

Dr. Jake Johnson:

Hello, and welcome to the On-call Consults in Less Than 10 Minutes Series on ENT in a Nutshell, accompaniment to Headmirror's Online Survival Guide. I'm your host, Jake Johnson, and today we are joined by Dr. Garret Choby, a board certified rhinologist and skull-base surgeon. In this episode, we will cover sinonasal trauma. Let's jump right in.

In today's episode, we will have a narrow focus on trauma affecting the sinonasal cavity. We'll cover nasal bone and septal fractures, septal hematomas, septal abscess, anterior skull-base fractures, and CSF leak. A nasal bone fracture is relatively common to see in the ED, especially in the busy emergency department. Others are less common, but can be considered can't miss diagnoses due to the potential complications associated with these. For today's purposes, we'll leave out anterior table frontal sinus fractures, nasal orbital ethmoid fractures, with one exception, and maxillary sinus fractures out of the discussion. Dr. Choby, could you take us through a differential diagnosis, including can't miss diagnoses in this section of sinonasal trauma?

Dr. Garret Choby:

Absolutely, so again, we have a fairly narrow focus today, but things we'll think about as far as differential goes include nasal bone fracture or septal trauma without fracture itself, lacerations over the nose, as well as a nasal degloving or potentially a traumatic partial or complete rhinectomy. Septal hematomas and abscesses will be considered as well as posterior frontal sinus fractures, ethmoid skull-based injuries, in particular with CSF leak, as well as NOE fractures with the intra ethmoid artery ruptured retrobulbar hematoma. And then lastly, sphenoid sinus skull-based fractures with particular attention payed to the carotid canal.

Dr. Jake Johnson:

Generally, if you're a provider in the ED or on call ENT, how would this patient present to you?

Dr. Garret Choby:

So nasal trauma can present either an isolated scenario or part of a multi-system trauma. Patients may be awake and alert with very little pain, or they may be intubated, sedated on spine precautions. So there's a wide variety of presentations. Nasal bone trauma and soft tissue injuries are usually very quickly appreciated on initial survey. Awake patients may have a story that includes a sensation or a visual perception of the abnormality and occasionally relay things in regards to feeling or hearing a nasal bone fracture. Patients with septal hematoma or septal abscess may present the post-operative setting or less frequently in the traumatic setting. And lastly, skull-based fracture and CSF leaks are typically going to result from a complex trauma and often are discovered as part of a routine trauma CT protocol in a patient who may have a number of systematic injuries.

Dr. Jake Johnson:

And when you go to see this sort of patient, what things do you specifically want to ask them or find out about?

Dr. Garret Choby:

Sure, it's important of course, they realize that this patient may be someone who's intubated and sedated. However, if they are interactive, it's important to know about the mechanism and timing of injury, as well as the patient's appreciation of their deviation from normal in both physical appearance,

as well as nasal breathing. If possible viewing pre-injury photos is helpful. It also looks for other facial fractures, this includes occlusion issues, facial contour, sensation in V1 through V3, as well as potential issues with extra ocular or orbital injury. It's important to talk about things like the pain in regards to the location, radiation and the quality, as well as asking questions along the lines of a clear rhinorrhea or a salty posterior taste. And then lastly, of course, it's important to think about things like visual acuity and enophthalmos or hypoglobus.

Dr. Jake Johnson:

When thinking about going to see one of these consults or evaluating this sort of patient, what are some things you want to bring with you?

Dr. Garret Choby:

Certainly a number of things can be entertained. The nasal exams we're focused on today. And this includes things like nasal speculum or a zero degree endoscope, 10 or 12 Frazier suctions to remove blood clot from the nose, as well as a topical decongestant like oxymetazoline. In cases of septal hematoma, you may also want to consider things like injectable lidocaine with epinephrine, and 18 gauge needle, as well as a 15 blade and things like Doyle splints or saline flushes. And if we're going to be aggressive in trying to reduce the nasal bone fracture at the bedside, Boies elevator as well as potential splinting supplies are also helpful.

Dr. Jake Johnson:

Examining these patients. What things specifically would you like to look at, especially in regards to the different areas of trauma that we're discussing?

Dr. Garret Choby:

So, when examining things like a nasal trauma or nasal bone injury, a careful external nasal exam is important, including looking at the patient as a straight on view, oblique views, as well as from below in the worm's eye or above and the bird's-eye view. Palpation of the nasal bones and evaluating the volume of edema is also very important. If there are lacerations present, identifying the depth of them, as well as determining if other deeper structure involves like cartilaginous or bony structures is important. Anterior rhinoscopy with a headlight look for things like a septal hematoma abscess, and then of course, rigid endoscopy, if a more post your exam is required, or you're worried about things like a skull-based fracture or a CSF leak. If a CSF leak is, is suspected a dandy maneuver, or having them lean forward and observing them for drainage of clear salty fluid can be helpful. And then moving on from there, if an orbital injury is suspected, examining extra ocular motion and gross visual acuity is very important, as well as for proptosis, if worried about a retrobulbar hematoma. And then of course, the periorbital soft tissue, including the position of the globe, as well as the medial campus and things like, you know, enophthalmos or hypoglobus..

Dr. Jake Johnson:

After you complete your examination. What sort of things do you consider in terms of a workup with labs and imaging or anything like that?

Dr. Garret Choby:

So this one depends a bit on what you're suspecting as far as an injury goes. If it is a very isolated nasal bone injury or laceration, additional imaging or labs is probably not necessary. If a patient is particularly

inserted cosmesis aesthetic photography may be helpful if you're worried about things like a skull-based fracture or more significant traumatic injuries, a fine cut CT scan and the maximum facial region, as well as reformatting in three planes is very helpful. If CSF leak is suspected, beta two transferrin testing is very appropriate. If this may be sitting out for a long period of time consideration may also be given to putting it on ice, to make sure that the protein does not denature.

Dr. Jake Johnson:

As far as management of these things go, could you break it down for us a little bit?

Dr. Garret Choby:

Absolutely. So I'll break it down to a couple of categories. The first one is a nasal bone fracture. If it is a simple nasal bone fracture and the patient is quite tolerant and may perhaps be less cosmetically concerned, a simple closed reduction in the emergency department under local anesthesia can be appropriate. This typically involves replacing or placing the bones in their proper place with a Boies elevator and a splint afterwards. However, it may also be more appropriate to allow some of the edema to come down for approximately five to seven days and we manage this in the operating room. If a septal hematoma abscess is present, this would be considered a semi-emergency and urgent management is necessary. A delay can cause issues with septal necrosis and eventually a Saddle nose deformity. This can frequently be drained in the operating room or at the bedside. If at the bedside you can inject local anesthetic, then aspirate the blood with a needle or syringe, then make an incision over it to irrigate out the remaining portion of the hematoma or abscess. It is ideal to place a small Penrose drain if possible.

And then lastly, Doyle splints. Again, if the patient is tolerated, tolerates this well, it may be done at the bedside, but some patients may require an operating room management for this. If it's a soft tissue injury, like a laceration, this can often times be closed primarily. If it, if though involves things like cartilage or other deeper structures an OR trip may be required for better wash out and a more careful closure. And lastly, if there was a skull-base fracture present with ongoing CSF leak, many of these will close with conservative management and may not require operative management. CSF leak precautions are important, including head elevation, no straining, no nose blowing. And in some cases, this may also require a lumbar drain placement. The use of antibiotics is controversial and it's not necessarily required for routine cases of a traumatic CSF leak. If there is a significant posterior table, frontal sinus, a fracture that is severe displacement, or there is extrusion of dura through this ear, an ongoing CSF leak operative intervention is likely required, and this may involve a cranialization procedure. If there are fractures in the area of the planum or the tuberculum and you're worried about a carotid injury, a CTA may be necessary in this area. Also realized that it delayed pseudoaneurysm is also possible, so you may consider getting a delayed CTA as well in some of these cases.

Dr. Jake Johnson:

I think that all covers it really well for sinonasal trauma. Thank you, Dr. Choby for being with us today.

Dr. Garret Choby:

Absolutely. Thanks for the time.