INTRODUCTION:

CT scans can provide much more detailed information about the anatomy and abnormalities of the paranasal sinuses than plain films. A CT scan provides greater definition of the sinuses and is more sensitive than plain radiography for detecting sinus pathology, especially within the sphenoid and ethmoid sinuses. CT scan findings can also be quite nonspecific, however, and should not be used routinely in the diagnosis of acute sinusitis. The primary role of CT scans is to aid in the diagnosis and management of recurrent and chronic sinusitis, or to define the anatomy of the sinuses prior to surgery.

INDICATIONS FOR SINUS & MAXILLOFACIAL AREA CT:

For evaluation of known or suspected infections or inflammatory disease:
- Unresolved sinusitis after four (4) consecutive weeks of medication, e.g., antibiotics, steroids or anti-histamines.
- Immunocompromised patient (including but not limited to AIDS, transplant patient or patient with genetic or acquired deficiencies,) or conditions predisposed to sinusitis (e.g., cystic fibrosis and immotile cilia syndrome).
- Osteomyelitis of facial bone where imaging study, (such as plain films, or brain MRI, etc.) demonstrates an abnormality or is indeterminate.

For evaluation of known or suspected tumor:
- For known or suspected tumor with bony abnormality or opaque sinuses seen on imaging or for mucocele (unusual benign tumor).

For evaluation of trauma:
- Suspected fracture AND prior imaging was nondiagnostic or equivocal.
- For follow-up trauma with fracture or opaque sinuses visualized on x-ray.

Pre-operative evaluation:
- Planned maxillo-facial surgery.
- For use as adjunct to image guided sinus exploration or surgery.

Post-operative evaluation:
- Complications, e.g., suspected CSF leak, post-operative bleeding as evidenced by persistent opaqueness on imaging.
- Non-improvement two (2) or more weeks after surgery.
Other indications for Sinus CT:

- For poorly controlled asthma associated with upper respiratory tract infection. May be performed without failing 4 consecutive weeks of treatment with medication.
- For presence of polyposis on imaging or direct visualization that may be causing significant airway obstruction.
- For deviated nasal septum or structural abnormality seen on imaging or direct visualization that may be causing significant airway obstruction.
- For new onset of anosmia (lack of sense of smell) or significant hyposmia (diminished sense of smell).
- Other conditions such as Granulomatosis with polyangiitis (Wegener’s) may present as rhinosinusitis.
- A follow-up study may be needed to help evaluate a patient’s progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.

COMBINATION OF STUDIES WITH SINUS CT:

Sinus CT/Chest CT –

- For poorly controlled asthma associated with upper respiratory tract infection. May be performed without failing 4 consecutive weeks of treatment with medication.
- Granulomatosis with polyangiitis (Wegener’s) disease (GPA).

ADDITIONAL INFORMATION RELATED TO SINUS CT:

**Sinusitis** - In acute sinusitis, routine imaging is not recommended except for patients with suspected complications (especially in the brain and in the orbit). In addition to CT scanning, magnetic resonance (MR) imaging of the sinuses, orbits, and brain should be performed whenever extensive or multiple complications of sinusitis are suspected. In chronic sinusitis, CT scanning is the gold standard for the diagnosis and the management, because it also provides an anatomic road map, when surgery is required.

**Allergic rhinitis** - Allergic rhinitis is rhinitis caused by allergens, which are substances that trigger an allergic response. Allergens involved in allergic rhinitis come from either outdoor or indoor substances. Outdoor allergens such as pollen or mold spores are usually the cause of seasonal allergic rhinitis (also called hay fever). Indoor allergens such as animal dander or dust mites are common causes of year-round allergic rhinitis.

**Multiple polyps** - These are soft tissues that develop off stalk-like structures on the mucus membrane. They impede mucus drainage and restrict airflow. Polyps usually develop from sinus infections that cause overgrowth of the mucus membrane in the nose. They do not regress on their own and may multiply and cause considerable obstruction.

**Deviated Septum** - A common structural abnormality of the nose that causes problems with air flow is a deviated septum. The septum is the inner wall of cartilage and bone that separates the two sides of the nose. When deviated, it is not straight but shifted to one side, usually the left.
A coronal CT image is the preferred initial procedure. Bone window views provide excellent resolution and a good definition of the complete osteomeatal complex and other anatomic details that play a role in sinusitis. The coronal view also correlates best with findings from sinus surgery. Approximately 30% of patients cannot lie in the needed position for coronal views and so axial views would be taken (and “reconstructed” afterwards).

CT instead of MRI – MRI allows better differentiation of soft tissue structures within the sinuses. It is used occasionally in cases of suspected tumors or fungal sinusitis. Otherwise, MRI has no advantages over CT scanning in the evaluation of sinusitis. Disadvantages of MRI include high false-positive findings, poor bony imaging, and higher cost. MRI scans take considerably longer to accomplish than CT scans and may be difficult to obtain in patients who are claustrophobic.
REFERENCES:


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