BLOODLESS TONSIL ENUCLEATION.

A MODIFIED TECHNIQUE AND A NEW GUILLOTINE.

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TWENTY years ago Whillis and Pybus published their now classical technique of guillotine enucleation by the reversed method. It has been universally adopted, though often incorrectly ascribed to Sluder, and its position remains unchallenged and is likely so to continue.

Some three years ago it occurred to me that if "traction" could be applied to the posterior aspect of the tonsil during the dislocation manoeuvre of the Whillis and Pybus technique, the deep fibrosed or so-called "difficult" cases could be more easily dealt with. To this end I had the distal rim of the fenestra of my guillotine made in the form of a series of miniature sharp chisels. The guillotine head is inserted from below upwards, behind the tonsil and in front of the posterior pillar. The lower pole of the tonsil is threaded through the fenestra, and the tonsil is elevated to bulge the anterior pillar in the usual way (Fig. 1). The little chisels have now dug themselves into the postero-lateral aspect of the tonsillar capsule, and fix

guillotine?" but "Should one guillotine?" I think it can be fairly stated that guillotining is the cleanest method, and, if haemorrhage is slight, recovery is rapid and healing perfect. The latter is only natural when one reflects that with the guillotine there is the minimum handling and trauma of tissues as compared with even the most immaculate dissection.

When we examine the peritonsillar tissue in a case of chronic tonsillitis we find masses of fibrous tissue with vessels running through it. Obviously, when cut through, these would gape. In the child the peritonsillar tissue is loose and elastic; the vessels here involute naturally, and bleeding is minimal.* The decision as to whether to guillotine or dissect tonsils therefore rests very largely on the question of the amount of bleeding anticipated.

It is obvious that where there has been peritonsillar fibrosis considerable force is required to crush the vessels adequately. In the instrument presently to be described such crushing force can be exerted. There are a certain number of cases where the tonsil is so firmly bound down that it is impossible to invert it completely through the fenestra of the guillotine. Here, of course, dissection is the only method.

When the blade of the guillotine is driven home the tonsil lies isolated, separated from its bed by the blade, the crushed stump intervening (Fig. 4). This stump, in the

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

it in a harpoon-like manner. The next step is designed to pull the tonsil out of its bed, thereby stretching the peritonsillar tissue; the tonsil, being fixed, will not slip off the guillotine, and traction is applied to it by retracting the guillotine towards the mid-line and slightly forwards—that is, away from the posterior pharyngeal wall (Fig. 2). Slight counter-pressure is exerted with the thumb over the tonsil. With the guillotine maintained rigidly in this position the whole tonsil is inverted through the fenestra and the blade driven home behind the anterior pillar (Fig. 3). It will be seen that apart from the "traction" the whole manoeuvre, which takes but a few seconds, is the ordinary Whillis and Pybus technique.

Up to this point the operation is bloodless if a blunt guillotine is used. By the ordinary method the tonsil is now severed from its bed and, according to the nature of the case, the bleeding may be more or less severe. Whether the mode of severance be in the nature of torsion or avulsion, the stump is invariably torn away deep to its crushed portion, hence the inadequate haemostasis.

A single blade cannot be expected to perform both the functions of crushing and of cutting. For this purpose a well-designed two-bladed guillotine is essential. I have made use of such an instrument, and, as is indicated by the main title of this communication, the whole operation can be rendered bloodless.

Where the ordinary guillotine technique *plus* "traction" is employed many tonsils, which in the ordinary way would call for dissection, can be dealt with by the guillotine. The surgeon, however, will prefer to dissect—especially adult cases—unless he can be sure that the immediate haemorrhage incidental to ordinary guillotine procedure can be controlled.

The question which must be decided is not "Can one

properly performed operation, consists of the circumferential reflection of mucous membrane surrounding the equatorial area of the tonsil at the junction of its embedded and non-embedded portions, together with some areolar and fibrous tissue, and vessels of the tonsillar bed.

There are several types of two-bladed guillotines incorporating crushing and cutting blades. I have found them most satisfactory, particularly that of La Force. In this guillotine a very powerful crushing force can be applied, to which I ascribe the perfect haemostasis that is obtained. The mode of bringing its crushing and locking action into play is clumsy; furthermore, the fact that the cutting blade requires to be carefully reset after each tonsil has been removed is a grave fault, and no doubt these two disadvantages account in a large measure for its lack of popularity in this country.

I have developed the two-bladed guillotine illustrated, the crushing power of which is very great and instantaneous. It locks automatically; moreover, no strain is put on the surgeon's memory. The cutting blade sets itself back automatically when the crushing blade is released, the recoil being utilized as in the Maxim gun. This is an extremely important feature—as the cutting blade is merely a convenience and must at no stage of the operation obtrude itself or add to the complexity of handling the instrument—if one is to claim that this two-bladed guillotine is almost as simple to use as the ordinary single-bladed type. The cutting blade in this instrument cannot be sent home first—a procedure that would negative the bloodless object of the operation.

The principle of the guillotine is similar to that of the guillotine devised by Ballenger, Elphick, Howarth, and

* See author's article in the *Journal of Laryngology and Otology*, September, 1926.

La Force. There are two blades, one the crushing blade (A), and the other the cutting blade, which lies between the bed plate and the crusher and works close up to it. The crusher, which grasps the stump of the tonsil, is primarily actuated by the handles with such pressure as may be brought to bear by the strength of the grip of the hand. This action automatically engages the mechanism (BCD) for the final crush—a useful time-saving feature.

This mechanism is in the form of a pair of double cylindrical circumvolutes, the internal or female (B) being attached to the bed of the guillotine, and the external or male (C), which has a lever (D) attached, is fitted and rotates freely on the crushing blade and is kept in position by means of a spring (E). A quarter turn of the lever (D) tends to drive the crusher further forward and exerts extra pressure and automatically locks it and completes the crushing operation. The mechanical advantage being about 1 to 14, the crushing effort is very great. The cutting blade is attached to the crusher, and the final cutting is performed by the depression of a lever (F) which drives the cutting blade forward. The releasing of the guillotine brings the lever (F) of cutting blade in contact with the stop on (B) and automatically throws it out of action and sets the cutting blade ready for the next operation.

It will readily be seen that it is not possible for the cutting blade to be brought to action until the crushing

blade has done its work. Miniature sharp chisels are on the distal rim of the fenestra (H). The purpose of screw (G) is to set the blades at any desired position in order to vary the size of the fenestra. Thus one guillotine will do for all cases except for children under 2 years. The guillotine is shown set for a small tonsil.

The actual handling of the guillotine is simplicity itself. When the tonsil has been completely inverted (Fig. 3) the crushing blade is sent home by compressing the handle, and lever (D)—already partly engaged—is pushed over to its limit with the free hand in a clockwise direction. After a suitable period the tonsil is secured with a vulsellum and is cut off the guillotine by depressing lever (F) (Fig. 4). Lever (D) is then returned to its original position and the guillotine will spring open and be already set for the other tonsil.

It is obvious that if the crushing pressure is maintained until coagulation has taken place an added safeguard is incorporated. Accordingly I crush the stump for three to five minutes before removing the tonsil. If the mouth is large enough and a second guillotine available the other tonsil can be dealt with while the first still crushes its stump. There will be no bleeding—merely a moistness of the tonsillar bed.

If desired, the stump can be ligatured in a dry field—an easy matter. The whole operation in adults takes ten minutes at the outside. In children, where the peritonsillar tissue is soft and elastic, momentary crushing suffices to secure complete haemostasis. I have used the instrument illustrated for almost a year at the Royal Ear Hospital, University College Hospital. In not a single case has there been any primary reactionary or secondary haemorrhage.

Irwin Moore, quoting McNab, and referring to two-bladed guillotines, complains that the anterior pillar is frequently removed. The type of guillotine used is not stated. I can only say that with the technique indicated I have not been able to emulate this. The anterior pillar comes through the ordeal uninjured—provided the fenestra of the guillotine is not too large for the tonsil. Even in that case the expert will manage not to invert it completely through the fenestra. It is, however, definitely an advantage to adjust the fenestra slightly on the small side, which can be done instantly in the instrument illustrated.

The criticism has been made that reactionary haemorrhage occurs a few hours after the operation with two-bladed guillotines. I have not encountered this, and can only assume that the instrument used did not allow sufficient crushing force to be applied to the stump.

Children whose tonsils have been removed by this method show no, or only very slight, rise of temperature. This I attribute to the obliteration (by crushing) of the lymphatics and subsequent minimal toxic absorption from the open tonsillar wound.

I wish particularly to acknowledge my indebtedness to my friend Mr. Phelps, of Messrs. Mayer and Phelps, and to their technical staff, for the great assistance and the facilities extended to me.

TONSILLECTOMY.

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It is not desirable that one method, and one method only, of performing the operation of tonsillectomy should be adopted for patients, whether adults or children. Each case is a law to itself, and should be judged on its merits. If this mental attitude is adopted it will save the unwary and the comparatively inexperienced operator from many pitfalls.

To attempt to remove the deeply embedded adherent tonsil which has been the site of many attacks of tonsillitis, and perhaps the subject of abortive attempts at removal, by the guillotine only, or even with a finger on the pillar, or traction by tonsil forceps, will only lead to disappointment for the patient and the operator. For the tonsil will not move by finger pressure, and the forceps will take away a superficial piece of tissue, but will not remove the main mass of the gland from its strong anchorage.

Another subdivision of this sort of tonsil, met with in even young children, is that in which the pillars have met in the median line in front, and are indistinguishable from the underlying tonsil. This type is also the product of long-continued chronic inflammation with interludes of acute tonsillitis. The tissues are usually very septic, and the tonsil when reached is generally found to be lying in a pool of pus. For such tonsils dissection or partial dissection should be employed.

It is of advantage to employ a tonsil forceps, such as that made for me by Messrs. Mayer and Phelps. The

FIG. 1.—The Author's tonsil forceps.

advantage of this instrument is that it need not be removed during the operation, since, by means of the ratchet, it retains its hold, thus freeing a hand. Moreover, the handles will pass through the ring of the guillotine, if it is desired to use this instrument. (Fig. 1.)

The dissector best suited for this type of tonsil is one with a short curve and a cutting edge, the other end being