

# AMSER Case of the Month

## June 2023

67-year-old with double vision.

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# Patient Presentation

- 67-year-old patient in assisted living presenting with persistent double vision. No known trauma, eye pain, swelling, or erythema. No fevers or chills.
- Physical exam is notable for enophthalmos.
- Relevant labs, including WBC and CRP, were normal.

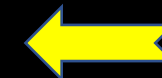
What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

## Variant 2:

Nontraumatic orbital asymmetry, exophthalmos, or enophthalmos. Initial imaging.

Procedure	Appropriateness Category	RRL
MRI orbits without and with IV contrast	Usually Appropriate	0
CT orbits with IV contrast	Usually Appropriate	☒ ☒ ☒
CT orbits without IV contrast	May Be Appropriate	☒ ☒ ☒
CTA head and neck with IV contrast	May Be Appropriate	☒ ☒ ☒
MRA head and neck without and with IV contrast	May Be Appropriate	0
MRI head without and with IV contrast	May Be Appropriate	0
MRI orbits without IV contrast	May Be Appropriate	0
MRA head and neck without IV contrast	May Be Appropriate (Disagreement)	0
MRI head without IV contrast	May Be Appropriate	0
Arteriography cervicocerebral	May Be Appropriate	☒ ☒ ☒



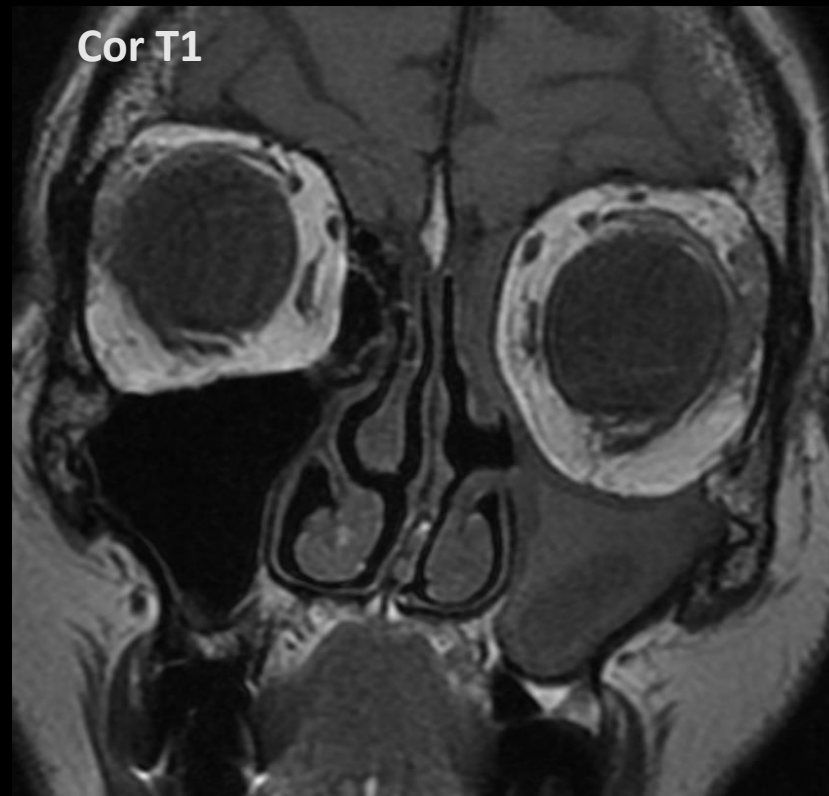
This exam was ordered by the PCP

# Findings (unlabeled)

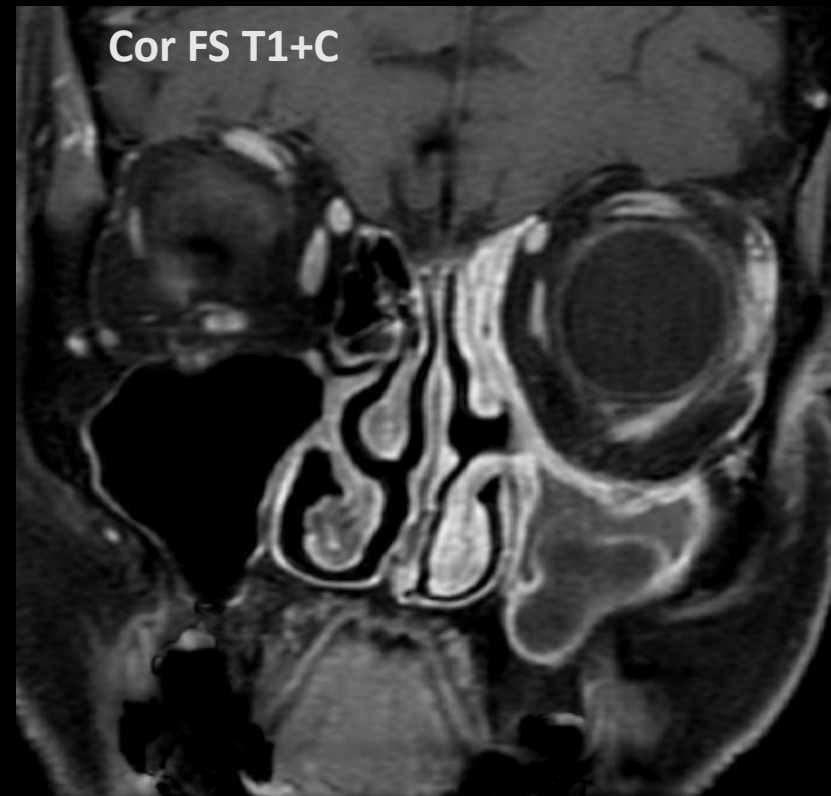
Cor T1



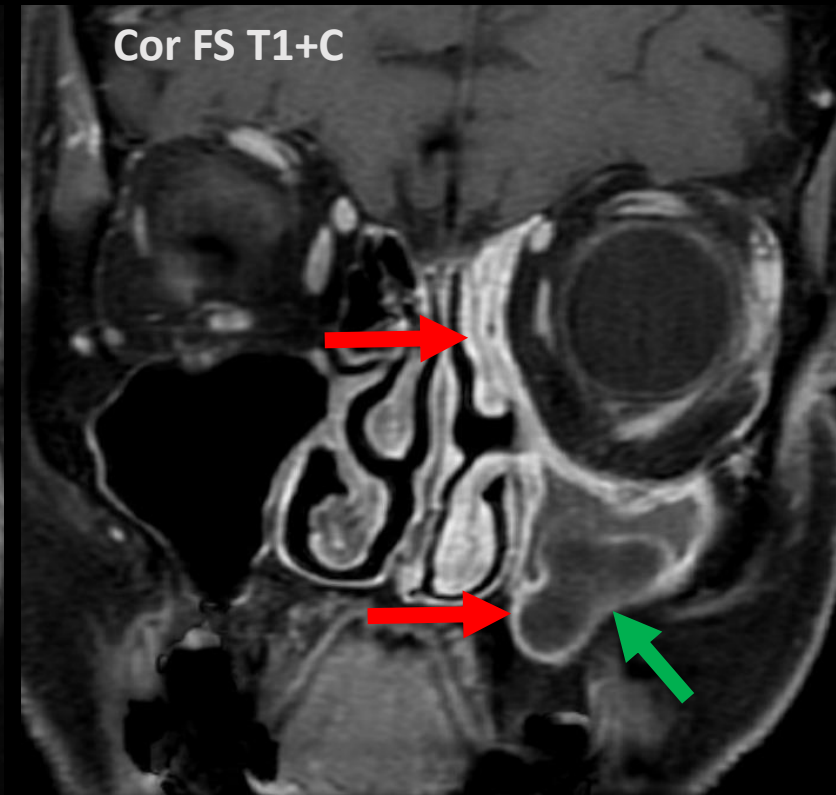
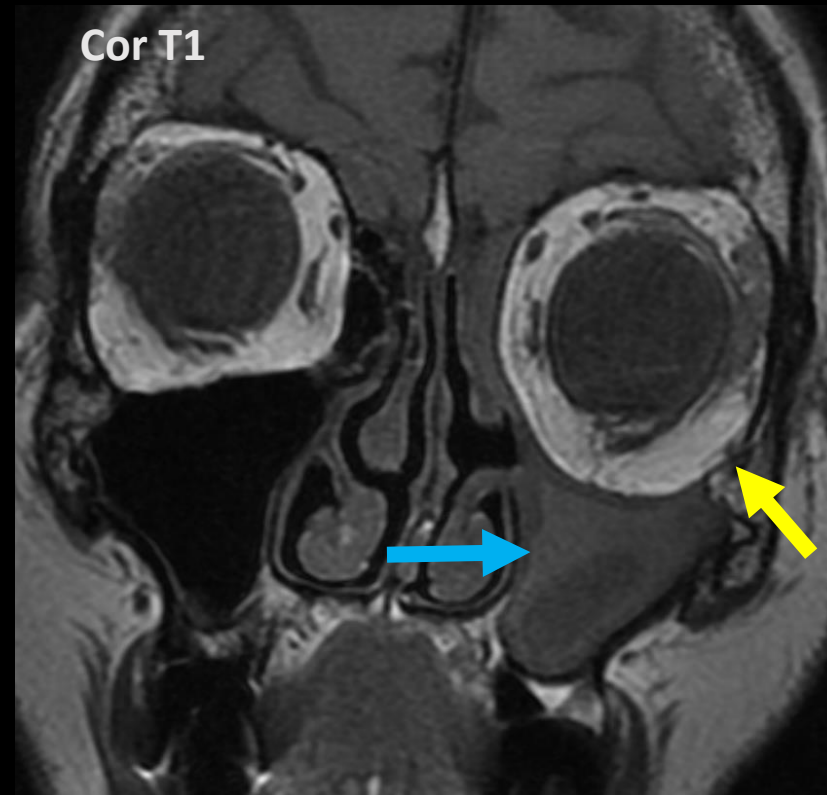
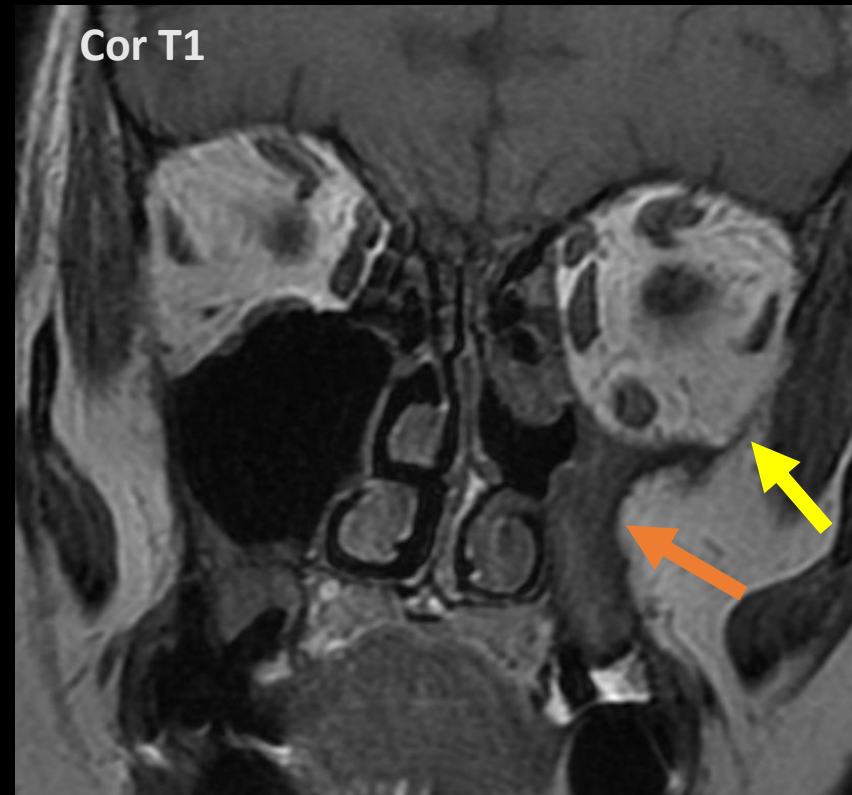
Cor T1



Cor FS T1+C



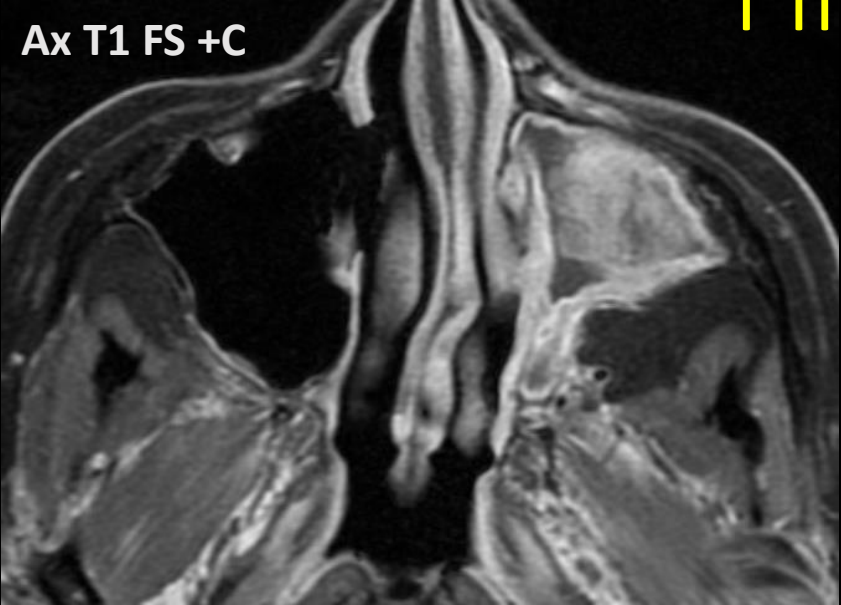
# Findings (labeled)



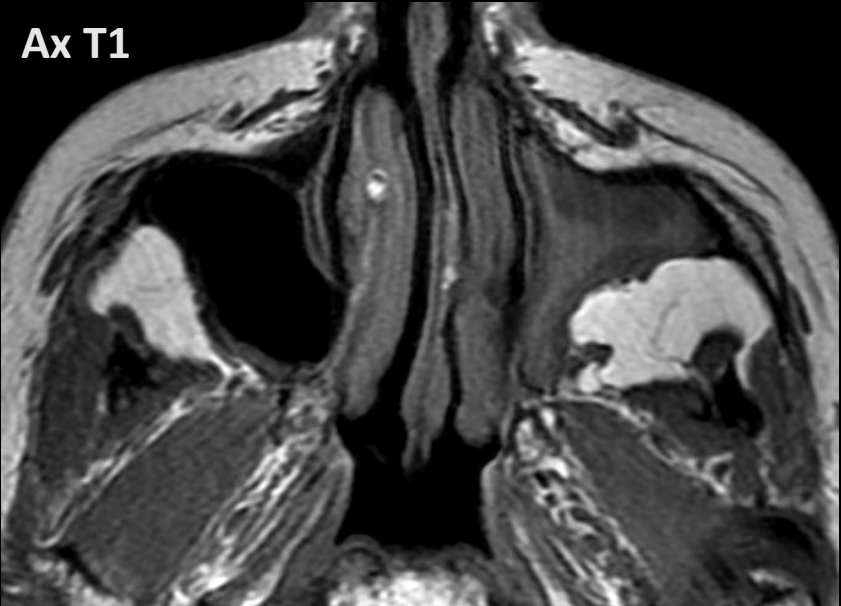
Coronal MR imaging shows **mucosal thickening in the left maxillary and ethmoid sinuses** with a **left maxillary sinus retention cyst** as well as **left maxillary sinus T1 intermediate proteinaceous fluid**. There is antral atelectasis with **medial bowing of the lateral left maxillary sinus wall** and **inferior bowing of the left orbital floor**, resulting in expansion of the left bony orbit.

# Findings (unlabeled)

Ax T1 FS +C



Ax T1

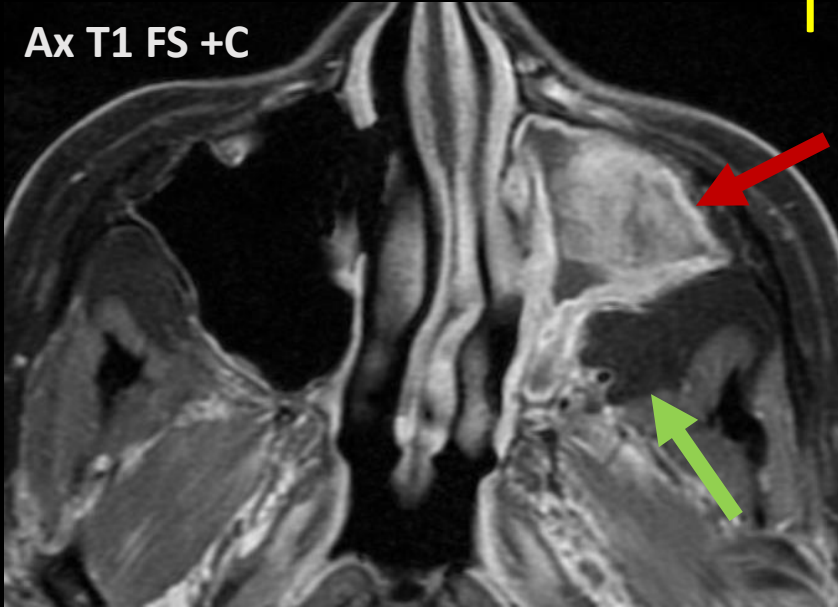


Ax T1 FS +C



# Findings (labeled)

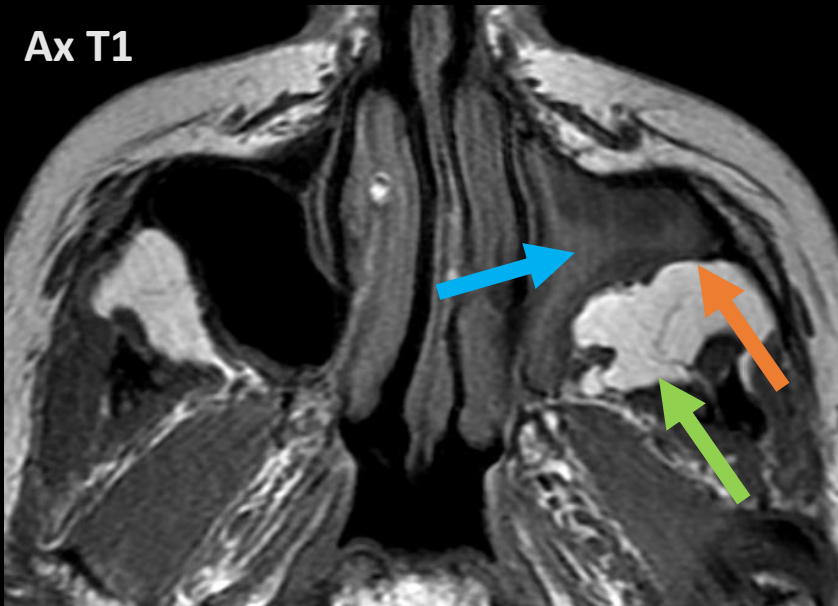
Ax T1 FS +C



Axial imaging shows **mucosal thickening** and **proteinaceous fluid** in the left maxillary sinus, consistent with sinusitis.

There is **bowing of the lateral left maxillary sinus wall**, an **expanded retroantral fat pad**, and **enophthalmos of the left globe** secondary to sinus atelectasis.

Ax T1



Ax T1 FS +C





Final Dx:

Silent Sinus Syndrome

# Case Discussion

- **Pathophysiology**

- Silent sinus syndrome is characterized by chronic maxillary sinus atelectasis related to chronic obstruction of the sinus ostium leading to negative pressure in the cavity.
- The orbital floor and maxillary sinus walls are affected, resulting in enophthalmos and hypoglobus.
- Primary silent sinus syndrome is idiopathic, while secondary silent sinus syndrome can result from mid-face trauma or prior surgical procedures. Up to 1% of patients with Graves ophthalmopathy present after undergoing orbital decompression.
- This pathology almost exclusively occurs in the maxillary sinus and is commonly unilateral.

# Case Discussion

- **Clinical Presentation**

- Patients have a prolonged history of painless eye or facial asymmetry, diplopia, or both.
- Physical exam findings may show enophthalmos and hypoglobus.
- Patients may or may not present with prior or current sinus symptoms.

- **Radiologic Findings**

- Maxillary sinus atelectasis or reduced sinus cavity volume, with thinning of the sinus walls and compensatory expansion of the ipsilateral orbital volume
- Lateralized ipsilateral uncinate process
- Commonly enlarged middle meatus, with varying degrees of middle turbinate retraction and nasal septum deviation
- Expanded ipsilateral retroantial fat pad
- Visualization of osseous thinning, infundibulum blockage, and lateralized uncinate process clearer by CT compared to MRI

# Case Discussion

- **Treatment**

- Initial treatment may be conservative, with surgical intervention pursued if patient's symptomatology is significant or progresses.
- Surgical intervention aims to restore sinus ventilation and drainage, prevent further sinus wall collapse, restore eye position and orbital floor height, as well as avoid sinus infection.
- The surgical approach involves opening the maxillary sinus ostium with a nasal antral window or maxillary antrostomy.

# References:

- Albadr FB. Silent sinus syndrome: Interesting computed tomography and magnetic resonance imaging findings. J Clin Imaging Sci. 2020;10:38. doi: 10.25259/JCIS\_62\_2020.
- Bhalla N, Rosenstein J, Dym H. Silent sinus syndrome: Interesting clinical and radiologic findings. J Oral Maxillofac Surg. 2019 Oct;77(10):2040-43. doi: 10.1016/j.joms.2019.03.042.
- Illner A, Davidson HC, Harnsberger HR, Hoffman J. The silent sinus syndrome: clinical and radiographic findings. AJR Am J Roentgenol. 2002;178(2):503-6. doi: 10.2214/ajr.178.2.1780503.
- Kennedy TA, Corey AS, Policeni B, et al. ACR Appropriateness Criteria® Orbits, Vision and Visual Loss. Available at <https://acsearch.acr.org/docs/69486/Narrative/>. American College of Radiology. Accessed March 29, 2023.