DACRYOCYSTORHINOSTOMY*

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EVER since Toti (1904) recommended dacryocystorhinostomy, its application has been widespread and a number of technical modifications have become available. However, accurate suturing of anterior and posterior flaps gives better results (Dupuy-Dutemps and Bourguet, 1920). The insertion of these sutures is technically the most difficult part of the operation and requires much patience, especially in dealing with a friable mucous membrane and sac. This short paper presents factual observations on forty cases in which suturing of the two flaps was greatly facilitated by the use of a special needle, which combines the advantages of both the Dupuy-Dutemps miniature aneurysmal needle and Reverdin's needle, but has the added advantage that laceration is infrequent. Thus we were able to include in this series cases of chronic dacryocystitis with fistula and those of acute dacryocystitis rendered quiescent where the mucous membrane is likely to be friable.

The cases in which dacryocystorhinostomy was undertaken are analysed in the Table.

TABLE
RESULTS IN FORTY CASES, BY CONDITION AND TECHNIQUE

Condition	Number of Cases	Suturing			No. Successful
		Anterior Flap Only	Posterior Flap Only	Both Flaps	
Simple chronic dacryocystitis	**23	1	—	22	22
Large atonic sac with mucocoele	6	—	—	6	6
Chronic dacryocystitis with fistula	5	—	—	5	5
Acute dacryocystitis rendered quiescent	5	1	—	4	5
Pseudo sac after • dacryocystectomy	1	—	1	—	1

** Includes cases with bilateral sac operations

* Received for publication December 29, 1959.

The age and sex incidence of these patients is shown in Fig. 1, which suggests that dacryocystitis is most often seen in the 3rd to the 5th decades. The youngest child in this series was 6 years old.

Fig. 1.—Age and sex of forty patients.

Operative Technique

In most of the patients the operation was performed under local anaesthesia, but in children general anaesthesia was administered by the endotracheal route. The nasal cavity is packed the night before the operation with ribbon gauze soaked in Argyrol-Ephedrine and with anaethaine 2 per cent. with adrenaline. The usual premedication to alleviate apprehension is given to all adults.

Exposure of Sac.—We prefer to make the incision well forward, straight and boldly down to the bone in one sweep (Hallum, 1943, 1948). A vertical incision is made 2 cm. long with its upper limit level with the inner canthus and 1 cm. nasally. With a periosteal elevator the entire bony surface is exposed and the soft structures including the lacrimal sac are retracted laterally away from the lacrimal fossa.

Bone Resection.—A sharp chisel is placed 7 mm. anterior to the anterior lacrimal crest and parallel to it, and a cut is marked by gentle tapping (Jain, Sethi, and Prakash, 1955). This line is enlarged to 1.5 cm. so that its lower end is level with the commencement of the naso-lacrimal canal. Then two horizontal cuts about 1 cm. long are made from the upper and lower ends of the vertical cut laterally towards the lacrimal fossa. Deepening there an osteum measuring 1.5 × 1 cm. is formed, and its edges are rendered smooth by Citelli's punch.

Incision of Mucosal Flap.—A probe is passed through the inferior punctum and the canaliculus into the sac, and pushed medially to elevate the medial sac wall. A stab wound is made in it with a used cataract knife and enlarged upwards and downwards, the ends being cut in an “I” shape. This results into two flaps in the medial sac wall.

The nasal mucous membrane is incised by two horizontal cuts at the upper and lower end of the exposed portion. Then a vertical incision is made with the formation of two nasal flaps. The vertical flap is so placed as to make anterior flap bigger than the posterior.

The nasal pack is now removed.

Suturing of Mucosal Panel Flaps.—In this series we used a special needle of our own design (Fig. 2), which makes this otherwise difficult procedure very simple with no laceration. The posterior flaps of the nasal mucous membrane and sac are joined first, and the anterior flaps afterwards, using black silk sutures.

Fig. 2.—Needle.

Closure of Incision.—The wound is now dusted with penicillin powder. Soft tissue including the orbicularis is approximated by a few interrupted 4/0 catgut deep sutures and the skin wound is closed by continuous subcuticular stitches using 00 black silk. Penicillin drops and Irgafen eye ointment are instilled into the conjunctival sac.

A layer of sterile rolled gauze is placed over the incision and a firm dressing is applied.

Post-operative Management

The patient rests in bed in the sitting position for 24 hrs, and antibiotics and sedatives are given when required for 4 to 5 days. In all cases the first dressing is done after 24 hrs. Pressure is applied under fresh rolled gauze over the stitch-line to express any collection of serum or blood. This is quite important, as sometimes a streak of blood may be found emerging from the nasal end; retention of blood clot or its subsequent organization may partly or wholly block the passage. If no particular reactionary swelling occurs, then the eye and the wound are left open.

The nasal cavity is inspected and cleaned gently to remove any blood clots that may be present. On the 4th or 5th day syringing is done with 5 to 6 ml. penicillin solution (5,000 units/ml.) combined with 0.25 per cent. of 0.5 to 1 ml. hydrocortisone suspension. On the 6th day the skin stitches are removed by pulling them from one end. Syringing is repeated once every week for a month.

Complications

Haemorrhage from the skin incision was rare and in no case was the angular vein involved. However, in one case, bleeding from the wound edges was continuous and could not be checked by adrenaline packs. When Jelfoam was applied and the skin closed, the bleeding stopped. Fracture of the lacrimal bone occurred during chiselling in two cases in which the bone was very friable, otherwise this complication was not present.

Laceration of nasal mucous membrane occurred in five cases during the formation of the ostium; in two of these it was superficial and there was no difficulty in suturing the anterior and posterior flaps, but in three cases only two anterior and one posterior sutures could be placed and that with difficulty.

Results

All these cases were followed-up for one month in the hospital, but once they were discharged follow-up was not possible in every case. Most of them live in the suburbs or in distant places, and are too poor to undertake the unnecessary expense of a journey unless the symptoms persist. However, fourteen patients could be followed-up for from 3 months to one year and in them the results were quite satisfactory and the passage remained patent. However, in one case, although the patient was relieved of epiphora, no fluid could enter the nose on syringing the sac, so that the operation was of doubtful success.

Slight puckering of the stitch line occurred in one case only. The stitch-line usually becomes inconspicuous within 2 to 3 months of the operation, which is a point of some significance for female patients. This is probably due to subcuticular stitching and to our open method of post-operative management.

Discussion

Although mucocoele and chronic dacryocystitis with atonic sacs offer the most favourable prognosis for dacryocystorhinostomy, favourable results

were obtained in five cases with lacrimal fistula and five cases with acute dacryocystitis, first rendered quiescent by medical treatment. Obstruction of the lower canaliculus, however, is an absolute contraindication to dacryocystorhinostomy.

Dacryocystorhinostomy is not favoured in quite young children but even in them it is not contraindicated (Stallard, 1958). Four of our patients were under 10 years of age and the youngest in this series was only 6 years old. This child, with one eye blind, came with a hypopyon ulcer and a lacrimal fistula in the "good" eye. In his case the puncta were temporarily blocked with heat cautery. The hypopyon ulcer healed with the usual treatment, and later a dacryocystorhinostomy with a small ostium and with free dissection of the fistulous tract was successfully performed. The passage has remained patent up till now.

In one case, even after previous dacryocystectomy elsewhere, the sac removal was incomplete and a pseudo-sac had formed in the bottom of the lacrimal fossa. We succeeded in doing a anastomosis of the posterior flaps only and as a result the epiphora was relieved and the passage has remained patent up till now.

A more medially-placed incision (Hallum, 1948) well forward (1 ml. medial to the inner canthus) made straight and boldly down to the bone has its advantages that the angular vein is not cut; and mongoloid folds (as reported by Lyle, Cross, Simpson, and Frazer, 1946) are absent in a laterally placed incision. As the skin incision and sutured flaps are at different levels, blockage by the development of scar tissue is infrequent.

The apposition of the flaps is the most difficult part of the operation and this factor has discouraged many surgeons in the past from performing the dacryocystorhinostomy, which is an otherwise simple operation for the relief of epiphora caused by blockage of the naso-lacrimal duct. The procedure is simplified and facilitated by the above-mentioned needle. Reverdin's needle, which has been used by some surgeons, has the disadvantage of causing lacerations, especially in dealing with a friable sac and mucosa. Moreover, with our needle it is much easier to suture the flaps, and it is our practice to use this needle for every case of dacryocystorhinostomy in this hospital.

Subcuticular skin stitches render the incision line inconspicuous and in our opinion a deep catgut suture helps to spread the soft tissues which goes a long way towards producing a normal canthal appearance.

The success of the operation largely depends upon the correct apposition of the two flaps. It is difficult to agree with Shuttleworth (1949) that the exact technique of operation does not affect the ultimate result. The apposition of the flaps is rendered very simple by the use of our needle and we have never yet found difficulty in approximating the flaps.

The open method of management of wound healing and the subcuticular sutures make the line of incision very inconspicuous.

Post-operative syringing with cortisone solution is helpful in preventing closure by granulation tissue and subsequent fibrosis, particularly where the flaps have not been perfectly apposed.

We are indebted to Dr. L. R. Sarin, D.O.M.S., M.R.C.P., Medical Superintendent, S.M.S. Medical College Hospital, Jaipur, for permission to publish the cases admitted to this hospital. We are also grateful to Dr. B. C. Sharma, D.O. (Oxon.), Professor of Ophthalmology, for his valuable suggestions.

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