

A CASE OF DERMAL SINUS OF THE NOSE WITH FRONTAL SUPPURATION

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Congenital dermoid cysts and dermal sinuses of the nose are rare, but because of their interest over 80 cases have been reported (Ryan, 1948). Most of these are in journals concerned with plastic or oto-laryngological surgery, and never appear to have come within the province of the neurosurgeon. A few, however, presented with features which led to such diagnoses as osteomyelitis of the frontal bone, cerebrospinal fluid fistula, or meningocele. The case to be reported here may therefore be of interest to neurosurgeons.

The earliest account of the condition is that of W. Lawrence in the *London Medical Gazette* of 1837. Under the title "A Clinical Lecture" he described the common dermoid cysts at the outer canthus of the eye and also both a cyst and a dermal sinus on the nose. These were successfully removed. Several brief reports of cases have appeared in the present century, including one (Furniss, 1938) of dermoid cysts on the noses of identical twin boys. Larger series were described by New and Erich (1937) and Holmes (1942). A series of 14 cases, with a full review of the literature, was reported by Crawford and Webster in 1952.

In most cases the lesion is confined to the nose, although a track may extend in a complex manner into the nasal septum. Cases involving the frontal bones are rarer. Holmes (1942) and Davis and Berner (1948) reported cases in which the upper part of the track led to a depression in the frontal bone, and Benjamins (1936) and Ryan (1948) illustrate cases in which there was an actual defect in the frontal bone with the track reaching the dura.

Luongo (1933) and Brunner and Donnelly (1947) have given clear accounts of the formation of the nose, and have suggested a mechanism for the production of these lesions. The primitive cartilaginous nasal capsule is covered externally by a downward extension of connective tissue derived from the dura mater. Superficial to this again is the skin. The nasal bones develop by intramembranous ossification in a layer of loose tissue under the skin, and as they grow from each side towards

the midline they separate the skin from the connective tissue covering the nasal capsule. Failure of this separation or sequestration of a portion of this ectoderm will result in the formation of a dermal sinus or cyst which will in part extend deep to the nasal bones. If the lesion is at the upper part of the nasal capsule the track may reach the dura where it gives off its extension to the nasal capsule.



FIG. 1.—Appearance of the patient, showing the orifice of the sinus on his nose and the point where pus was aspirated on his forehead.



FIG. 2.—Radiograph of skull showing the defect in the frontal bone.

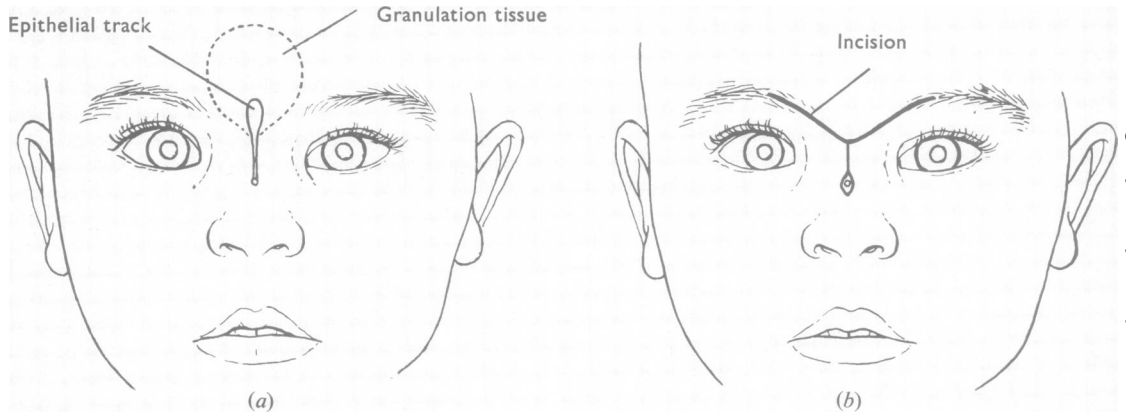


FIG. 3.—(a) Diagram of lesion. (b) Showing line of incision.

Case Report

R.A., a boy aged 10 months, had been noticed since birth to have a tiny pimple in the centre of the dorsum of his nose. Six weeks before admission a lump about the size of a pea developed above this at the nasion, and a few drops of clear fluid issued from the "pimple". During the next two weeks the lump enlarged and became inflamed. After a further week pus containing

Staphylococcus aureus was aspirated from a fluctuant swelling over the forehead. The boy was treated with tetracycline, and the inflammatory signs subsided leaving some residual swelling.

On admission the child was normal for his age apart from the local lesion (Fig. 1). This showed as a punctum on the dorsum of the nose, with a soft swelling 2.5 cm. diameter over the nasion and forehead. No fluid could



(a)



(b)

FIG. 4.—(a) Photomicrograph of track showing epithelial lining $\times 72$. (b) showing inflammatory and foreign body giant cells in the wall of the upper part of the track $\times 370$.

be expressed from the sinus, and no hairs were seen at its orifice. Radiographs of the skull showed a small defect between the nasal bones and at the lower end of the metopic suture (Fig. 2).

Under general anaesthesia a T-shaped skin incision was made across the eyebrows and down the nose, including the punctum. The sinus track was found to contain several dark hairs, and to extend up to the bony defect, where it ended in contact with intact dura. Above this the main bulk of the swelling consisted of a mass of granulation tissue (Fig. 3). The whole was excised, and the wound healed with a fine scar which will be largely concealed by the eyebrows.

Dr. C. Triep reported that sections showed a sinus track, lined by squamous epithelium with surrounding granulation tissue. Foreign body giant cells, related to hair fragments, were found (Figs. 4a and b).

Discussion

Neurosurgeons are aware of the occurrence of dermal sinuses in the spinal and posterior fossa regions (Logue and Till, 1952; Ingraham and Matson, 1954), and these lesions may extend into the neural tissues, being due to defective closure of the neural tube. The nasal dermoids never have such extensions, being formed in a different way at a later stage of embryonic development.

The condition is usually visible at birth or becomes evident in early childhood as a cyst at some point along the nose, or as the orifice of a dermal sinus with or without projecting hairs. In the latter instance, attacks of inflammation tend to occur with pus discharging from the orifice or the formation of an abscess in the upper part of the track. Such abscesses can cause difficulties in diagnosis if the underlying lesion is not recognized. Radiographs, however, usually reveal a gap between the nasal

bones in the midline, or, less commonly, in the frontal bone.

The surgical treatment of these lesions is, whenever possible, complete excision. In some cases the complexity of intranasal extensions compels the surgeon to be content to remove the superficial part of the track and to open the deep ramifications freely into the nasal cavity. In the cases where there is a bony defect in the frontal region, no fears of an intradural extension need be entertained, and such sinuses are usually quite superficial and easily removed.

Summary

A case of dermal sinus of the nose in which the track reached the dura is described. The lesion was successfully removed.

I wish to thank Mr. Murray A. Falconer, whose patient this was, for permission to describe the case. Thanks are also due to Mr. L. T. Cotton who referred the patient, to Dr. R. D. Hoare for the radiograph, and to the Department of Pathology, Maudsley Hospital, and the Department of Medical Illustration, Guy's Hospital, for the illustrations.

REFERENCES

- Benjamins, C. E. (1936). *Acta oto-laryng.*, (Stockh.), 24, 284.
 Brunner, H., and Donnelly, W. A. (1947). *Plast. Reconstr. Surg.*, 2, 497.
 Crawford, J. K., and Webster, J. P. (1952). *Ibid.*, 9, 235.
 Davis, A. D., and Berner, R. E. (1948). *Ibid.*, 3, 345.
 Furniss, F. W. (1938). *J. Laryng.*, 53, 314.
 Holmes, E. M. (1942). *Ann. Otol (St. Louis)*, 51, 662.
 Ingraham, F. D., and Matson, D. D. (1954). *Neurosurgery of Infancy and Childhood*. Charles C. Thomas, Springfield, Illinois.
 Lawrence, W. (1837). *Lond. med. Gaz.*, 21, 471.
 Logue, V., and Till, K. (1952). *J. Neurol. Neurosurg. and Psychiat* 15, 1.
 Luongo, R. A. (1933). *Arch. Otolaryng. (Chicago)*, 17, 755.
 New, G. B., and Erich, J. B. (1937). *Surg. Gynec. Obstet.*, 65, 48.
 Ryan, A. J. (1948). *Conn. med. J.*, 12, 218.