

Dr. Jason Barnes:

Hey, there. Welcome to another episode of ENT in a Nutshell. My name's Jason Barnes, and today we're joined by rhinologist and skull base surgeon, Dr. Erin O'Brien, and we'll be discussing chronic rhinosinusitis. Dr. O'Brien, thanks so much for being here.

Dr. Erin O'Brien:

Dr. Barnes, thanks for having me.

Dr. Jason Barnes:

I do want to start by saying chronic rhinosinusitis is a pretty broad topic, and in that vein, we do have an episode on AERD, and for today, we'll mainly be covering chronic rhinosinusitis without polyposis. But we'll certainly be talking about some other topics as well. So, to start, Dr. O'Brien, can you tell us how a patient with chronic rhinosinusitis would present to your clinic?

Dr. Erin O'Brien:

So, typically we're talking about someone who's had symptoms for more than three months. That's part of the definition. And primarily complaining of sinonasal symptoms, blowing their nose, or feeling pressure, or feeling congested, and this has been going on for several months. And at that point, maybe they've seen primary care and maybe they've tried some treatment options, and now they are seeing an ENT doctor because despite other therapy, hopefully having tried other therapy, they continue to be symptomatic.

Dr. Jason Barnes:

When you're kind of taking the HPI, what are some other symptoms that you might hear frequently that you might not specifically attribute to chronic rhinosinusitis, Or might be comorbid symptoms?

Dr. Erin O'Brien:

Well, one thing that I want to get from a patient is the word congestion can be a tricky one, because that's not very specific. So, are they telling me they can't breathe through their nose? Or are they feeling pressure? And so, I want to get more specific with their symptoms. There's a paper that showed some of the words that patients use may be different than the understanding that the physicians have. So, you really want to drill down on what specifically is bothering them. Is it how much they blow their nose? Not being able to breathe through their nose? Is it headaches? And we could get to that. Is it post nasal drip, or cough, or mucous?

And so, you really want to be specific. So, the word congestion especially, I don't let that one just stand by itself. I want to really dig down into what bothers them. Then you want to get into how long have they had it? And then you can get into what they've tried. The other things that we ask about are cough, specifically. Because of some comorbid conditions with sinusitis, like asthma, and for older patients maybe bronchiectasis. And the other thing we really want to dig into is headaches. So, a lot of headache symptoms may be attributed to sinuses. So, that's another area you want to get more history on.

Dr. Jason Barnes:

And can you speak a little bit to the epidemiology? What kind of patients are presenting here? How many patients in the US have this? And what are some other implications of this disease?

Dr. Erin O'Brien:

So, chronic rhinosinusitis is very common, and there've been some estimates that it can affect up to 31 million people in the US. Now, that is going by symptoms and by health records in which people get a diagnosis of sinusitis or chronic rhinosinusitis. It can be an expensive diagnosis. It has a lot of doctor's visits. It's one of the more common reasons people go to the doctor. Also, one of the more common reasons people get antibiotics. And so, it's considered very prevalent, and also, potentially expensive. For people with chronic rhinosinusitis, it can have a significant impact on their quality of life. We talk about not only absenteeism, but... I think it's presentism. Might be saying that wrong. But the idea that people are present at work or present in their activities, but still not feeling well enough that they're at 100% function.

Dr. Jason Barnes:

And are there any predisposing risk factors that you ask patients about, or seem to be prevalent here?

Dr. Erin O'Brien:

When I'm getting a history, I do want to know... I do ask about allergies. There's debate whether allergies are a predisposing factor to sinusitis, or if potentially, allergies just may make their nasal or sinus symptoms worse. That's debatable whether allergies play a role in causing sinusitis. I also ask about cough and asthma, and ask about other infections. Do they get pneumonias? Do they potentially have immunodeficiencies? Did they get a lot of ear infections as a kid? Those factor may be part of it. Then there's more, if you're really digging down or drilling down, there are other systemic diseases that can present with chronic rhinosinusitis as well.

Dr. Jason Barnes:

So, you have a patient who's in your clinic, and they start to tell you about some symptoms that they have that are likely or suggestive of CRS. Often, I save the criteria for official diagnosis towards later in the episode, but I feel like now's probably the time to talk about what is the official diagnosis? And how do you tease that out with your HPI and your physical exam?

Dr. Erin O'Brien:

So, the Academy of Otolaryngology Head and Neck Surgery updated their criteria in 2015, and they have a published clinical practice guideline from 2015, which updated their 2007 guidelines. Back in 2007, they had major and minor criteria. But the new update from 2015 is at least two symptoms for over 12 weeks. So, chronic rhinosinusitis, you have to have symptoms for three months. Specifically those four options for symptoms are facial pain and pressure, fullness or congestion, colored nasal drainage or hyposmia or decreased smell.

Now, I will say that facial pain and pressure by itself is probably the least specific symptom, and can be associated with other things, which we can get to. In addition to at least two of those symptoms, there has to be documentation of disease or inflammation. So, that means when you look in the nose, you actually see purulence or edema or polyps. Or you can have the objective criteria of a CT scan or imaging that shows some inflammation in the sinuses.

For people who don't have an endoscopy, you can use a headlight and a speculum. Maybe you see drainage in the nasopharynx or posterior pharynx that may be acceptable as well. But you have to have at least two symptoms and you have to have some objective criteria.

Dr. Jason Barnes:

So, for all of these patients, in your clinic you're performing rigid nasal endoscopy.

Dr. Erin O'Brien:

Yes, by the time they come to my clinic, I'm going to do an endoscopy almost always. For primary care, that's not going to be an option. But a good nasal exam with a speculum, you should be able to see into the middle meatus if possible.

Dr. Jason Barnes:

Yeah, can you tell us a little more about what you're looking for on nasal endoscopy, and maybe some of the common steps that you use in terms of looking at anatomy and what type of scope you're using.

Dr. Erin O'Brien:

I prefer a 30 degree scope. 30 degree rigid endoscope so I can go into the nose and turn the scope and get a better view of the lateral side wall. The most important area is going to be the middle meatus. I will say that there've been some studies that you may miss evidence of sinusitis on rigid endoscopy in 30 to 35% of cases. So, it's not 100%. And a CT scan would be considered the gold standard.

That being said, I will typically look first before I spray any decongestant or anesthetic topically in the nose. I just want to see how big are their turbinates, how much inflammation is there. Then I'll spray decongest, anesthetize their nose. And you can look along the floor in the inferior turbinate, but really you want to be looking in the middle meatus. Are there polyps? Is there inflammation? Do you see purulence? And then, with another pass, try to look behind the middle turbinate into the sphenoid recess, and look in the nasopharynx for inflammation or purulence or polyps. And so, pretty much again, if they're coming to my clinic, pretty much everyone's going to get an endoscopy.

Dr. Jason Barnes:

And when you see these patients who have these symptoms, facial pain and pressure, fullness or congestion, maybe some drainage, maybe decreased sense of smell, what else is on your differential diagnosis here?

Dr. Erin O'Brien:

If they're coming in with more pressure, pain symptoms, then I'm going to ask more questions about headaches. Some people will recognize that they have migraines or have headaches. And they may say, "Oh, this is different." If they've got no objective evidence of sinusitis especially, then you can ask, "Describe an episode for me. Can you feel that it's coming?" You're asking about prodromic symptoms of a migraine. Do they get nausea with it? Does it last for a couple days? Is it throbbing? And a lot of migraine symptoms have a lot of overlap symptoms with sinusitis. You want to find out how episodic it is. How bad does it get? If they have a family history of migraines, then if their symptoms are primarily pressure or pain, even with fullness or congestion, these may be migraine episodes. Especially like I said, if you don't have objective evidence of purulence or pus or obstruction or inflammation on a CT scan.

Dr. Jason Barnes:

And what do you think of when you have someone present with maybe just unilateral disease?

Dr. Erin O'Brien:

Unilateral disease, so we're thinking of a couple things. First of all, we want to make sure it's not a tumor. Do you see a mass? Do they have epistaxis on that side? Do they have any other concerning findings? So, are there any eye symptoms? Do they have numbness? Do they have significant pain on that side? That's the most important thing you want to evaluate for things that are less malignant or less worrisome, but you may see unilaterally would be a fungus ball. And that may be just one sinus. And on a CT scan, you would see a hyperdensity.

The other things that may clue you in to a fungus ball are very dark drainage. Sometimes a bad odor. May temporarily get better with the antibiotics, but then it comes back. Allergic fungal sinusitis can be unilateral as well. And then, adonogenic sinusitis. So, if they've got sinus disease that's primarily the maxillary sinus. Or in bad cases, it can extend through the anterior ethmoids and even into the frontal. But all the disease is anterior to the basal lamella, and primarily the maxillary sinus. You want to take a good look at the root of the teeth, especially the molars on a CT scan.

Dr. Jason Barnes:

And finally, on the differential, how do you tease out allergies from CRS?

Dr. Erin O'Brien:

We have a good relationship with our allergists who do our allergy testing. I know a lot of otolaryngologists do their own allergy testing. You can also get a good history as far as do they have triggers? Do they have seasonality in their symptoms? Again, there's real debate whether an allergy or allergy symptoms predispose people to chronic rhinosinusitis or if they just happen to be two separate things or together. But skin testing preferably. And if that's not possible, then blood testing for IGE for specific allergens. Total IGE level may be helpful as well. As far as other causes of rhinitis, you may have vasomotor rhinitis if it's worse with eating or change in temperature or activity. And then nonspecific rhinitis maybe they have sneezing, itchy, watery eyes, runny nose, some congestion, but allergy testing is negative. That would be something in the differential as well.

Dr. Jason Barnes:

So, moving on to pathophysiology, can you tell us what is the cause of CRS?

Dr. Erin O'Brien:

That's a good question. That's a broad question. So, in general, I mean I even tell my patients we don't know entirely. It's considered typically an inflammatory process. In some cases, it may be more infectious. And then we look at with CRS, whether someone has polyps or not. That's not an absolute division because there may be some people who look like they don't have polyps, and then in the operating room you get in there and there's some polypoid inflammation in the ethmoids. But generally, we break it down into CRS with or without polyps. With polyps tends to be more of an eosinophilic disease, or a TH2 disease commonly seen with asthma. Maybe seen with eosinophilia. And then as you've covered in your other podcast, in severe cases, aspirin sensitivity, or AERD.

When we're talking about CRS without polyps, thought to be more TH1, not TH2 mediated. And there may be other triggers that predispose to CRS in those cases. So, tobacco smoke, possibly environmental pollutants or irritants. We also have worry about bacteria or infections. Biofilms were a hot topic maybe a decade or so ago. There is some genetic predisposition potentially to gram negative infections in people who have a genetic variant that they can't taste bitter substances. Not to get too deep into it, but non-tasters are more prone to have gram negative bacteria in their sinuses. And then there are some systemic diseases with CRS as part of the disease.

Dr. Jason Barnes:

Do you mind telling us a little bit more about the systemic diseases and how you tease those out and what the relationship is with CRS?

Dr. Erin O'Brien:

There've been a couple papers on immune deficiency and one paper estimated that up to 10% of people with CRS may have some immune deficiency. That's been debated. But in general, we check a CBC with diff. And you can also check immunoglobulins. Some IGG deficiencies can be associated with chronic rhinosinusitis. And if someone is more likely to have a history of infections, ear infections, pneumonia, or they have purulent rhinosinusitis that frequently recurs, you can also check for vaccine response, vaccine titers. And even T and B cell function. CVID is a possibility, chronic variable immune deficiency. So, if someone has recurrent purulent sinusitis possibly with other infections, consider immune deficiencies.

Other things we think about cystic fibrosis. Most children get tested now for CF when they're born, but someone with mild CF, who may be older and wasn't tested, you may consider that as well. There's some evidence that people who are CFTR mutation carriers, so they don't have full blown CF. But having one mutation may predispose people to having perhaps a mild phenotype and chronic rhinosinusitis. Primary ciliary dyskinesia may present with CRS and commonly pulmonary disease. Some of these people may have Kartageners with the situs inversus, but that's not 100% in PCD or primary ciliary dyskinesia. And in that case, we often see a lot of thick mucous at the bottom of the sinuses that the sinuses can't clear.

Vasculitis is another one. I commonly see Wegener's or granulomatosis with polyangiitis. Some of the other vasculitides like EGPA, or Churg-Strauss, that's more of a CRS with really high eosinophilia and really bad asthma. But if you see a lot of crusting and bleeding and pain, a painful nose, think of GPA. It can be limited to just the nose, so they may not have the pulmonary or rhino manifestations. And then, a really rare one that we just published on is actually called yellow nail syndrome, in which a patient will present with frothy secretions in their sinuses, chronic cough or bronchiectasis, and thick, yellow fingernails that don't grow. Not very common, but it may be worth taking a look at someone's fingernails if you're working up CRS without polyps.

Dr. Jason Barnes:

And one of the questions that I like to ask is when you're counseling patients on treatment, what do you tell them is the natural history of this disease? Or what happens if you choose not to treat it?

Dr. Erin O'Brien:

For the most part, the risk of a complication of sinusitis is low. Mostly what we're dealing with is either a quality of life issue or potentially if someone has bronchiectasis. Their sinus disease may be making their cough worse. Or if someone has asthma, their sinus disease may potentially make their asthma worse. So the risk of something serious happening from not treating sinusitis is low. And by complication I would mean an abscess either around the eye or intracranial abscess or a frontal sinus abscess. Those don't happen commonly. But people will come in and want to be treated because they have a lot of nasal symptoms and then overall quality of life is worse. And sleep can be affected, concentration, their mood can be significantly affected. The burden for quality of life for people with chronic rhinosinusitis can be as bad as lots of other diseases like congestive heart failure or rheumatoid arthritis. So, CRS has a big impact on quality of life and with treatment, we can really make some improvement.

Dr. Jason Barnes:

And one thing I should've probably asked in the HPI section here, is there a common questionnaire that you use to assess this quality of life and the effect of symptoms?

Dr. Erin O'Brien:

Yeah, so from the University of Washington, we use and what is pretty well adopted universally is the SNOT 22, sinonasal outcome test. Conveniently named so you don't forget what it's called. Originally it was the SNOT 20, and then they added two more symptoms including sense of smell. So, the SNOT 22. And there's some guidelines that have been published that you should have at least a SNOT 22 above 20 to consider surgery for CRS. I have seen people with bad disease, and their SNOT 22 subjectively, it may not be that high. The other thing I would caution is there's a lot of symptoms on the SNOT 22, productivity, sleep, mood, that may not be completely associated with their sinus disease. And so, for some people with really high SNOT 22 scores, I may not be able to completely address all their symptoms with their sinus disease treatment.

Dr. Jason Barnes:

So, after you have done a history and physical, performed rigid endoscopy, I understand a lot of folks present to your clinic with imaging studies having already been performed. But say they haven't. What would be your first next step in work up for this patient?

Dr. Erin O'Brien:

If the symptoms meet criteria for chronic rhinosinusitis and on exam, on endoscopy I see polyps or purulence, there's some question if that is the time to get a CT scan or not. If there's objective evidence and you know at that point you're going to treat medically anyway, there's some debate whether you should get a CT scan. Again, a CT scan is considered the gold standard. And if someone meets criteria, but they don't have objective evidence, at that point I would get a CT scan.

I have seen in some cases people will be started on therapy and then get another scan a month later. The only reason for a CT scan is if you need to make the diagnosis, or if there's some concern about a complication. Then you want to get a CT scan. And if you're thinking about going to the operating room, then you need a CT scan that shows objective evidence of disease. I wouldn't get a CT scan to check for treatment response.

Dr. Jason Barnes:

And do you get any routine laboratory work up for these folks?

Dr. Erin O'Brien:

I do, especially for polyps. I want to know if they have eosinophilia. And potentially, I will check for IGE levels. For CRS without polyps, that's part of the history, too. So, if you're worried about an immunodeficiency, you get labs starting with immunoglobulins, and a CBC with diff. If you're concerned about vasculitis, you would check for an ANCA level and antibodies for MPO and PR3. Potentially, you may check ESR and CRP. That's where I would start.

Dr. Jason Barnes:

And moving on to treatment, can you tell us what's the first step in treatment for folks who you diagnose with chronic rhinosinusitis?

Dr. Erin O'Brien:

Sure, the first thing we'd want to do is make sure they've used nasal saline irrigation. So, there's good evidence for high volume saline rinses. So, this is usually 240ml's of saline. Asking them preferentially to use distilled water or previously boiled water, not just tap water. They should be doing rinses for several weeks. The next is topical steroids. And at least a topical nasal steroid spray. There's several that are now over the counter. They should be using those for several weeks as well. If that's not helping them, potentially we would go to off label steroid irrigation. So, adding steroids, either drops or compounded steroids, added to their saline irrigations.

There's been some debate about the use of antibiotics. In the past, it was recommended that patients be on three weeks of antibiotics. That's falling out of favor especially when thinking about CRS that is more inflammatory than infectious. If you're thinking about antibiotics, it may be appropriate to get a culture and do culture directed antibiotic treatment. Generally, Augmentin will cover most causes of purulent or bacterial sinusitis. There are some antibiotics that are anti-inflammatory. One of them would be Doxycycline. The other would be Clarithromycin. And there is some evidence for Doxycycline for CRS with polyps can actually shrink polyps. There's also some good papers on using Clarithromycin for TH1 mediated chronic rhinosinusitis. The anti-inflammatory effect as well as the antibacterial effect. With long-term use of macrolides, though, you want to make sure they don't have any cardiac history, and potentially even check an EKG for QT prolongation, as macrolides may have some cardiac effects.

Dr. Jason Barnes:

And once you've offered medical management, say a patient has done everything that you've asked them to do, and they still continue to have symptoms, that they feel like aren't totally resolved. What's the next step?

Dr. Erin O'Brien:

So, at that point, I think it's reasonable if you've gone through rinses, topical steroids, antibiotics, I would say maybe topical antibiotic rinses. Although if they haven't had surgery, that may not be very effective to get into the sinuses, but at that point if you've failed medical therapy, surgical therapy can be considered at that point. There's good evidence that sinus surgery improves quality of life, and nasal endoscopy. There's no placebo or blinded trials, but in trials where people who met criteria to consider surgery, either opted for medical therapy ongoing or surgical therapy. Patients who went in the surgical arm felt better. Their SNOT 22 symptoms improved and their endoscopy improved.

Dr. Jason Barnes:

And when you counsel patients on surgical options, how do you describe what the purpose of surgery is?

Dr. Erin O'Brien:

If someone has chronic sinusitis and they're not getting better with medical therapy, at that point, the sinuses may be so inflamed, the mucosa, that at that point, we need to open up the sinuses further. So, that the rinses and the topical medication can actually get into the sinuses. The natural ostia of the sinuses are relatively small, are just a few millimeters. And so, if chronic inflammation over time has blocked them, no medication is potentially going to be able to penetrate. So, endoscopic sinus surgery makes those natural openings larger so that topical medication and rinses can be more effective.

Dr. Jason Barnes:



And there is a more recent push or interest in balloon dilation. Can you tell us a little bit about the option of balloon dilation in this setting?

Dr. Erin O'Brien:

So, the concept of balloon dilation is you're trying to open the natural ostium further. And that's only effective for the maxillary, frontal or sphenoid sinuses. Doesn't really do anything for the ethmoids. But if you have especially an isolated sinus that is obstructed, a balloon to dilate that opening may be effective. And the nice thing is it can be done in the office and there's less down time. You don't have to have a general anesthetic. And so, in some cases it can be very helpful. A couple words of caution, balloon is not indicated for CRS with polyps. It may be used in the operating room for those cases with bad polyp disease to help dilate, for instance, the frontal recess. But by itself, I would say it's not effective for polyps. Although, some of the initial studies showed that the balloon was very effective maxillary sinuses there have been some other studies that showed the balloon only actually went into the natural ostium of the maxillary sinus about 67% of the time. The goal is to dilate the natural ostium. So making a false passage further back in the maxillary sinus is not going to effectively treat the sinusitis. And also, before any sinus procedure, that sinus should show objective criteria of opacification on CT scan. So, it's not indicated to do a balloon dilation of a sinus that doesn't have disease on imaging.

Dr. Jason Barnes:

And going back to surgical management, you talked about endoscopic sinus surgery, which is kind of a breaking down of the walls of the sinuses. How do you decide which sinuses to surgically intervene in for a given patient?

Dr. Erin O'Brien:

So, I go by the CT scan. And if we see some level of obstruction or inflammation in that sinus, then it's appropriate to open up that sinus. The Lund-Mackay score is what's considered the basically standard way of scoring each sinus for inflammation. And I want to see objective criteria of disease before we open up the maxillary, for instance. Or the ethmoids. There's some debate about whether you have to open up the frontals, even if there is some evidence of frontal sinus disease because potentially removing the ethmoid septations below that frontal sinus may be helpful in managing frontal sinus disease. So I'd say depending on the patient, and the degree of obstruction or inflammation in the frontal sinus, doing a total ethmoidectomy may be sufficient for some frontal sinus involvement. If it's really bad disease, or if it's revision surgery, then you may need to consider actually removing all the septations around the frontal recess.

Dr. Jason Barnes:

So, in terms of treatment, we've talked about medical management, surgical management, possible balloon dilation. Can you speak to topical antibiotics, which you mentioned? And then, is there any role for antifungals in these patients?

Dr. Erin O'Brien:

I pretty much reserve topical antibiotics for someone who has had surgery, the sinuses are open but they continue to have purulence in the sinuses. And so if we get a culture, the sinus is open, it should be able to drain sufficiently. Topical antibiotics may be helpful. There was a paper that showed there's not necessarily more risk of antibiotic resistance with topical antibiotics, and it may be helpful.



Unfortunately, these are compounded medications that may not be covered by insurance. But it can be helpful for someone who's already had surgery to treat some of the crusting and perulance.

Topical antifungals were I would say a popular option or they were widely discussed... I guess it's been 20 years or so now. There was some theory that chronic rhinosinusitis was caused by an immune reaction to fungus in the nose. There are some patients for whom fungus may be a trigger. But in general, antifungal medications, either oral or topical, have fallen out of favor. Everyone, at least in studies of normal people, everyone probably has some fungus in their nose. So just the presence of fungus doesn't necessarily mean that someone should be on an antifungal. Unless someone has a fungal allergy, like allergic fungal rhinosinusitis, then topical antifungals don't have much role.

Dr. Jason Barnes:

So, in the patient who has chronic rhinosinusitis, who you've taken to the operating room for endoscopic sinus surgery, how do you counsel them on risks of surgery and how they should think about outcomes and expectations following surgery?

Dr. Erin O'Brien:

So, going back to their symptoms, what is it that bothers them the most? There are some aspects of their symptoms that we can probably find significant benefit with surgery as far as nasal drainage, or obstruction. And I will say, if they have a deviated septum, if you're doing a septoplasty during surgery, those patients may get more benefit in their symptoms than if you don't do a septoplasty, with the caveat, again, only if they have objective evidence of a significant septal deviation.

So, ideally, their sinus symptoms of breathing through their nose, or the feeling of obstruction, or the amount of mucous that they blow out, and maybe hopefully their sense of smell will improve. Surgery can also help with some of these symptoms with sleep disorder, productivity and mood. Some of the non-specific sinus complaints can potentially get better.

As far as risks, again, I will caution them I may not make all of their symptoms better. The other thing to educate patients about is just because they have surgery doesn't mean they won't need to continue with rinses and topical medications. The sinuses are opened in sinus surgery so that we can get the medication in. They may still need to be on that long-term. So, surgery itself may not be the end cure.

Many of them may need revision surgery. Many is potentially overstating it, but maybe 10 to 15% may need revision surgery. Either the openings may need to be larger, or they could get a recurrence of disease, or they could have scar tissue. They'll have to come back for a debridement. If I see them, I want to get out the crust. And if I start to see any scar tissue, I can remove that in clinic. So, that's a procedure when they come back.

The risk of a serious complication with surgery, such as an injury to the eye, blindness, bleeding around the eye, extremely low. Potential risk of a spinal fluid leak, meningitis or intracranial complication, again, potentially low. Those are much less than one percent. Potential for scar tissue forming, we talked about as part of the risk of revision. They may lose their sense of smell, so you should ask them about their smell ahead of surgery. Get at least some subjective score of their smell, and then tell them there is a potential for risk of loss of smell. And I guess a risk of infection after surgery. And then just in general, anesthesia risk.

Dr. Jason Barnes:

And you mentioned the possibility of revision surgery. Is there a subset of patients... I know we're talking about a broad topic, and maybe some different etiologies of this CRS. Is there a subset of patients who might not do as well with sinus surgery?

Dr. Erin O'Brien:

For someone with vasculitis, I would caution against even doing surgery until they are in remission, and only do surgery if they have significant symptoms. For Wegener's disease, their sinuses may be replaced by scar tissue or bone. And if they're not symptomatic, I wouldn't necessarily operate on them. Our own studies of patients with EGPA or Churg-Strauss, unfortunately, their outcomes after surgery may be lower. Primary ciliary dyskinesia, you're changing the option for surgery or how aggressive you are with surgery are making much larger entrostomies, for instance. If you're just doing a standard maxillary entrostomy, that may not be sufficient for someone whose cilia can't move the mucous through. Cystic fibrosis before Trikafta or this triple therapy for CF, we would commonly have to revise them, frequently, hopefully, with the new medications that will be less often.

Dr. Jason Barnes:

And following surgery, can you speak to how you follow up with these patients? You talked about post op debridement, but what's the timing of follow up? And how do you counsel them on continued rinses or other topical therapies?

Dr. Erin O'Brien:

I generally have my patients start rinsing the day after surgery. And commonly, even though the evidence is not great, I will do post-operative antibiotics, especially if I'm doing some type of dissolvable packing. And I may also put some packing with steroids or dissolvable steroid stent in some cases, for frontal sinus work. I want to see them back around 10 days post-op. At that point, there's less... I guess, less acute pain. It's less tender at that point and before scar tissue starts to form. And that's when I do my first debridement. Ideally, then a couple more weeks after that, and then it would be perhaps a couple more times in the next year. And then we'll see how their disease is after that, if we need to see them back. It really depends on how bad their sinus disease is how frequently you need to see them.

Dr. Jason Barnes:

Well, Dr. O'Brien, thank you so much. This has been a great discussion of chronic rhinosinusitis without nasal polyposis. Before I go into my summary, is there anything else you'd like to add?

Dr. Erin O'Brien:

I think as part of this treatment, you want to get a good history of comorbid conditions. If they have chronic cough, if they have allergic symptoms, get your pulmonologist involved, get your allergist involved, your immunologist if you're worried about immunodeficiency. This can be part of a broader treatment than just treating the nose.

Dr. Jason Barnes:

Well, thank you so much. I'll now move into our summary. CRS is a chronic inflammatory disease leading to sinus inflammation and opacification. And symptoms of anosmia or hyposmia, congestion, drainage and facial pressure or pain. CRS can be divided into CRS with nasal polyposis and CRS without nasal polyposis. And CRS without nasal polyposis is primarily an aberrant, inflammatory response down the TH1 pathway versus CRS with nasal polyposis, which is the TH2 pathway.

Work up for chronic rhinosinusitis includes a good history and physical exam including a nasal endoscopy and a CT scan of the sinuses looking for inflammation or opacification of the sinuses. Treatment should include nasal saline irrigations and topical steroid therapy. And when indicated for purulence, antibiotics can also be used.

Those refractory to medical therapy can be offered sinus surgery, and the goal of this is to open up the sinuses for improved efficacy of rinses and other topical therapies. Overall, patients do quite well with surgery and tend to have fast improvement in quality of life symptoms.

I'll now move into the question asking portion of our episode. As a reminder, I'll ask a question, pause for a few seconds and then give the answer.

So, the first question is what is the definition of chronic rhinosinusitis? So, chronic rhinosinusitis requires symptoms and objective evidence of disease. So, for over 12 weeks, patients should have at least two symptoms of the following: facial pain and pressure, fullness or congestion, colored nasal drainage, or hyposmia. And for objective evidence, they should have purulence on endoscopy, edema on endoscopy, polyps on endoscopy, or radiographic evidence showing inflammation of the paranasal sinuses. Also, if endoscopy is not available, a provider can perform a speculum exam with a headlight looking for inflammation.

The next question, what is the initial treatment of chronic rhinosinusitis? Chronic rhinosinusitis without nasal polyposis should initially be treated with nasal saline rinses and topical steroids. If there is evidence of purulence on physical exam, antibiotics can also be used, and Augmentin is usually a good first choice.

And finally, when is sinus surgery offered and what is the purpose of sinus surgery? Patients are offered sinus surgery if they've been refractory to medical therapy. And the goal of sinus surgery is to enlarge the natural openings and to remove the septations of the ethmoid sinuses. Recall that the goal of this is to aid in topical rinses and other therapies, and patients should be counseled that this is a chronic disease and surgery does not offer a cure.

Thanks so much and we'll see you next time.