Dermoid cyst with tubular bifurcation and dermal sinus

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NASAL cysts and sinuses are rare. One finds very brief descriptions of these conditions in the text-books, but frequent reports appear in the literature, particularly in the Otolaryngology journals. Pratt found a case reported as early as 1817, and Hamilton (1960) found reference to this condition in the *London Medical Gazette* in 1837. Recently, a similar case was reported by Stirk-Adams (1965) from Birmingham. The case described below is the first encountered at this clinic.

Embryology

The origin of this cyst and sinus is mainly explained on the basis of the embryological development of the nose. Grunwald (1910), Luongo (1933) and Brunner & Donnelly (1947) described the development of the nose as beginning with a cartilaginous structure present at birth, forming the anterior wall of the cartilaginous

capsule. At this time the frontal bones and the nasal bones are both present. They are separated by a space called the fonticulus naso-frontalis. A space called the pre-nasal space exists between the nasal and frontal bones on the one hand and the cartilaginous nasal capsule on the other. This space extends from the brain to the tip of the nose, and in its proximal part is the teat-like projection of the dura. Normally, as growth progresses, the fonticulus naso-frontalis is closed. Dermal cysts are closely related to the dural projections mentioned above, and this was encountered in our case.

In the early embryo, the dura and the skin are in contact with each other. However, as development progresses, and the frontal and nasal bones condense, the space between these two structures develops and any ectoderm which fails to separate from the dura is carried into the pre-nasal space where the dermal cyst may later form. If it retains its connection with the skin, a sinus may be found. The cyst may form anywhere in the pre-nasal space. A primary sinus develops, due to the persistence of the embryological tract. Secondary sinuses are the result of a rupture of the cyst or of incisions.

Surgical excision of the cyst, along with its attachment to the dura and the tract under the nasal skin is the treatment of choice (Pratt, 1965).

Case report

A 12-month-old male child, C.G., was first brought to the E.N.T. Out-Patients on 16 July 1965 with a history of having a sinus over the dorsum of his nose from birth, discharging intermittently. There was also a history of a swelling over the naso-frontal region 2 weeks previously. Clinical examination showed no abnormality except a tiny sinus on the dorsum of the nose, about the junction of the bony and cartilaginous parts, and the size of a pin-head. Two weeks later the swelling in question was well seen extending over the naso-frontal region, and producing slight

FIG. 1. Diagrammatic representation of the cyst with its dural and cutaneous extensions (Pratt, 1965). (After Crawford & Webster, 1952).

FIG. 2. Photograph of the patient showing scar of operation on the forehead and a secondary fistula in the region of the glabella.

oedema around the eyes. A clinical diagnosis of dermoid cyst with secondary infection was made.

Routine X-rays and blood counts were normal, but a few days later this swelling had to be aspirated because it was very tense, and on the point of bursting. It was difficult to decide whether to proceed with radical excision in this state of infection or whether to control the infection in the first instance. However, after 2 weeks of antibiotic treatment, on 19 October, radical excision of the cyst and sinus tracts was done. Prior to surgery a sinogram was taken by injecting Lipiodol into the sinus. This showed the position of the tract under the nasal skin, but did not demonstrate its extension to the dura.

At operation the cyst was excised by transverse incision across the forehead. This was decided because there was already a scar on the forehead as a result of a previous drainage procedure. The lower skin flap was reflected inferiorly, and the

sac elevated from the frontal bones to the nasion. The outer table of the frontal bone was found to be missing. The nasal fistula was excised and delivered in the scalp wound, and the tract was found to be bifurcated. Deep processes of the bifurcation passed deep to the nasal bones and up to the anterior cranial fossa from the fonticulus nasal frontalis and the cribriform plate. It was attached to the dura, and in removing this tract a CSF leak developed. It was, therefore, thought wise to put a fascial and muscle graft to the floor of the anterior cranial fossa, and this proved sufficient to stop the leak. The graft was obtained from the thigh.

During the post-operative period the patient developed some infection under the skin flap, and this had to be drained. Subsequent recovery was uneventful, and the patient was last seen in December when all was well.

The histo-pathology report showed a sinus tract along with a squamous epithelium. In the opinion of the pathologist, whenever such a cyst is accompanied by a dermal sinus the diagnosis of a dermal cyst can be conclusively made.

Summary

The case of dermal cyst with tubular bifurcation of the tract and extension on to the dura is presented. A method of surgical excision of the cyst and its tracts is described.

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References

- BRUNNER, H. & DONNELLY, W.A. (1947) Nasal and auricular fistulae. *Plast. reconstr. Surg.* 2, 497.
- CRAWFORD, J.K. & WEBSTER, J.P. (1952) Congenital dermoid cysts of the nose. *Plast. reconstr. Surg.* 9, 235.
- GRUNWALD, L. (1910) Beiträge zur Kenntnis Kongenitaler Geschwülste und Missbildungen an Ohr und Nase. *Ohrenheilk.* 60, 270.
- HAMILTON, J.G. (1960) A case of dermal sinus of the nose with frontal suppuration. *J. Neurol. Neurosurg. Psychiat.* 23, 239.
- LUONGO, R.A. (1933) Dermoid cyst of the nasal dorsum. *Arch. Otolaryng.* 17, 755.
- PRATT, L.W. (1965) Midline cysts of nasal dorsum. *Laryngoscope*, 6, 968.
- STIRK-ADAMS, W.A. (1965) A bifurcating tubular dermoid of the dorsum nasi. *J. Laryng.* 79, 633.