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AN OPERATION  
FOR THE  
RADICAL CURE OF STRICTURE OF THE  
LACHRYMAL DUCT,

WITH  
DESCRIPTION OF A STRICTUROTOME.

BY  
CHARLES HERMON THOMAS, M. D.





AN OPERATION FOR THE RADICAL CURE  
OF STRICTURE OF THE LACHRYMAL  
DUCT, WITH DESCRIPTION OF A STRIC-  
TUROTOME.\*

BY CHARLES HERMON THOMAS, M. D., OF PHILADELPHIA.

*Fellow of the College of Physicians of Philadelphia, etc.*

All who have busied themselves with the surgery of the lachrymal passages must be aware that surgeons have not agreed upon a satisfactory method for the treatment of stricture of the lachrymal duct. With respect to the possibility of radical cure, the attitude of many is one of discouragement—perhaps even of disgust. Of all procedures in use, none is so generally employed as dilatation by probes. But the length of time which this method of treatment requires, the amount of trouble it involves, together with the uncertainty of permanent good results—all of which its advocates admit—make it desirable that some more effective procedure be adopted.

Influenced by the results obtained by French surgeons in internal urethrotomy, Stilling, then of Hesse-Cassel, published a brochure in 1868, detailing a new method of treating stricture of the lachrymal passages by internal incision, an operation devised by him, and which he was the first to make effective. My attention was at once attracted to this paper. The operation strongly appealed to me as a good one, and

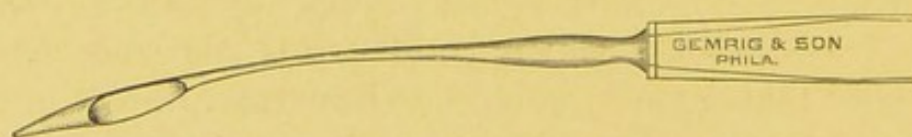
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\* Read before the American Medical Association, Section of Ophthalmology, 1892.

correct in principle. But I believed that the instrument which he proposed was not altogether well adapted to the purpose for which it was intended. In the first place, the knife, being short, straight and rigid, is not readily applicable to the bony canal, entrance to which, moreover, is more or less impeded by the overhanging brow—an obstacle which all who have attempted to pass a straight Bowman's probe have doubtless encountered. Then the rounded cutting point and tapering blade—broadest where it joins the shank—make an instrument which one might naturally shrink from introducing into such a passage.

To meet these apparent objections, I devised an instrument which was made for me by J. H. Gemrig & Son, in August, 1869, and which has been subjected to the test of use in my own hands, and some others, during the more than twenty-two years which have followed. The results have been so wholly satisfactory as to lead me to welcome the invitation to present the subject here, especially as I have delayed publishing any account of it till now.

The instrument consists, besides the handle, of shank, blade, and tip. Its length, exclusive of the handle, is  $5\frac{1}{2}$  cm. The shank is of untempered steel, to give it



flexibility, and 4 cm. in length. The flexibility of the shank is such as to permit the instrument to be bent into any curve found convenient for introduction into the canal; thus forming a probe, dilator, and knife combined. The cutting blade is 7 mm. in length and 3 mm. in width, the whole terminating in a conical tip, blunt at the point, and equal to the blade in length. The conical tip serves at once as a guide and a



dilator for the cutting blade which follows, and also as a protector of the soft parts during the introduction and withdrawal of the instrument. The handle does not descend below the level of the brow in operating.

A considerable personal experience in urethral surgery, and especially in internal urethrotomy, had prepared me to regard Stilling's insistence on the analogy between stricture of the urethra and of the lachrymal passages as in the main justifiable; and, I may add, as a false passage in the surgery of the urethra is, under all circumstances, to be sedulously avoided, so in the treatment of lachrymal stricture like considerations are applicable, and like care is to be exercised. As in operation for stricture of the urethra by internal urethrotomy incision is properly preceded by dilatation, not as a method of cure, but as a necessary preliminary to the introduction of the cutting instrument into the lumen of the canal, so in incision of strictures of the lachrymal passages like precautions should be taken, allowance being made for the difference of structure in the two cases.

From this point of view Stilling's knife is defective; there is no certainty that its rounded cutting end will enter the narrowed lumen of the duct, and that the downward thrust may not carry it through the tissues alongside of the true passage, and thus force a false one. And a false passage once made, the subsequent incisions taking their start therefrom may result in the formation of a canal whose walls, being devoid of mucous membrane, consist of cicatricial tissue throughout. This danger is obviated by the conical tip of the stricturotome here described, serving, as it does, to guide the blade safely into the duct, and to dilate the strictured part, so as to allow of the blade's easy passage through and beyond it.

From the foregoing it is clear that, while the initial incision with the Stilling knife is necessarily made as a



thrust with a cutting pointed instrument without a guide, and is, therefore, to a considerable extent a chance thrust in the dark, the incision with the stricturotome here proposed is a draw-cut from beyond the stricture upward and through it. The incision in the latter case is made at a perfectly definite point of selection—the seat of the stricture—and the instrument is at all times under perfect control, and ready to be used either as an exploring, dilating, or cutting instrument, as the exigencies of the operation may require.

In operating, the first step consists in slitting the canaliculus, the lower if a style is to be used, otherwise the upper. This is accomplished more conveniently with a small grooved director and Beer's knife than with Weber's knife. In making this incision, two points are to be observed: the cut is to be made along the inner edge of the lid, the edge of the knife being directed somewhat backward and towards the eye, so that the groove formed may be in a favourable position to receive the tears; and the opening into the sac must be made sufficiently large to permit the free entrance of the necessary instruments. This latter may be best accomplished with the point of the knife, before the director is withdrawn. An obstructing ledge of tissue is usually found at the inner end of the groove, formed from the lower canaliculus, which offers an impediment to the passage of instruments, and even of tears. This obstruction may be divided later by the stricturotome during its withdrawal at the close of the operation.

A Bowman's probe, or, better still, the flexible probe of Dr. Williams, of Boston, is now to be inserted to explore the canal, and to note the location and calibre of the first stricture encountered. The probe being withdrawn, the stricturotome, well oiled, is introduced, special care being taken to place the point of the instrument within the grasp of the stricture. Strictures impermeable



to ordinary probes, and which allow only the passage of an Anel's probe, will be found permeable to the conical tip of this instrument. The tip being engaged in the stricture, gentle, continuous pressure is to be made, and the blade carried through and beyond the contraction. It cannot be too strongly insisted upon that exploration of strictures in this locality is to be conducted with extreme deliberation and patience; all instruments should be introduced by coaxing, and never by force. More than one sitting may be necessary.

The blade being now caused to engage within the stricture, incision is made completely dividing the tissues at the strictured point, even to the bone, and in at least two different directions. The instrument should then be moved laterally in all directions, to make sure that no narrowing remains; and before withdrawal it should be carried within the nasal fossa as an exploring instrument, to learn if any other stricture be present, which, if found, should also be incised. By far the most common seat of stricture of these passages is at the junction of the sac and duct; only occasionally will a stricture be found at the nasal extremity of the duct. A little bleeding at the nose and at the inner canthus is the only external indication that an operation has been performed. The whole operation is singularly free from pain, and with cocaine the pain becomes quite insignificant.

Stilling, and those who have used his instrument, describe more or less considerable hæmorrhage from the nose and ecchymosis of the lower lid as the ordinary results of operation, due, no doubt, to the somewhat extensive and unnecessary cutting of healthy structures, which unavoidably attends the use of such a knife as his, but which conditions do not exist in the operation as here described, the incision being limited to the parts affected.



As regards after-treatment, I have usually introduced a large leaden style, measuring 8 to 9 mm. in circumference, with the upper extremity bent at a right angle, and so reduced in size as to drop into the open groove formed of the divided lower canaliculus, where it lies concealed. This is removed, at first every day or two, while the passage is washed; after the first ten days it need not be disturbed for a week or more at a time. At the end of a few weeks the style may be removed altogether.

Stilling insists that all after-treatment looking to the mechanical separation of the parts with a view to preserving the space gained by the incision is not only needless, but even harmful, in consequence of the subsequent inflammation said to be thus produced; and he therefore discountenances the use of either probes or styles under such circumstances. With this conclusion, however, my experience does not agree, provided that not a vestige of the stricture remains uncut, and that the passage be so large that the style goes loosely into place. Under these circumstances I have found that the style at least does no harm; while in some instances, where the parts are swollen and the cut surfaces are thus kept in apposition within the bony canal, it is likely to prove effective in keeping the severed parts asunder. Experience, both with and without the style, leads me to believe that, while success is likely to attend both methods of after-treatment, the use of the style is much to be preferred.

In forming an estimate of the relative value of the two methods, dilatation and incision, it is to be observed that by both a permanent enlargement of the calibre of the duct is the object sought to be attained. In both cases increased calibre can be secured only by structural changes in the walls of the duct. But in each, totally different principles as well as procedures underlie the



results aimed at. By the process of probing—gradual dilation—the change is sought to be effected through absorption of the tissues forming the stricture, by means of the pressure of the impinging probe, with a re-disposition of new tissue elements to compensate for the increased size of the duct. Such a process is slow and tedious at the best, and finally uncertain in its results, and for these reasons practically unavailable. Stricturotomy, on the contrary, at once effects an enlargement of the canal, and the “splice” which is formed at the seat of the incision soon fills up the gap, giving the reasonable expectation of the permanent patency of the so-enlarged canal. It may be added that while the canal, as produced by stricturotomy, may be larger than is necessary for the performance of the normal functions of the part, it is certain that the space provided by probing is usually altogether deficient in size. The larger size, in the one instance, however, does no harm, while the small size produced in the other results in the failure of the operation.\*

In the light of all the facts, I feel warranted in stating my belief that *probing as a method of treatment ought to be discarded*. And, also, that stricturotomy, as here described, based as it is upon sound surgical principles and supported by experience, should be substituted for it and all other instrumental procedures now in use for the treatment of stricture of the lachrymal duct. Lachrymal stricture, treated by this method, has, in my hands, during many years, yielded results as satisfactory as those following operation in other parts of the body.

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\*Since this article was written a paper in the “Recueil d'Ophthalmologie” for May, 1892, by Dr Chauvel, Surgeon-in-chief of the French army, gives the result in fifty cases of lachrymal obstruction treated by probing. He concludes as follows: “It has seemed to us that it is not without utility to make known the little success which slow and progressive dilatation has yielded in our hands, seeing that this method of treatment is the one which thus far has the most adherents.”



