

Frontal sinus transgression

Frontal sinus transgression refers to the extension of a surgical **procedure** or treatment beyond the boundaries of the **frontal sinus**. This can occur during surgical procedures that involve the **frontal sinus**, such as **endoscopic sinus surgery**, **craniofacial surgery**, or lesion removal at the frontal lobe as well **anterior interhemispheric approach**.

Although the majority of patients have frontal sinuses deep enough to accommodate standard trephine instruments, surgeons should recognize that up to 15% of nonhypoplastic frontal sinuses may not be sufficiently deep at a given point to allow safe trephination without risking unintentional transgression of the posterior table. This study suggests that trephination routinely carried out at a given predetermined distance from the midline may be an unsafe practice. Careful evaluation of the imaging is essential in every case to avoid inadvertent injury and to help select the safest distance from the midline for frontal sinus trephination ¹⁾.

Complications

Frontal sinus transgression can result in complications such as **cerebrospinal fluid leaks**, **meningitis**, or **brain abscesses**. Therefore, it is important for surgeons to be aware of the boundaries of the frontal sinus and to take precautions to avoid transgressing them during surgery. A high level of suspicion and long-term surveillance is needed to monitor their occurrence.

Patients who undergo frontal sinus surgery should be closely monitored for signs of complications, such as **headaches**, **fever**, or drainage from the nose, and should report any concerns to their healthcare provider immediately.

As reported by Schramm and Maroon, ²⁾ **frontal sinus** complications that occur are primarily inflammatory and include **osteomyelitis** of the **frontal bone**, **cellulitis**, **subcutaneous abscess** or subperiosteal abscess, chronic **frontal sinusitis**, **mucocoele**, and mucopyocoele. Predisposing factors have included entrapment or migration of incompletely removed **mucosa** into craniotomy or burr-hole sites, obstruction of the **frontal recess**, inflammation of mucosa secondary to foreign bodies, or prior history of allergy or chronic frontal sinusitis ³⁾.

Frontal mucocoele

see **Frontal mucocoele**.

¹⁾

Lee AS, Schaitkin BM, Gillman GS. Evaluating the safety of frontal sinus trephination. *Laryngoscope*. 2010 Mar;120(3):639-42. doi: 10.1002/lary.20803. PMID: 20131361.

²⁾ ³⁾

Schramm VL Jr, Maroon JC. Sinus complications of frontal craniotomy. *Laryngoscope*. 1979 Sep;89(9 Pt 1):1436-45. doi: 10.1002/lary.5540890909. PMID: 481049.

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