

Sinusitis



How can eight little air-filled hollows cause such pain and suffering?

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“I’m constantly stuffed up — 24/7,” says Jennifer Lockyer, a 28-year-old commercial property leasing agent in Toronto. “It’s always painful and often gross. My voice sounds nasal. This awful phlegm constantly floats down my throat — and I’m not even sick.”

Jennifer is one of the estimated two million Canadians who suffer from sinusitis, an inflammation — with or without infection — of the lining of the sinus cavities. It’s among the 10 most frequently diagnosed medical conditions in Canada.

“When you think of the quantity of people affected, the impact economically and the impact on their quality of life, sinusitis is a significant illness,” says Dr. Martin Desrosiers, an associate clinical professor of otolaryngology at McGill University and the University of Montreal.

Jennifer has learned to cope with being chronically uncomfortable and continues to function at a high level, rarely missing work. “I tough it out through thick and thin,” she says. Others are not as stoic. In Canada, sinusitis is one of the leading causes of employee absenteeism. Excluding the cost of time off work, visits to physicians and other health-care costs of sinusitis amount to about \$600 million yearly.

What causes sinusitis?

Viruses, allergens, irritants (cigarette smoke, air pollution, solvents, dust or drugs such as cocaine), and even nose piercing — all these can trigger the inflammatory response of sinusitis. The inflammation causes the hair-like cilia in the sinuses to be less effective at moving out mucus. Then the tiny one- to two-millimetre openings that connect the sinuses to the nose become blocked by swelling from inflammation or polyps (outgrowths from the lining of the sinus cavities). The cavities can’t drain properly, and mucus buildup becomes a breeding ground for infection.

Other causes of this condition include malformation of the nose, such as a deviated septum; trauma to the face, such as a broken nose or cheekbone; and barotraumas — physical injuries caused

The Sinuses

You have eight sinuses clustered around the eyes and behind the nose. They are connected to the nose by tiny passages. That's four pairs of air-filled pockets lined with mucous membranes and millions of microscopic hair-like projections called cilia.

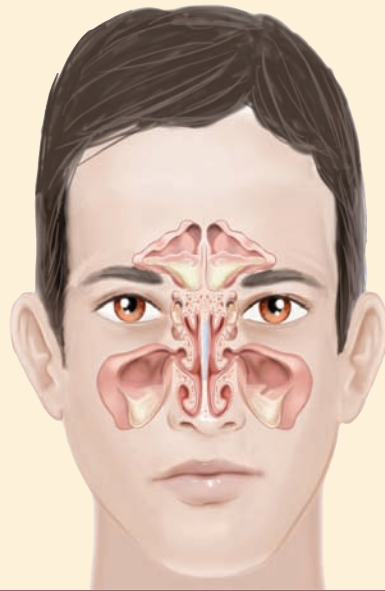
Frontal sinuses — located in the forehead region

Maxillary — in the cheek area

Ethmoid — between the eyes

Sphenoid — in the centre of the skull

The exact function of these cavities is not known. Theories about their function include warming and cleaning inhaled air; lightening our skulls, protecting our brains, and serving as an echo chamber for our voices.



by a change in pressure from deep-sea diving or air travel. Even constant nose picking can lead to sinusitis. During pregnancy, the hormones that thicken the uterus can also promote swelling of the lining of the sinuses.

Polyps occur in about 20% of people with chronic sinusitis. Dental infection is involved in 5% to 10% of bacterial infections of the sinus.

According to Dr. Simon McGrail, an otolaryngologist in Wolfville, N.S., and a professor emeritus of otolaryngology at the University of Toronto, infected teeth can cause sinusitis. "The roots of infected upper teeth have been known to enigrate weakened bone around the maxillary sinus. And in some people, the roots go right into the sinus cavities just by their natural anatomy," he says. This is a fairly common problem, particularly if just one sinus is affected. "With an airborne infection, all the sinuses may be involved," he says. So when he sees a patient with stubborn sinusitis on one side only, one of the first questions he asks is "How are your teeth?"

Routine extraction of teeth, however, can also spread infection to the sinuses. A study at the

University of Pennsylvania Medical Center in Philadelphia suggests that infected nasal and facial bones may spread infection from one sinus to another.

How long does sinusitis last?

Acute sinusitis lasts for four weeks or less. Chronic sinusitis lasts for 12 weeks or more, with or without treatment. Between 60% and 70% of the time, acute viral sinusitis will resolve itself within 10 days with no treatment. Even acute bacterial infections resolve without antibiotics 50% to 70% of the time.

"While acute sinusitis will usually go away on

its own," says Desrosiers, "chronic sinusitis symptoms are more prolonged, though less intense. They tend to wax and wane." And they have a huge effect. "When you compare quality of life across different populations, chronic sinusitis has the same impact as chronic coronary heart disease or low back pain."

Complications

Chronic cough

Sinusitis is a very common reason for chronic cough. Using CT scans, researchers at the Mayo Clinic in Rochester, Minn., showed that 37% of patients with chronic coughs lasting more than three weeks also had inflammation of the sinuses.



Common Symptoms of Sinusitis

- Facial congestion, pain, pressure, fullness
- Nasal obstruction
- Impairment or loss of sense of smell
- Cough
- Nasal discharge, sometimes yellow-green
- Bad smell coming from the nose
- Post-nasal drip down the throat
- Fever
- Headaches
- Bad breath
- Dental pain
- Ear pain
- Disturbed sleep
- Fatigue
- Muscle and joint pain

Pain and fatigue

Compared with the general population, patients with unexplained chronic pain are six times more likely to have sinusitis. And a study at Georgetown University in Washington, D.C., found that patients with chronic fatigue were nine times more likely to have sinusitis.

Asthma

There is a frequent association between chronic sinusitis and asthma. “Often, deterioration of asthmatic conditions can be found when patients have exacerbation of their upper airways,” says Desrosiers. He explains that the linings of the sinuses, nose and lungs all consist of similar air-exposed tissue called respiratory epithelium, and irritation of one part can affect the other.

“It’s called the unified airway theory,” he says. That theory holds that respiratory disease is usually reflected throughout the respiratory system, even though symptoms may appear confined to a specific or isolated segment. Hence, symptoms in the upper airway (nose or sinuses) can signal disease throughout the respiratory system, including the lower airway. “Biopsy studies of the upper and lower airways identify a number

of similarities in cell types and inflammation,” says Desrosiers.

Management

A wait-and-see approach is probably best for the first week of symptoms. Viral infections usually resolve within a week or 10 days. Bacterial infections with a discoloured discharge may worsen after five days and show no improvement for two weeks.

When swelling or polyps block sinuses, nasal examination with a speculum and nose or throat cultures provide information only about the nasal passages, not the sinuses. “In fact, says McGrail, “the nasal passages may be clear even though the original infection may have originated in the nose.” That’s because the sinuses’ drainage passages to the nose are blocked and the mucus is trapped in the cavities. Furthermore, the viruses or bacteria causing sinus infections can be quite different from those in the nose or throat.

Diagnosis may require imaging with an X-ray, an endoscopic examination or a CT scan. “Since sinus pain can be similar to that of migraine or pain of dental origin, a CT

scan or an endoscopic examination using a tiny telescope with a lens and light on it is usually required to diagnose chronic sinusitis,” Desrosiers says.

Non-drug treatment

The goal of treatment is to increase airflow through the sinuses by decreasing inflammation and eliminating any blockage to allow drainage. Successful therapy may also reduce the symptoms of chronic aches, pains and fatigue that often accompany sinusitis.

- Begin with the simplest treatments such as increasing fluids to thin out mucus. Remember to blow your nose gently.
- Place warm moist compresses on your face for five to 10 minutes several times a day. Breathe in warm moist air from a shower,



What's New?

People who carry a mutation of a gene related to cystic fibrosis (CF) are twice as likely to develop severe sinusitis, says Montreal otolaryngologist Dr. Martin Desrosiers, director of the Genetics of Rhinosinusitis Research Group, the only team in North America studying the genetics of chronic sinusitis. This abnormality is five times more likely to occur in people with chronic sinusitis. Those affected can suffer from chronic sinusitis without having CF.

The mutation may impair the cilia, the tiny hair-like mucus-moving projections in the sinuses. “There are genetic causes in rare diseases, such as CF or primary ciliary dyskinesia, in which the cilia do not function properly,” says Desrosiers. Researchers suspect that the mutations lead to changes in an affected person’s innate immune system — the one he or she is born with, not the one acquired through exposure after birth. That undermines their ability to fight off the colonization of bacteria. “There is an altered recognition of bacteria in the sinuses,” says Desrosiers.



a bath or a sink filled with hot water but don't lean over a pot of boiling water.

- At the first sign of inflammation, flush nasal passages with a saltwater solution — 1/4 teaspoon (1 mL) of kosher or pickling salt and 1/4 teaspoon (1 mL) of baking soda per cup of warm tap water. Or purchase a commercial product such as NeilMed SinuRinse.
- Use squeeze-bottle rinses or pressurized sinus sprays. Gentle mist-type nasal sprays won't budge a blockage.

Drugs

- **Analgesics** Aspirin, acetaminophen or ibuprofen and other over-the-counter painkillers can help ease sinusitis pain.
- **Antibiotics** These usually do not help since viruses cause sinus infections up to 200 times more often than bacteria. If you have a greenish pus-like discharge coming from your nose, your doctor may prescribe an antibiotic for a bacterial infection. Preliminary lab experiments at the University of Ottawa using manuka honey from New Zealand and Sidr honey from Yemen found that the sticky syrup was more effective than antibiotics in killing the bacteria that cause some sinus infections.
- **Antihistamines** Since antihistamines cause the mucus to become drier, and therefore thicker and less likely to drain, avoid them during an episode of acute sinusitis. They

About 10% of surgical patients will still have sinusitis after surgery. Genetics may be a factor



may help in chronic cases caused by allergies.

- **Decongestants** These may temporarily dry up nasal and sinus discharge, but draining thick mucus is difficult. And after three to five days of decongestant use, a rebound effect can set in and worsen congestion.
- **Corticosteroids** Nasal corticosteroid sprays decrease swelling by blocking the chemical pathway that produces the inflammation, thereby promoting better drainage. They may help chronic cases.

Tooth extraction

When infected teeth are causing the infection and antibiotic treatments fail, dental extraction is likely necessary.

Humming

A small Swedish study found that humming increased the flow of air in the sinuses as measured by exhaled nitric oxide (NO). Humming increased NO output by 15 times. The sound vibration of chanting may help, too. But if polyps are blocking the air exchange, these exercises won't help.

Surgery

"Surgery is required when the patient fails to respond to medications and continues to have symptoms," says Desrosiers. About 10%

of surgical patients will still have sinusitis after surgery. Last year, McGrail treated a woman whose stubborn one-sided sinusitis persisted after months of antibiotics and even surgery, but resolved immediately after removal of an upper molar with infected roots. It took a CT scan to show that the tooth had penetrated the sinus.

In today's surgical approach, an endoscope inserted through the nostril projects an image of the sinuses onto a video screen. The surgeon removes polyps, pus and damaged tissue and may correct defects such as a deviated septum. In some cases, bits of bone are removed to enlarge the passage to the nose and improve drainage.

Today, surgery is usually done on an outpatient basis. The nose is packed afterwards, and the patient must avoid heavy lifting for two to six weeks. "Sinus surgery used to be a major procedure, with the surgeon having to break into the cheekbones. But with today's endoscopic techniques, it's much easier on the patient," says McGrail.

Desrosiers notes that if symptoms persist after surgery, "the patient needs to be reassessed by a specialist and may require chronic therapy."

Fortunately, Jennifer hasn't needed surgery or long-term specialist care. "For me, decongestants made my sinusitis worse. Antihistamines helped a bit," she says. Saline sprays, and particularly rinses, provide the most relief. "They just clean everything out. They make such a difference to my quality of life." 