INTRANASAL DACRYOCYSTOSTOMY.*

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IN his introduction to a paper on this subject (*British Journal of Ophthalmology*, May 1919), Dr J. V. Paterson, ophthalmic surgeon to the Royal Infirmary, Edinburgh, states that the effective treatment of disease of the lacrymal passages has always presented difficulties to the surgeon. This is especially true of hospital patients, who very often do not come for treatment until the disease has reached an aggravated form. In many of these cases there is great dilatation of the sac with regurgitation of muco-pus on pressure, or there is tear sac abscess, the result of the spread of the septic process to the tissues round the sac.

The old treatment of dilating the tear passages by frequent probing is, in nearly all cases, quite ineffective. Treatment by the wearing of styles, or the introduction of threads to act as drains, has never been widely adopted, partly owing to the trouble it involves, and partly to the success being very moderate.

So troublesome are these cases of dacryocystitis that most ophthalmic surgeons have largely employed the drastic method of complete excision of the tear sac. This operation, however, is obviously not an ideal one, its aim being to remove the diseased tear sac and not to establish drainage into the nose and restore the function of the parts involved. After excision, a certain amount of watering of the eye nearly always exists and is a lifelong source of annoyance to the patient.

In Dr Paterson's experience, the intranasal operation has given results very much better than those following excision. After carefully watching the success achieved by intranasal dacryocystostomy, Dr Paterson feels confident that this method of treatment will eventually be widely adopted.

I am deeply indebted to Dr J. V. Paterson and Dr A. H. H. Sinclair for sending many of their cases to me for operation. The first paper by Dr Paterson and myself on this subject (*vide supra*) was published in 1919 and reported on 50 consecutive cases. Since then 42 patients have been operated

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upon. In 37 of these one tear sac was involved, and in 5, both tear sacs = 47 operations.

The *duration* of the dacryocystitis varied from three months to twenty years. Of the 42 cases, 36 were hospital and 6 were private patients. *Sex.*—31 of the patients were females and only 11 were males. *Age.*—28 of the 42 patients were between thirty and fifty years of age.

Previous Treatment. — Most of the patients had been previously treated in the Eye Department by dilatation of the punctum and canaliculus, washing out the tear sac and the passage of probes into the nose. In at least 5 cases the patient had an abscess around the tear sac at the time of operation.

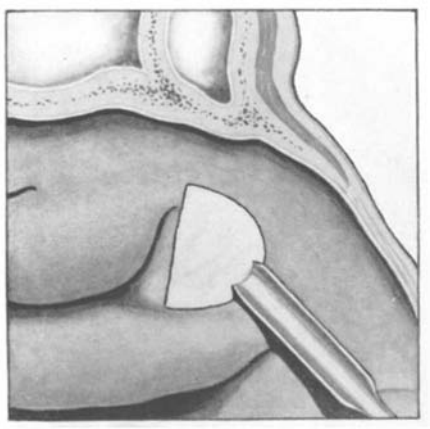
Condition of Nose.—In 10, the nasal septum had to be resected in order to give access. In one case, due to a shrapnel wound, the operation was difficult on account of adhesions. The general conclusion come to was that slight intranasal abnormalities had little or nothing to do with the commencement of the tear sac trouble. The findings, however, do not negative the view that the dacryocystitis had originally been due to infection passing up the nasal duct from the nose.

Tear Sac.—The great majority of the cases showed considerable dilatation of the tear sac. Several of the patients remarked that the tear sac trouble became acute from time to time, with comparatively quiet intervals.

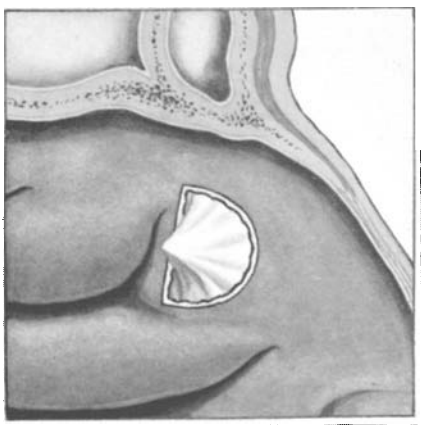
Technique.—Heroin (gr. $\frac{1}{12}$) and atropin (gr. $\frac{1}{100}$) are injected subcutaneously before operation, and the region in front of the anterior end of the middle turbinal is packed with strips of gauze wrung out of 10 per cent. cocain with adrenalin. In children a general anæsthetic is necessary. Even adult patients complain of the removal of the bone with gouge and hammer; indeed, since 1920, a general anæsthetic has always been given, even to adults. When anæsthesia is complete a gag is inserted and a naso-pharyngeal plug introduced through the mouth. (Submucous resection of the nasal septum, when necessary, is always carried out at the time of the tear sac operation.) The mucosa covering the inner surface of the frontal process of the superior maxilla is injected with 0·25 per cent. novocain with adrenalin.

A few minutes later a D-shaped incision is made just in front of the anterior end of the middle turbinal, the curved portion of the incision anteriorly and the straight portion

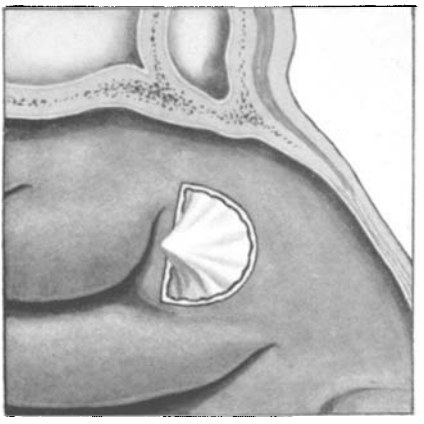
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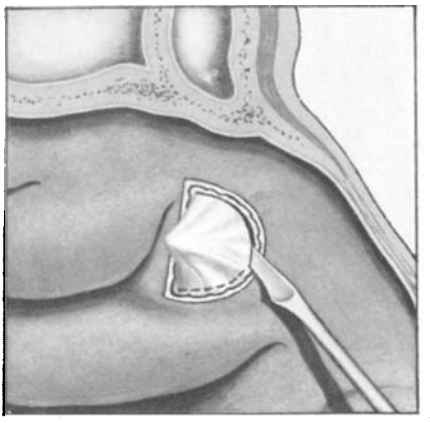
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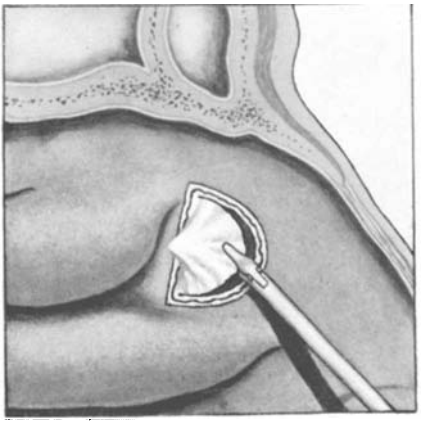
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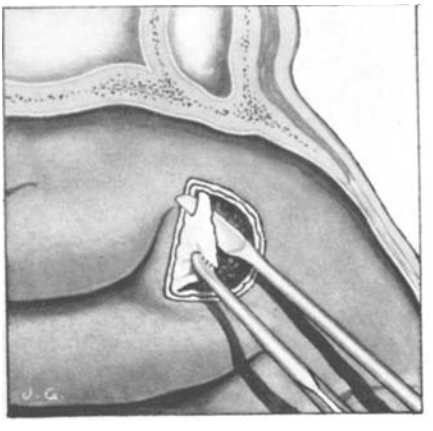
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posteriorly. With the sharp periosteum elevator this piece of mucous membrane is raised up and *entirely removed* with forceps, exposing the inner surface of the frontal process over an area about half the size of the middle finger-nail (Fig. 1). An assistant now places his finger, covered with gauze, over the sac externally. With the gouge and hammer the bone in the exposed area is removed, uncovering the lacrymal sac, which in the majority of these cases at once bulges inwards towards the nasal cavity (Fig. 2). Sometimes the most anterior of the ethmoidal air cells is opened up, but the thin pink lining membrane of the air cell is not likely to be mistaken for the dense bluish-white wall of the tear sac.

When a sufficient area of the sac has been exposed, a small piece of gauze wrung out of 5 per cent. cocain with adrenalin is packed into the region of the tear sac and the intranasal operation temporarily abandoned, while the punctum is being dilated and the lacrymal probe passed into the sac. The nasal speculum is now reintroduced and the inner wall of the sac made to bulge inwards by pressure on the lacrymal probe carried out by the assistant (Fig. 3). The sac is next incised with a small, sharp-pointed, curved knife, as far forward as possible (Fig. 4). A pair of small double-cutting forceps is now introduced, so that the female blade lies inside the sac, while the male blade lies against the medial wall of the sac (Fig. 5). On closing the forceps, a piece of the inner wall is punched out, and this is repeated till a sufficiently large opening has been made. As an alternative, one may grasp the inner wall with Paterson's long mouse-toothed forceps and excise the inner wall with the small curved bistoury (Fig. 6). The excision of the inner wall of the sac is the most difficult and also the most important part of the operation. The opening of the sac is almost invariably accompanied by a free escape of pus into the nose. In several cases the pus had a foul odour.

Difficulties.—In 15 cases the bone of the frontal process of the superior maxilla was very thick, while in 6 cases there was considerable bleeding. (These are the two main difficulties in the operation.) In one early case the hæmorrhage was very severe, but, when the facial artery on the same side was compressed by an assistant, the bleeding was at once controlled, so that the operation could be completed successfully. In the majority of cases the operation occupied only

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from ten to fifteen minutes; but in a few instances it extended to half an hour.

No *after-treatment* is necessary. In almost all cases the patient states on the morning after the operation that the tears are now going "the right way."

Complications.—Fever, swelling, and redness over the region of the sac occurred in one case. In 4, there was a sufficient amount of bleeding into the tissues to justify the use of the term "black eye."

Stay in Hospital.—The average stay in hospital was four days.

Results.—In the earlier series of 50 cases (1915 to 1918) already published, 48 reported; 38 of these may be regarded as complete cures (78 per cent.); 5 cases as considerably improved (11 per cent.); and 5 cases as comparative or complete failures (11 per cent.).

When a new operation is introduced, there are always a large number of cases for the first few years, because there has been an accumulation of patients who could not be satisfactorily dealt with by older methods. Later on, when the accumulation has been worked off, one has only to deal with the normal yearly quota. This explains why the intranasal tear sac operation is not so common now as it was soon after its introduction.

In the present series of 42 cases (1919-1924) 31 reported. In 4 of the 31 cases both tear sacs had been operated upon, making in all 35 operations. Of the 35 operations, 23 may be regarded as complete cures (65·5 per cent.), 3 after a second operation. Of the unsuccessful cases, 1 continued to have abscesses each time she became pregnant. In 9, the tears continued to run over the cheek, 1 in spite of re-operation. One or 2 stated that lacrymation occurred only when exposed to a cold wind. In 2, the tear sacs were later excised by the ophthalmologist.

In several of the failures, the ophthalmic surgeon reported, when he referred the patient to me, that the lacrymal probe could be passed quite easily and that fluid entered the nose, so that there was no actual obstruction of the duct. In spite of these facts, however, the eyes watered. My experience of these cases of epiphora without dilatation of sac and empyema is that they do *not* give a satisfactory result after West's operation.

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Intranasal Dacryocystostomy

According to Freiberg (quoted by Knutson), the canaliculi force the tears forward, functioning like a regularly working pump. Freiberg considers that the prognosis of the operation depends on the forcing power of the canaliculi.

Recurrence of the dacryocystitis takes place in about 25 per cent. of the unsuccessful cases. As a rule, the recurrence is noticed within two months of operation, and is due to failure to remove a sufficiently large portion of the inner wall of the tear sac. Such recurrences may be dealt with at a second operation, which is of course a comparatively easy matter, as the bone has been previously removed. In several of these a successful result was obtained from re-operation.

REFERENCES.—Paterson, J. V., and Fraser, J. S., "Intranasal Dacryocystostomy," *British Journal of Ophthalmology*, May 1919. Knutson, E., "On Endonasal Operations of the Lacrymal Sac according to West," *Acta Oto-Laryngologica*, vol. iii., fasc. 1 and 2, p. 126.

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