often, throat soreness will continue for 2-3 weeks until complete healing in the throat. This is normal and you should give your child the prescribed pain medication until this subsides.

Postoperative Medication

Antibiotics are not routinely prescribed after surgery. Pain is best managed by adequate fluid and electrolyte intake. It is common for a sore throat to worsen by morning because of drying of the throat from mouth breathing during the night. It is important to awaken the child during the night to give them fluid/electrolytes and, if necessary, pain medication.

Unless specifically instructed otherwise, give:

- **Ibuprofen 4.5 mg/lb each dose every 6 hours** (each dose should not to exceed 600 mg in older patients)**.** This is considered the most effective pain medication after tonsillectomy with the least side effects. It can be purchased over-the-counter in a liquid or pill (gel caps, capsules, or tablets for older patients).
- **Acetaminophen 4.5 mg/lb each dose every 4 hours** (each dose should not to exceed 650 mg)**.** This medication is intended to supplement the ibuprofen and does not need to be alternated with it. If both medications are started at the same time, then they will both be given again simultaneously 12 hours later since ibuprofen is given every 6 hours and acetaminophen is given every 4 hours. It also can be purchased over-the-counter in a liquid or pill (gel caps, capsules, or tablets for older patients).

Many studies demonstrate that narcotic pain medication does not improve pain control over an ibuprofen and acetaminophen combination. Nevertheless, in children 6 years of age or older, narcotic pain medication such as **Acetaminophen with Hydrocodone** may be prescribed, but should be used sparingly. *Since this product also contains acetaminophen already, it is extremely important not to give any other acetaminophen-containing products within 4 hours of the last dose.* The most common side effects of hydrocodone include sleepiness, constipation, and an upset

stomach, each of which results in reduced fluid intake and thus more pain. Therefore, if there is not a significant increase in fluid and electrolyte intake after using hydrocodone, please do not give additional hydrocodone, as vomiting and dehydration will likely follow. Since hydrocodone will cause constipation, it is necessary to give a stool softener such as **Miralax** or **Colace** with the initial dose and repeat as directed thereafter. It is best to give narcotic pain medication with food rather than on an empty stomach.

At the time of surgery, your child will be given an intravenous dose of **Dexamethasone**, an anti-inflammatory steroid that will reduce inflammation for 3 days duration. Your surgeon may chose to prescribe an additional single dose of dexamethasone to be taken orally 3 days after the procedure to boost this initial dose. Drop off this prescription to your pharmacy immediately as it may take the pharmacy several days to obtain this medication.

Many medical studies and patients have found the use of homeopathy in the postoperative period to be beneficial. **Arnica Montana** may reduce pain, promote healing, and reduce bleeding. Arnica Montana is FDA approved and is available in small pellets. It is ideal to use the 9C dilution, yet other dilutions will suffice. Dissolve 8 pellets under tongue the night before surgery and again the morning of surgery. This will not interfere with anesthesia and does not count as eating. After surgery use 4 pellets every 2 hours for 1-2 days, then 4 pellets four times daily until fully healed.

Bleeding

The throat heals well after surgery because of its excellent blood supply. Unfortunately, this is the same reason that excessive bleeding may occur postoperatively. This occurs in 3-4% of patients with tonsillectomy, yet is quite rare in patients with adenoidectomy alone. A small amount of bloody mucus in the mouth and throat is expected the first few hours after surgery and is not alarming. It is also common after surgery to vomit some blood/bloody mucus, which has been swallowed during and immediately after surgery. Harsh coughing and clearing of the throat should be avoided. Bleeding may occur at any time within the first 2-2 ½ weeks after surgery depending on age so adult supervision is necessary. This most common time for bleeding is four to ten days after surgery when the scabs in the tonsil beds begin to slough off. If any bleeding occurs, the patient should **immediately gargle ice water** to temporarily stop the bleeding (swallow ice water if unable to gargle). The cold temperature promotes clotting and minimizes blood loss. **Immediately notify our nursing office (815) 531-3800 (daytime), our answering service (855) 897-8031 (after hours)** or proceed to the nearest emergency room. Although ibuprofen does not cause bleeding, it may impair the clotting process so do not administer it 2 weeks prior to surgery and stop it immediately if any bleeding occurs after surgery.

Fluid/Electrolytes and Diet

For the first 24 hours after surgery, clear liquids with electrolytes (water, ice chips, non-citrus juices, Kool-Aid, Gatorade, Pedialyte, popsicles, and freezer pops) are recommended. Cold rather than warm fluids are often more soothing the first few days. Nevertheless, after a few days warm fluids (hot chocolate, soups, broth, etc.) are commonly more soothing to the throat. **Staying well hydrated is the single most significant factor to ensure an easy recovery.** It is important that your child drink plenty of fluids with electrolytes to keep from getting dehydrated. If your child will only drink from a straw, then use a straw as the ends justifies the means. Please call our office nurse if you are worried that your child is not drinking enough or if there are signs of dehydration (dark urine, urination less than 2-3 times per day, crying without tears, nausea long after recovery from anesthesia). Some children require intravenous fluid replacement.

Weight of the patient	Minimum Fluid/Electrolyte Intake in 24 Hours
Over 20 lbs.	34 ounces
Over 30 lbs.	42 ounces
Over 40 lbs.	50 ounces
Over 50 lbs.	58 ounces
Over 60 lbs.	68 ounces

Nausea from anesthesia may persist up to 24 hours following the procedure, yet usually subsides much sooner. At any point that the appetite returns, the diet may be gradually advanced as tolerated to mechanically soft foods, i.e., mashed potatoes, soft cereals, oatmeal, cream of wheat, Farina, soft-boiled/scrambled eggs, yogurt, pudding, custard, baby food, apple sauce, Jell-O, ice cream, soups, and pasta. Avoiding hard and crunchy foods (i.e., cookies, crisp bacon, toast, crackers, pizza, popcorn, nuts, corn chips, potato chips, pretzels, etc.) will minimize painful tongue and throat movements from chewing until better tolerated. Please realize that the above dietary suggestions are just guidelines that have been helpful to most of our patients. In general, there are no food restrictions after surgery. The soft diet just tends to be more comfortable for children until regular food is tolerated. Once again, intake of fluids with electrolytes is more important than food intake. You do not need to push solid foods as long as your child is drinking. It is common for children to temporarily lose some weight after surgery, which is gained back when a normal diet is resumed. **If adenoidectomy was performed <u>without</u> tonsillectomy, a regular diet for age can be started when tolerated**.

Fever, Nausea & Vomiting

It is normal to expect your child to run at least 1-2° F above his/her normal temperature after surgery. A high or prolonged fever may indicate infection, but is most commonly one of the first signs of inadequate fluid and electrolyte intake. Persistent **fever over 102° F** when your child is drinking well should be reported to your surgeon. It is not uncommon for your child to vomit a couple times after the anesthesia. This is not unusual and may last up to 24-36 hours after surgery. If it becomes severe or persistent, your surgeon may order a prescription suppository to suppress this nausea. If it seems to occur only after administering the narcotic pain medication, then discontinue it. If nausea starts to become a problem several days after surgery, this may be a sign of dehydration that requires attention.

Bad Breath, Dental Care, Speech and Healing

After a tonsillectomy a white or yellow coating develops in the back of the throat as healing occurs. This is normal and does not indicate infection. This scab develops on the raw surface and usually has a very bad odor. This odor will resolve once the scabs fall off. Your child should still gently brush and floss the teeth after surgery. It is common for your child's voice to sound a little hoarse and/or nasal after the surgery. This may last for a few days up to few weeks before his/her speech returns to normal. A combination of pain, swelling, and lots of new space for breathing cause the voice change. After the throat heals, it is common to have a higher pitch to the voice. This is especially noted in children who had muffled speech from the enlarged tonsils or adenoid. This seldom seems to persist beyond a few months. **The use of a humidifier in the postoperative period is advised.**

Physical Activity and School

Your child should stay home and rest for the next several days to weeks. However, bed rest is not required. Strenuous activity, physical education class, sports, and school recess are not allowed for *two weeks* after surgery due to the risk of bleeding. Your child may return to school at your discretion once pain medication is no longer required and you feel your child can tolerate normal non-strenuous school activity. A responsible adult should supervise children at all times until completely healed and use appropriate judgment. **You should receive a doctor's note at the time of surgery to excuse your child from school or gym class. You will need to write in the date your child returns to school since this is variable and is at your discretion.**

Follow-up

You will receive a postoperative phone call by our nursing staff approximately *three weeks* after surgery to check on your child's progress. Therefore, we usually do not require a postoperative office follow-up, unless instructed otherwise by your surgeon or you feel that it would be of benefit. Of course, if there are any postoperative problems or questions during the recovery, please call our nursing office between 9:00 a.m. and 4:30 p.m. Monday through Friday. We will assist by making suggestions over the telephone or advise that your child be evaluated in the office.

Questions

Please confine any questions that do not deal with bleeding or difficulty breathing to regular office hours. We are always available for emergency problems, but non-emergency calls during nights and weekends can be exhausting and keep us from being at our best during regular working hours. Thank you for your understanding**.**