CONGENITAL FISTULA OF LACRIMAL DUCT*

BY

MANMOHAN MALHOTRA

New Delhi, India

CONGENITAL fistula of the lacrimal duct is very rare, and is usually associated with other congenital anomalies (Duke-Elder, 1932, 1952; Gray, 1949; Spaeth, 1948).

The epithelium of the ducts and alveoli of the lacrimal gland is derived from a series of ectodermal invaginations in the region of the superior conjunctival fornix. Early buds form the orbital portion, while secondary buds from above appear later and form the palpebral lobe at the 40–60 mm. stage of the foetus. The stalk of the ectodermal invaginations, at first solid, are later canalized (50–55 mm.). The full development of the gland occurs at about 3 to 4 yrs. The gland ducts are about twelve in number, two to five being derived from the orbital lobe, and six to eight from the palpebral lobe; they all pass through the palpebral lobe as would be expected from their development. The majority of ducts open into the lateral part of the superior fornix, but a large duct (which may be called the infero-lateral duct) traverses the extreme outer end of the gland, passes just deep to the conjunctival epithelium, and opens a few millimetres lateral to and some distance below the external commissure.

The case described below is that of a little girl who had a congenital fistula of the right inferolateral lacrimal duct and right dacryocystitis with no associated deformity of the external canthus or elsewhere.

Case Report

A girl aged 7 years was referred to me on January 10, 1956, complaining of constant watering from both angles of the right eye—more from the outer angle where she was never able to keep the skin free of tears.

The watering increased to a continuous stream on weeping. The condition dated back to the first month after birth. She was also troubled by mouth breathing and snoring.

She had been treated by repeated probing of the right naso-lacrimal duct at the age of 9 months and again at 1 year, but with no benefit. There was no history of trauma to the eye or of any infectious or eruptive fevers, and she was otherwise normal.

Examination.—Pressure on the right lacrimal sac caused a mucoid regurgitation. The obstruction of the naso-lacrimal duct was also confirmed by syringing. There was constant watering from the lateral angle of the right eye. The tonsils were enlarged and there was a big pad of adenoids.

* Received for publication May 17, 1956.

Operation.—A right dacryocystorhinostomy, with no stitches for coaptation of the nasal and lacrimal mucous membrane, was performed, and the tonsils and adenoids were removed under general anaesthesia at the same time on January 15, 1956.

Result.—Because of the effect of the pre-operative hypodermic injection of atropine, the child did not complain of any watering from the eye, but next day she felt the sensation of water trickling from the lateral angle. The artificial opening of dacryocystorhinostomy was found to be freely patent on the fourth, eighth, and tenth days after the operation.

On the tenth day, a minute examination of the area near the lateral angle revealed that there was a tiny opening the size of a pinhead 5 mm. lateral to and 2 mm. below the external canthus from which tears were constantly flowing, the flow increasing to a stream on emotion. The margins of the opening showed natural furrows but no tuft of hair. A fine probe lacrimal was passed through the opening. It traversed a devious passage in the shape of an L, the horizontal limb passing deep towards the conjunctiva and then upwards just underneath the palpebral conjunctiva near the region of the fornix. The lacrimal probe is shown in position in the Figure; the node-like thickening on the probe just below the cutaneous opening is due to a teardrop.

Operation.—On February 6, 1956, an incision 0.75 cm. long, slightly curved, with the concavity directed towards the eye and encircling the cutaneous opening together with the surrounding furrows, was made. The dissection of the horizontal limb of the duct was aided by the passage of the lacrimal probe and two threads were passed through the furrowed skin around the opening; these were kept pulled forwards by the assistant. As the conjunctiva was reached the horizontal limb was freed and transplanted into the conjunctival sac.

Result.—On removal of the stitches on the fifth day, tear drops were seen flowing through the stitch holes and also through the wound. It was decided to help the wound to heal by coaptation with "Sello-tape", but on the tenth day tears were seen to be flowing through three holes instead of one.

Operation.—On February 20, 1956, in addition to the skin incision a wide opening in the conjunctiva of the lateral fornix was made. A plastic drainage tube of 0.6 mm. internal diameter was placed near the duct in the lateral fornix, and Michel's clips were applied to the cutaneous incision. The child was put on aureomycin, as penicillin injections failed to relieve the post-operative swelling of the lid. The drainage tube was removed on the fourth day, and the clips were removed on the tenth day after the operation.

Result.—The child was subsequently watched for a further fortnight, and this time the results were quite satisfactory.

Discussion

It is suggested that the cutaneous epithelium may have some part to play

FIGURE.—Lacrimal probe passing through cutaneous orifice. The node-like thickening on the probe just below the orifice is due to a tear drop. The scar near the inner canthus is due to a previous dacryocystorhinostomy.

in the development of the lacrimal gland. The inferolateral duct of the lacrimal gland is large and may take a great share in the discharge of tears into the conjunctival sac.

Some cases of lacrimal fistula of congenital origin have been described as opening a little distance above the tarsal plate (Mackenzie, 1830; Steinheim, 1875; Merlin, 1901; Terlinck, 1910; Gallemaerts, 1919; Cange and Duboucher, 1931; Schornstein, 1935; Alvaro and Sampaio Doria, 1937; Frey, 1938). These are frequently associated with tuft-like hairs around the orifice. A case of anomalous lacrimal ductule is described by Ling (1926), in association with deformity of the external canthus; the lids having failed to approximate at the lateral canthus, the ductule opened on the deformed canthus lateral to the usual site of the canthus.

In our case, congenital fistula of the inferolateral duct was not associated with any deformity of the external canthus or any tuft of hairs.

Summary

A rare case is described of congenital fistula of the inferolateral duct of the right lacrimal gland opening 5 mm. lateral to and 2 mm. below the well-formed external canthus, together with right dacryocystitis. There was no dissimilarity or abnormality in the dimensions or boundaries of the palpebral fissure on either side.

The closure of such a fistula presents practical difficulties.

Careful dissection of the duct up to the point where transplantation into the fornix is aimed at was followed by transplantation of the cutaneous orifice into the conjunctival sac.

A drainage tube into the conjunctival wound drained the tears and prevented them from passing through the cutaneous incision.

The edges of the skin incision were coapted by Michel's clips, which were removed after 10 days.

I am indebted to Dr. Satya Prakash of Connaught Place, New Delhi, for referring the case to me, and for his constant assistance and guidance. I also express my thanks to Dr. H. L. Dhal of Sir Ganga Ram Hospital, New Delhi, who gave the anaesthetic.

REFERENCES

- ALVARO, M. E., and SAMPAIO DORIA, A. (1937). *Rev. Oto-neuro-oftal.*, **12**, 283.
 CANGE, A., and DUBOUCHER, H. (1931). *Arch. Ophthalm.*, **48**, 161.
 DUKE-ELDER, S. (1932). "Text-book of Ophthalmology", vol. 1, p. 365. Kimpton, London.
 ——— (1952). *Ibid.*, vol. 5, pp. 4696, 4697.
 FREY, G. (1938). *Arch. Ophthalm. (Chicago)*, **20**, 685.
 GALLEMAERTS (1919). *Ann. Oculist. (Paris)*, **156**, 127.
 GRAY, H. (1949). "Gray's Anatomy", ed. T. B. Johnston and J. Whillis, 30th ed., p. 137. Longmans Green, London.
 LING, W. P. (1926). *Amer. J. Ophthalm.*, **9**, 1.
 MACKENZIE, W. (1830). "A Practical Treatise on the Diseases of the Eye". Longman, Rees, Orme, Brown, Green and Longman, London.
 MERLIN (1901). *Wien. med. Wschr.*, **51**, 719.
 SCHORNSTEIN, T. (1935). *Arch. Augenheilk.*, **109**, 86.
 SPAETH, E. B. (1948). "Principles and Practice of Ophthalmic Surgery", 4th ed., chap. 3. Lea and Febiger, Philadelphia.
 STEINHEIM (1875). *Klin. Mbl. Augenheilk.*, **13**, 303.
 TERLINCK, H. (1910). *Z. Augenheilk.*, **24**, 522.