

## Nasal dermoid with intracranial extension

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**Section:** Paediatric radiology

Case Type: Clinical Cases

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**Patient:** 5 years, male

### Clinical History:

A five-year-old male presented for investigation of a naso-frontal sinus.

### Imaging Findings:

A five-year-old male was referred for investigation of a naso-frontal sinus. There was no other pertinent past medical history. A clinical examination revealed a small pitted opening in the midline at the nasion. Based upon the location of the mass, the referring physician requested an MRI of the nose and anterior cranial fossa to exclude the possibility of a number of developmental congenital anomalies. A combined intracranial-extracranial operative approach enabled a complete excision of the mass, with an excellent clinical outcome.

### Discussion:

During the embryological development of the fronto-ethmoidal area, a projection of the dura extends through the embryonic foramen caecum between the developing nasal cartilage and the nasal bone. Congenital fronto-ethmoidal abnormalities result from a lack of the normal regression of this dural projection and occurs in one out of every 20,000–40,000 births. If the dura remains adherent to the skin, then a dermal sinus tract may extend from the midline nasal skin superiorly through the foramen caecum into the floor of the anterior cranial fossa. An abnormal regression of the dural diverticulum may also give rise to frontoethmoidal cephalocoeles, nasal gliomas and nasal dermoids. The clinical presentation of these congenital midline abnormalities tends to be similar, with symptoms of nasal obstruction and the presence of a nasal mass. The presence of a nasal dimple or a dermal sinus tract mandates an imaging study to search for a likely dermoid tumour. Nasal dermoids occur when skin elements are pulled along with the regressing dural diverticulum. A sinus tract extending between the skin surface and the anterior cranial fossa is seen in approximately half of all cases. Intracranial components are also seen in up to half of all affected patients. A sinus opening in the skin or a dimple is observed in up to 80% of dermoid or epidermoid cysts. The MR is the modality of choice in the evaluation of nasal dermoids and any possible intracranial extensions. Fine cut sagittal and coronal images are most helpful. T2 sequences are the best for imaging the entire length of the tract. T1 sequences are the best to detect the characteristic fat components within the mass. The fat found within the marrow of the normal crista galli should not be confused with a dermoid cyst. The treatment of nasal dermoids includes the complete resection of the mass and any associated sinus tract. An incomplete resection may lead to tumour recurrence or meningitis. An intracranial-extracranial operative approach is required to treat a lesion with an intracranial component. Imaging is vital in planning the surgical approach.

**Differential Diagnosis List:** Nasal dermoid cyst with intracranial extension.

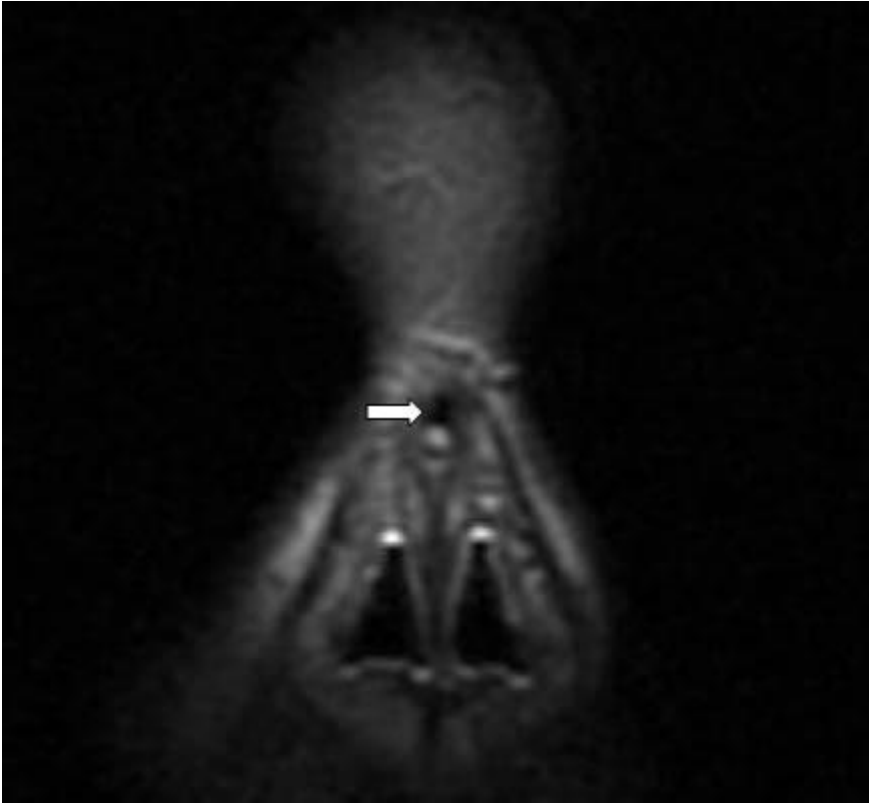
**Final Diagnosis:** Nasal dermoid cyst with intracranial extension.

**References:**

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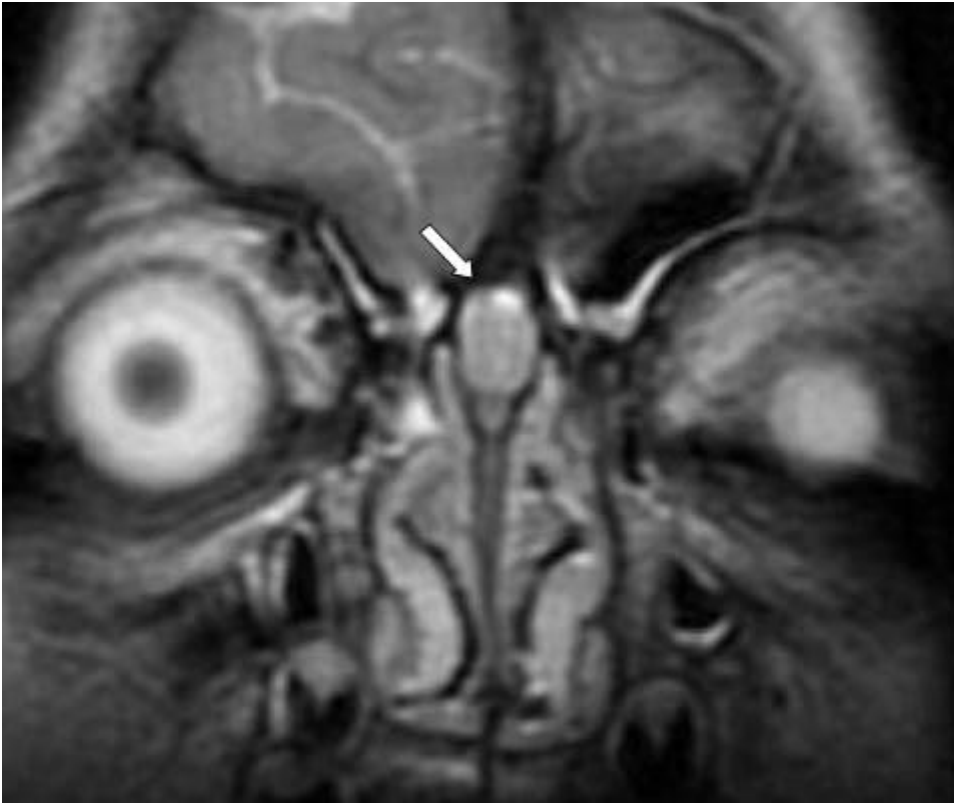
**Figure 1**

a



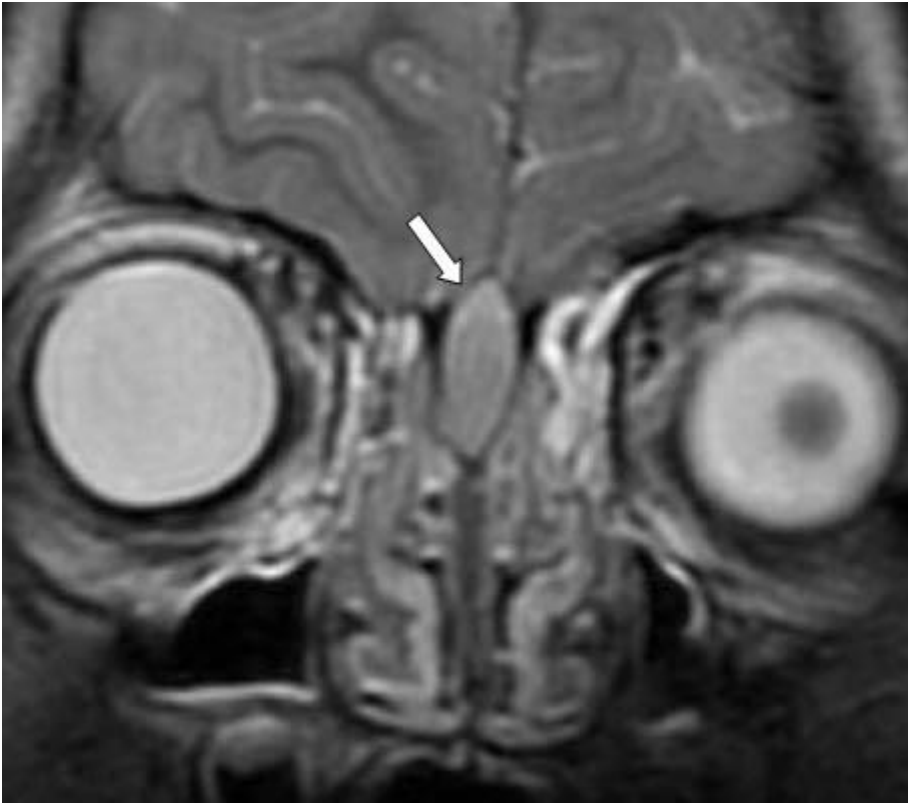
**Description:** A coronal T2-weighted image demonstrating a defect of the base of the skull at the junction of the frontal bone with the nasal bones. **Origin:**

**b**



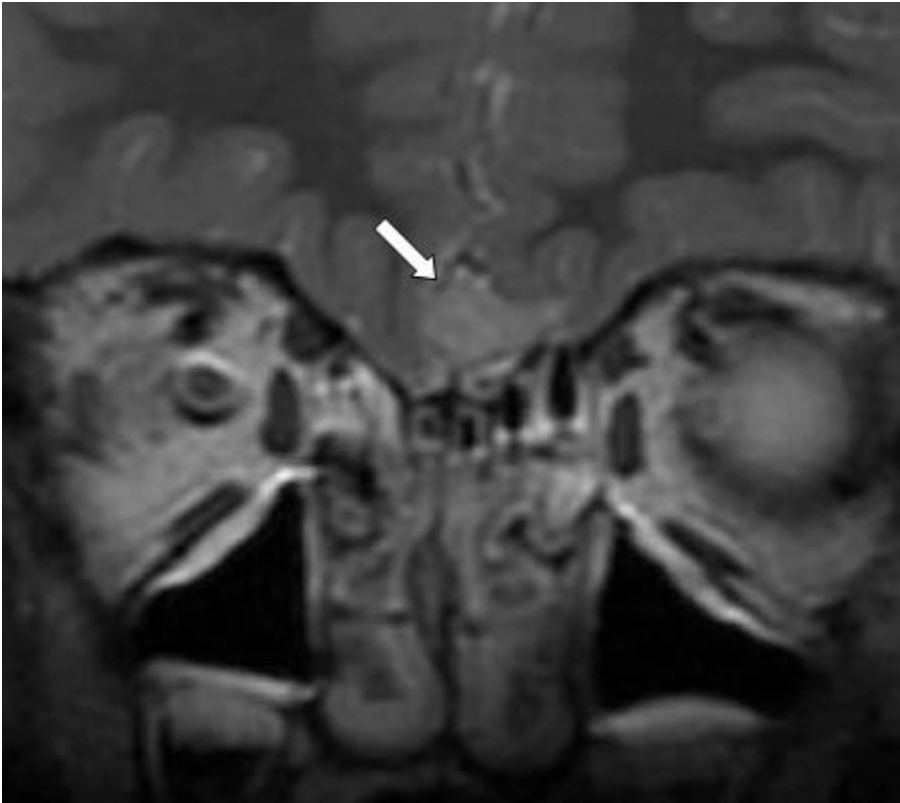
**Description:** A coronal T2-weighted image demonstrating a nasal dermoid mass extending through the defect in the skull base, into the floor of the anterior cranial fossa. **Origin:**

c



**Description:** A coronal T2-weighted image demonstrating a nasal dermoid mass extending through the defect in the skull base, into the floor of the anterior cranial fossa. **Origin:**

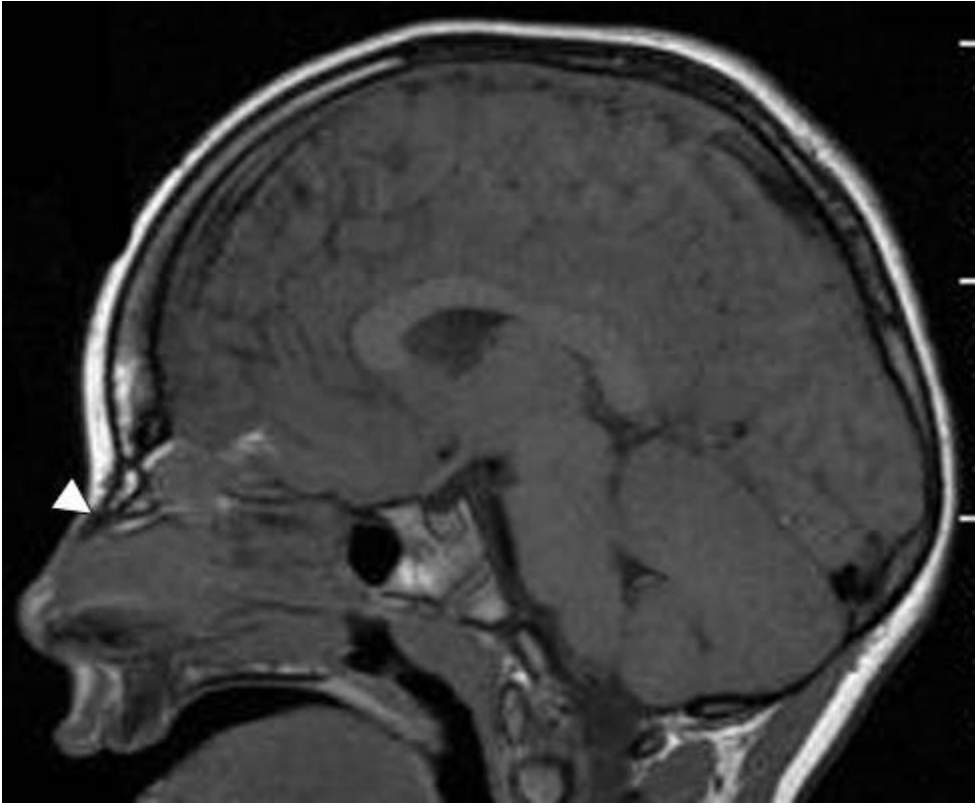
d



**Description:** A coronal T2-weighted image demonstrating a nasal dermoid mass extending through the defect in the skull base, into the floor of the anterior cranial fossa. **Origin:**

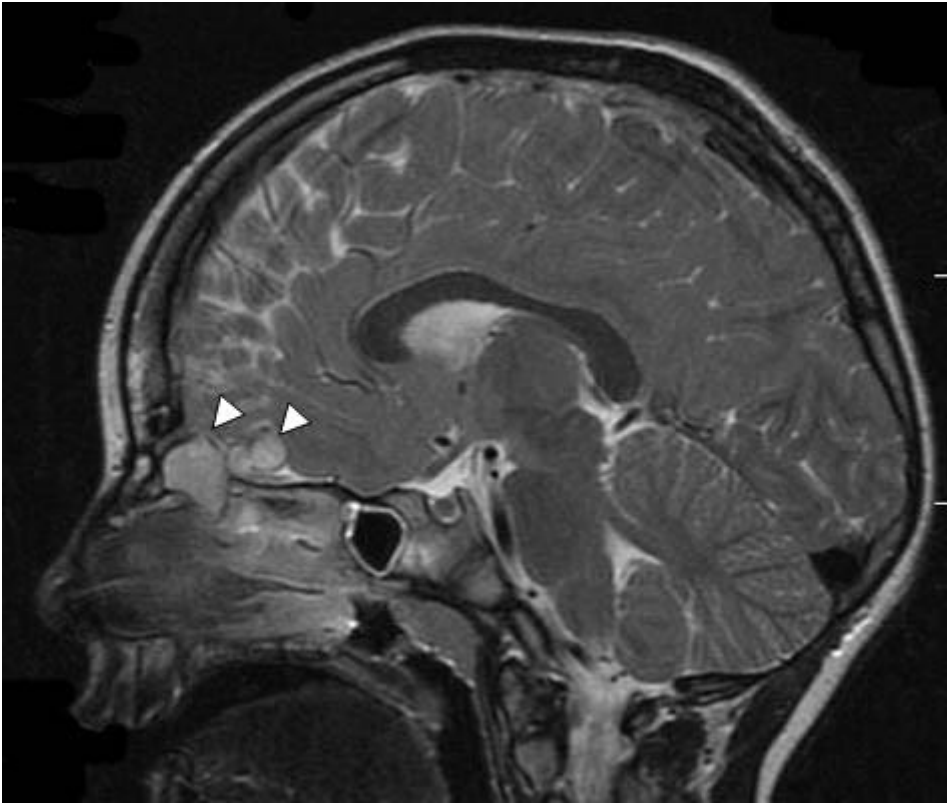
**Figure 2**

a



**Description:** A sagittal T1-weighted image demonstrating a defect at the base of the skull, at the junction of the frontal bone with the nasal bones. **Origin:**

**b**



**Description:** A sagittal T2-weighted image demonstrating a nasal dermoid mass extending through the defect in the skull base, into the floor of the anterior cranial fossa. **Origin:**