HEMORRHAGE AFTER TONSILLECTOMY.*

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THE objection most frequently advanced by the advocates of tonsillotomy against tonsillectomy is the danger of hemorrhage following the more radical operation. While I by no means wish to assert that this danger does not exist, nor, indeed, to belittle in any way the chances of its occurrence, nevertheless, as there is in the minds of many men, particularly of the general practitioner, a certain misgiving in regard to this, I should like to add my testimony to that of others as to the comparative safety of the complete ablation of the tonsil.

I know that the amount of blood lost during a properly performed tonsillectomy is insignificant compared with the amount lost during the average tonsillotomy; and my experience leads me to believe that the chances of post-operative hemorrhage are at least no greater and probably not as great in the new as in the old operation. During the past two years, on the summer service at the Boston Dispensary, there have been performed four hundred tonsillectomies, done either by myself or by assistants directly under my supervision. In all these operations the technic was essentially the same. But one case of post-operative hemorrhage occurred, and this one case followed the use of a tonsil punch at the base, though the operator had the evidence of an intact capsule on the excised tonsil to assure him that its removal had been complete. The hemorrhage, which came from the surface on which the punch was used, was controlled by methods of which I shall speak later.

Whether or not a greater number of hemorrhages would have occurred in this series of cases if a different technic had been used, of course no one can say, but I am inclined to believe that, to a degree at least, the freedom from hemorrhage was due to the method employed in the operation.

Three places in the sinus tonsillaris are especially prone to bleed after tonsillectomy, viz., the anterior and posterior pillars at their lower halves and the base between the pillars. This latter place is perhaps the most usual bleeding point. I never have seen a serious hemorrhage occurring in the upper half of the tonsillar fossa. The reason for this is that the larger vessels from the surrounding tissues enter the tonsil in its lower segment. Obviously, if no sharp cutting instruments are used at these danger points, the chances of hemorrhage will be greatly reduced. The operation which I advocate avoids these absolutely, and is performed as follows:

The tonsil is grasped with a two-pronged tonsil forceps, the upper prongs entering the tonsil at the level of the floor of the supratonsillar fossa, and the lower prongs as near the base as possible. The prongs of this forceps are about a quarter of an inch apart, are long and slender, and instead of being bent at a right angle to the shaft form a slightly obtuse angle with it. They are easily forced deeply into the substance of the tonsil,

where they engage the larger fibrous trabeculae without macerating the more superficial friable tissue. Even in the adult tonsil these trabeculae become much attenuated as they approach the surface, and there they offer little resistance to the pull of a tenaculum; deeper down they are much heavier and stronger. The security of the grip of the tenaculum is of the greatest importance, especially in those cases in which previous peritonsillitis has created a network of adhesions with the surrounding tissues. Under those circumstances the line of demarcation between the tonsil and the walls of the tonsillar fossa can at times only be discerned by moving the tonsil in various directions, and it is most embarrassing to find the tenaculum constantly pulling away during this procedure. This instrument seldom tears through even the soft tonsils of childhood.

The forceps inserted, the tonsil is pulled gently forward and inward, so that the plica is put upon the stretch and is backed up by the bulk of the tonsil. With a long, sharp pointed knife (a peritonsillar knife is excellent) an incision is made just outside the inner border of the plica from its base upward and backward to the point of juncture with the posterior pillar. (I use the word "plica" to designate both the plica triangularis and the plica supratonsillaris.) This incision is carried through the anterior fold of the plica only, and immediately the deep fibrous layer of the posterior fold is exposed. It opens up what may be regarded as a closed fibrous sac, the walls of which completely surround the tonsil except over its faucial surface, and the inner edge of which is the double fold of mucous membrane which forms the plica. The walls of this sac are but loosely adherent except at that point in the lower half where the larger vessels pass from the deep structures into the tonsil.

A blunt dissector is now introduced into the incision, and unless adhesions are present this space may be opened up easily and the whole upper and anterior part of the tonsil turned out of its bed in the sinus tonsillaris. Slight adhesions may be broken by a more vigorous use of the dissector, but if the adhesions are marked, it is better to divide them with a knife, as the too vigorous use of the dissector thoroughly bruises the tissues, and a very painful throat results. The posterior pillar is not touched.

The importance of a perfectly sharp knife in making the initial incision cannot be over-accentuated, for, if the knife edge be dull, all delicacy of touch is lost; the operator cuts too deeply in his efforts to cut at all, goes through both layers of the plica and into tonsillar substance and so gets outside of the peritonsillar sac, and a clean dissection of the tonsil becomes difficult if not impossible. This is the origin of many of the so-called adhesions of the tonsil.

The loop of a snare threaded with No. 7 wire is now slipped over the handle of the tenaculum and then pulled down to a size that the bulk of the tonsil will just about fill. No danger of

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catching the uvula is then present. With gentle traction inward and forwards, the tonsil is pulled into the loop, the canula of the snare being above and thrust downward behind the tonsil as far as the dissection permits. The wire is then pulled as tight as may be, the patient's head thrown forward, and while the ether is applied for the other tonsil, the snare is slowly screwed home. This last step should be very deliberate as it is at this time that all the larger vessels of the tonsil are divided. I usually take from three to five minutes in affecting the separation.

The bleeding after this operation is almost always slight; often the sheet wrapped around the patient is unstained. Lest some believer in more radical surgery, who dissects out his tonsils, even to the base, with a sharp knife or scissors should maintain that the entire tonsil is not removed by this method, I will say that nothing is easier of proof than the success or failure of the operation according to this standard. If the removed tonsil shows an intact capsule, then the ablation has been complete; and in the vast majority of cases such an intact capsule may be demonstrated. Even when the lower part of the tonsil is missed, as it occasionally is, it is easily removed by a second application of the snare.

Concerning the posterior pillar: I never dissect it because I think the snare does this better than any other instrument can do it. I never have seen the integrity of the posterior pillar in the slightest degree affected by the wire.

Often after the removal of a tonsil by the snare, a small piece of tissue which looks like tonsillar tissue is seen at the base, even in cases in which we are sure that the whole tonsil has been removed. For a long time I was at a loss to know just what this tissue might be. The end of the lingual tonsil sometimes encroaches very closely upon the base of the faucial tonsil, and if hypertrophied may be mistaken for a part of the latter. But the tissue of which I speak lies higher up in the tonsillar fossa and is, I think, nothing but the fibrous tissue subjacent to the tonsil, which has been gathered up into a bunch by the action of the wire. It contains the larger tonsillar vessels, and it is to the endeavor to remove it with a punch that two of the post-operative hemorrhages I have had were due. It is a dangerous place to cut and should be let alone.

I do not claim for this operation an absolute freedom from the chances of post-operative hemorrhage, but I think it has a sound anatomical basis and reduces that chance to a minimum.

In dealing with post-operative tonsillar hemorrhage, three methods are available, short of tying the external carotid artery. Exigences requiring this later procedure must be extremely rare, for in the last two years, during which tonsillectomy has been the rule at the Massachusetts General Hospital, there has been no case in which it was even thought of. I will take up these methods in the order of their simplicity, and it is in that order that I think they should be tried in any given case.

First, simple pressure. The patient should be etherized in this as well as in the other two methods. It is useless to attempt to do anything without it if the bleeding is at all severe; the patient soon becomes panic stricken and is then unmanageable. The upright position with the head forward, so that the blood is not swallowed nor inhaled, but runs out of the mouth and into the ether cone, is essential. With the mouth gag in place, a curved sponge holder with a gauze sponge at the end of a size to fit snugly into the sinus tonsillaris is inserted between the pillars of the bleeding side and pressed strongly outward; at the same time counter-pressure with the fingers is applied just behind the angle of the jaw. The sponge on the inside may easily be grasped with the fingers on the outside, and thus a very effective compression is put upon all parts of the tissues of the tonsillar fossa. This pressure may be continued for from five to ten minutes. I have had two cases that were completely controlled in this way. If after ten minutes' pressure the bleeding is not stopped, no time should be lost in passing on to the second method.

Second, ligation of the bleeding point or points. I believe in most cases of bleeding after tonsillectomy, barring cases of hemophilia and provided that the tonsil has been completely removed and no undue injury has been done to the surrounding tissues, that the blood comes from some definite vessel or vessels and does not come from an oozing surface. I say this both because the surface of the tonsillar fossa is composed of a fibrous tissue which is not well supplied with capillaries, and because my own experience is in accord with this view. The case of bleeding mentioned above in the four hundred tonsillectomies at the Boston Dispensary and one case at the Massachusetts General Hospital were controlled by ligation of a single point. Both were at the base and in each instance a punch had been used at this point after the tonsil had been removed by the snare. Pressure should be applied as in the first method described, as in this way the exact bleeding point is more likely to be found. If this can be determined, it is grasped with an hemostat about one inch longer than the ordinary and with rather a heavy and broad end so that no great accuracy in its application is necessary, as quite a breadth of tissue is included in the bite. As it is extremely difficult to tie this off after the usual manner, a suture is passed through the tissue with a sharp aneurysm needle, first from above downward in front of the hemostat and then from below upward behind it, making a sort of purse string. The hemostat is then removed and the suture tied with little danger of tearing away.

Third, suturing of the faucial pillars. In cases in which neither of the above methods is successful, the faucial pillars may be sutured. I have never had a case requiring this, but it has proved very efficient, notably in the hands of Dr. Crosby Greene. As I understand his method, the sutures pass completely around the tonsillar

fossa, so that when they are tied the fossa is obliterated and pressure brought to bear upon all parts of its surface. It would seem hardly possible that any hemorrhage should continue under these conditions. While I believe that many and perhaps most hemorrhages after tonsillectomy may be stopped by pressure or by direct suture through a limited area, it is, nevertheless, a comfort to know that such an efficient method of controlling the hemorrhage is at our disposal.

Shortly after writing the above, I had occasion to suture the pillars in a case of hemorrhage after tonsillectomy, seen in consultation with Dr. J. E. Somers of Cambridge. The patient, a child of six years, was undoubtedly hemophilic, though this was unknown at the time of operation. The bleeding, at first profuse, had somewhat subsided when I arrived half an hour after the start. It was, however, still free. Upon clearing the fauces of blood-clot the hemorrhage increased to such an extent that it was impossible to see any of the landmarks of the throat. As pressure with a gauze sponge had no effect, I immediately clamped with hemostats point after point at random in the tonsillar fossa. After six hemostats had been placed, the hemorrhage was sufficiently controlled to allow sutures to be passed accurately around the tonsillar fossa. Three silk sutures were placed; the hemostats were then removed and the sutures tied. They controlled the hemorrhage perfectly.

In placing these sutures through the pillars, I used an aneurism needle devised by Dr. H. P. Mosher for this purpose. The needle is passed around the tonsillar fossa and is then threaded by means of a slender suture-carrier with which the thread is easily and quickly inserted in the open eye of the needle. The needle is then withdrawn carrying the thread with it.

Reports of Societies.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

A MEETING of the New England Otological and Laryngological Society was held in Boston, Nov. 28, 1910. Dr. A. C. Getchell, President.

Dr. J. PAYSON CLARK reported:

A CASE OF FOREIGN BODY IN THE TRACHEA. STATUS LYMPHATICUS. DEATH. AUTOPSY.¹

DISCUSSION.

Dr. A. COOLIDGE: Whenever the larynx or the bronchi or the trachea is invaded by any instrument, there is always the possibility of respiratory shock. I have seen one or two cases myself which were quite striking. Is it not possible that this may have had something to do with Dr. Clark's case, the shock being due to the foreign body itself, or to the manipulation in getting it out? Status lymphaticus was primarily the cause of death, but may not respiratory shock have been a contributing cause?

Dr. D. CROSBY GREENE, JR., read a paper entitled

¹ See JOURNAL, p. 115.

REPORT OF THREE RECENT CASES OF BRONCHOSCOPY FOR FOREIGN BODIES.²

DISCUSSION.

Dr. A. COOLIDGE: The relative merits of lower and upper bronchoscopy depend upon the instruments at hand and the experience of the operator. If poorly equipped it may be better to do lower bronchoscopy, but under the proper conditions the passing of a bronchoscope through the larynx is an easy matter. I should like in this connection to report a case which came to the hospital a few days ago. This is the first time I think in this city that the use of the bronchoscope was substituted for an emergency tracheotomy. The patient came in on the surgical side with a tooth plate firmly impacted in the esophagus. The plate had been there nearly a week and was surrounded by edematous mucous membrane. After working down through the edema I could seize the plate, and in trying to unpin it from the sides of the esophagus I turned it half over, in which position it blocked the trachea from the esophageal side and I could not get it back again. The patient began to breath badly and became cyanotic.

It occurred to me to try to pass a bronchoscope. A small one was passed easily through the glottis, and then under direct inspection I managed to get by the obstruction. The patient immediately breathed well again. The esophagoscope was then again introduced, the bronchoscope being still in place, and an attempt made to break the tooth plate and to remove it in different ways. Not being successful, the patient was returned to the surgical side, and esophagotomy done by Dr. Greenough. The patient meanwhile breathed and was etherized through the bronchoscope. The plate was taken out by esophagotomy, after which the bronchoscope was withdrawn without farther trouble. The patient made a good recovery. This illustrates that occasions may arise of emergency when tracheotomy seems inevitable, in which it may be easier and quicker to pass a bronchoscope than to do a tracheotomy.

Dr. A. C. GETCHELL: I think the question of removal of foreign bodies from the bronchi is a matter of peculiar interest to what we might call the provincial practitioners, and I count myself as one. That is, What is our duty in these matters? Dr. Coolidge says it is comparatively easy to pass a bronchoscope and get a good view, but unfortunately this procedure is one that cannot be done except with practice upon a living subject, and, therefore, the matter of acquiring skill depends upon the practical experience with the patient at hand. We of the outside do not like to pass by good things; we do not like to pass them on to the metropolitan practitioners, but the question arises as to what is our duty, and I have decided for myself, as most of these cases are cases which will admit of some delay, that it is not my duty and it is not wise for me to operate on them. But I think that those of us who do not have the larger advantages of the metropolitan hospitals should equip ourselves and have a fair degree of proficiency and readiness for the esophageal and laryngoscopic work.

I have seen in Worcester two cases of foreign bodies in the bronchus, and I am pretty sure I have seen all that have come to Worcester in twenty-five years. One of them was years ago before any direct bronchoscopy was done. It was a nail. After a period of apparent lung trouble, although it was evident what the cause was, it was coughed up.

The other came to me recently and I fancy it is the case that will be reported to-morrow. I think it

² See JOURNAL, p. 117.