THE TECHNIQUE OF TONSILLECTOMY UNDER LOCAL ANESTHESIA.*

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There are three considerations of importance in removing tonsils under local anesthesia. The most important consideration is the complete removal of the tonsil without mutilation of the surrounding structures; The next consideration is that the operation be rendered as painless as possible; The third consideration is that the tonsils should be removed as quickly as possible.

The operation of tonsillectomy has gone through many stages. In the first place there was the hard fight between the champions of tonsillectomy and those who considered that a tonsillotomy was all that was indicated. During this period the champions of tonsillectomy were so intent upon getting the tonsil all out, that the finer details of technique received little attention. The results in many cases were fearful and wonderful; mutilation of the pillars, complete removal of one or both pillars, amputation of the uvula and on account of lack of attention to details often a portion of the tonsil left imbedded in a mass of cicatricial tissue, with resulting contraction and deformity. As the operation became established on a firm basis and the profession became practically a unit upon the necessity of complete removal, men began to devote attention to the nicer details of technique, until today the operation is a piece of art, removing only the tonsil and leaving the surrounding structures intact and unimpaired.

This result was brought about by those men who advocated adequate exposure of the field, adequate illumination of the field, and painstaking attention to all the details of dissection. These things were set forth by the author in a paper before the American Medical Association in 1912.

The writer has not yet reached the ideal in local anesthesia. Though the great majority of patients complain of absolutely no pain a few complain of varying degrees of pain. Some of these who complain most, give no evidence of suffering, such as flinching, and I am inclined to think that in a large proportion of those who complain the suffering is from the mental dread of the operation.

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This brings up the question as to what cases are suitable for local tonsillectomy. I would say that tonsils which have been the seat of recurrent attacks of peritonsillar abscess are not suitable for operation under local anesthesia. While I have operated on many at the earnest solicitation of the patient, the tonsil usually has to be taken out in a number of pieces which makes it very trying on the patient as well as the surgeon. Then, too, there are patients with reflexes so sensitive that it is almost impossible to resort to any manipulation in the throat. It is much more satisfactory to have these patients under a general anesthetic.

Aside from these two classes of cases I am generally governed by the wishes of the patient. I think it is a mistake to over-persuade a patient. A patient who has a nervous dread of the operation and wishes to take a general anesthetic had better be indulged, as such a patient is liable to break down and create a distressing scene. I think it is a mistake to make an arbitrary ruling as some men do, that all adult patients are operated on under local anesthesia, or that all patients are operated on under general anesthesia.

Our decision in each case should be the result of reasonable regard for all the conditions present.

One of the drawbacks to operation is the profuse flow of saliva which sets up in most cases. Flowing down the throat it causes the patient to choke and cough and interrupts the operation. To combat this I give one one-hundredth of atrophin sulphat hyperdermatically. If the patient is nervous one-eighth or one-quarter of morphia is added to it.

The preliminary swabbing of the throat is done with an eight per cent solution of cocaine. This is mopped on the throat for three applications at intervals of five minutes, special attention being paid the pharynx, as that is the area that causes the most retching and gagging. Fifteen centimeters of a one-half per cent solution of apothessin to which six drops of adrenalin solution (1-1000) has been added, are injected around the tonsils. The points of injection are usually six, one on each side of the base, one on the anterior and one on the posterior pillar, and two in the supratonsillar region. An effort is made to inject the capsule as well as possible. For this purpose Canter's screw is used to draw the tonsil from its bed so as to get at the capsule. When the injection is finished the tonsil is surrounded by a ring of infiltration. I think the elevation of the

mucous membrane by the infiltration helps the dissection. Seven to ten minutes are allowed to elapse between the injection and the operation.

The three considerations I had in mind in writing this paper are in the order of their importance, thoroughness, painlessness, and speed.

The first two we have considered. The necessity for getting the operation over with as quickly as possible must be apparent I think to everyone. The patient is on a nervous strain and has keyed himself up to endure the ordeal and the more it is prolonged, the more likely he is to break down or else carry away an unpleasant impression of the operation and the operator's skill.

Tonsillectomy is really two operations. As generally practiced one tonsil is removed and time allowed to elapse for the bleeding to check and then the other tonsil is operated on. This is very trying to certain types of patients. They have their courage screwed to the sticking point for the first tonsil and they go through with satisfactorily but when faced with the second their courage fails and it is only by coaxing and urging that they can be induced to go on with the second. Indeed I have seen patients, not in my own practice, but in clinics resolutely refuse to have the second tonsil removed, and walk out without having the operation completed. It was these considerations which led me to devise a technique which would make it possible to remove both tonsils practically at the same time, so that as far as the patient is concerned it would seem to be a single operation. Another point in favor of such a technique is that sometimes most unexpectedly the removal of the first tonsil is followed by a profuse hemorrhage which takes time to get under control and when it is finally controlled the patient is usually frightened and his morale badly shaken so that the removal of the second tonsil becomes a real ordeal both to the patient and the surgeon.

The technique as I practice it requires two tonsil forceps which can be locked on the tonsil, and two snares. The forceps are of the type which allow the snare wire to slip over the handles without removal. The snares are of the powerful pistol grip type devised by Brown. A powerful snare is essential. For some years I employed a thumb and finger type and on numerous occasions encountered tonsils which were removed with the greatest difficulty

after numerous attempts. I have had snares to bend in my hands. Such experiences are very trying to the patient and distressing to the surgeon. What is needed is a powerful instrument that will not bend and that will remove the tonsil with one swift pressure. The Brown snare fulfills the requirements and is strongly and simply made with nothing about it to get out of order. The snare is threaded with number 9 piano wire, I think it is important to have a strong stiff wire that does not easily get out of shape.

When ready to proceed with the operation the patient is told that we wish to examine the tonsil to see if it is ready. We then proceed to apply the forceps. The type of forceps used is of the utmost importance. What is needed is a forcep with a powerful grasp that will not tear out of the tonsil when traction is made. It must admit of the snare loop slipping over the handle without removal, the teeth must be narrow enough to slip between the pillars without engaging them and it must have as little bulk as possible so as not to interfere with the working space in the throat. The forceps devised by the writer fulfill these requirements. When the patient is told that we wish to examine the tonsils to see if they are ready he will readily allow the forceps to be locked on the tonsils without fear as he thinks the operation has not yet begun. One blade of the forceps is placed deep in the supratonsillar fossa and the other is inserted into the base and the forceps locked firmly in the tonsil. The tonsil is lifted from its bed and its contour and attachment noted. The other pair of forceps is then locked on the other tonsil in the same way. The assistant having the two snares in easy reach, hands the surgeon the knife, and with a few quick strokes the left tonsil is freed from its attachments, especial care being used to free the supratonsillar region, as it is essential that the snare should get well back of the superior pole. The left tonsil being freed, the right tonsil is quickly freed in like manner. The assistant now hands the surgeon a snare and at one stroke he removes the right tonsil. While the surgeon is removing the right tonsil the assistant slips the loop of the other snare over the forceps attached to the left tonsil, and takes the snare and the forceps to which the right tonsil is attached out of the surgeon's hand and with a quick stroke the surgeon removes the left tonsil and the operation is over. The operation is over so quickly that practically all patients think that they have had only one tonsil removed.

In an uncomplicated case the time consumed is from fifty to sixty seconds. The shortest time was thirty-five seconds.

After the tonsils are removed the bleeding is carefully checked and the patient is not allowed to leave the chair until the throat is absolutely dry. This rule which I have always followed under a general anesthetic, is even more necessary under a local anesthetic. On account of the use of adrenalin the bleeding is much less at the time of removal under a local anesthetic than under a general, but for that very reason the tendency to delayed bleeding is much greater when the constricting effect of the adrenalin has passed off. On account of the bleeding being slight we are tempted to trust it to stop, but that is a mistake. No single procedure has given me greater satisfaction than the rigid adherence to the rule that a patient shall have a dry throat before leaving the operating room.

Immediately after removing the tonsils cotton sponges on sponge holders, wet in sterile water, from which the excess moisture has been squeezed are thrust into the fossa and held for five minutes. This will usually control bleeding that can be controlled by pressure. If there are still bleeding points after removal of the sponges they are caught with artery forceps where possible and the forceps allowed to stay on several minutes. If the forceps do not control the bleeding then a small Michel skin clip is clamped on the bleeding point. This holds it absolutely secure and one can feel sure that the bleeding will not recur. They usually slough off in a few days but sometimes it is necessary to remove them. I think these little clips are our surest reliance in hemorrhage that is controlled with difficulty. Their application is so simple and presents none of the mechanical difficulties of ligation.

In the case of delayed bleeding, which I understand to be bleeding that comes on within the first twenty-four hours, what are the measures for control that we have at our command?

In the first place I would like to say that it is my opinion that most cases of delayed bleeding are cases that have never stopped bleeding. Seeing that every patient has a dry throat before leaving the operating room will eliminate these cases. There are, however, undoubtedly cases which have a tendency to bleed. Not true hemophiliacs but patients with a delayed coagulation time and if questioned they will recall that they bleed freely from slight injuries and that the bleeding persists for sometime. I have had several

of these cases whom I have sent away from the table with absolutely dry throats in whom bleeding recurred after several hours. When called to a case of this kind we discover as a rule that the bleeding is confined to one side and that the fossa is filled with a clot. The first thing to do is to clean the clot from the fossa thoroughly and look for the bleeding point. If it can be seen it is grasped with the artery forceps. If the forcep's pressure does not control then the Michel skin clip is applied. But often times the bleeding point is low down and hard to locate on account of its position, the sensitiveness of the throat, and the flow of blood itself. In that case the author's tonsil clamp is applied. The gauze pad is soaked in thrombo-plastin and the clamp is left in position for an hour, which usually controls the bleeding absolutely, but if not, it can be reapplied for another hour. I have only had two cases in which other measures had to be resorted to after applying the clamp.

We look upon cases of high blood pressure with dread, but in no more than five cases have I had after-bleeding. In the great majority of cases it has seemed to me that the bleeding was actually less than usual. In the case of a man seventy years old with a blood pressure of 235 the bleeding was no more than a trace. As a precautionary measure I omit the adrenalin solution from the anesthetic in cases of high blood pressure. The point of age having been brought up I want to record that the oldest patient upon whom I have performed a tonsillectomy was a gentleman in his seventy-eighth year. I may add that no patient I ever had stood the operation better or had less trouble afterward. I have operated upon many patients over sixty and a number over seventy and my experience leads me to believe that there is practically no age which may not be given the benefit of tonsillectomy, where it is indicated. None of the things we have been taught to fear in the aged has materialized. The hemorrhage has not seemed so great as in young or middle aged adults, the shock has been no greater and the healing and convalescence has proceeded just as rapidly and the benefits following the operation have been just as apparent. I have eliminated mere age as a contra-indication to operation.

I have digressed somewhat but I would like to sum up the conclusions of my experience with regard to hemorrhage. My opinion

is that hemorrhage is dangerous and that from the time we realize that bleeding is going on we must be unrelenting in our efforts until the bleeding is stopped. I have never had a patient to show the effect of tonsillar hemorrhage by pallor or any of the objective signs of loss of blood, but I am perfectly sure it is because I never let up in my efforts until the bleeding is controlled. I have not ligated a vessel in five years, I have never sutured the pillars, and I have never placed an adult under a general anesthetic for the purpose of controlling hemorrhage. It might be my fate to do so at any time, as one can see that it might become necessary, but I believe that in nearly all cases we have measures that will suffice without resort to these two extreme measures. We are so rich now in the means at our disposal for the control of hemorrhage that I cannot think without a shudder, of the crude measures in vogue when I entered surgery, twenty-four years ago. Those were the days of *laissez faire* when the surgeon said "Let it alone, it will stop itself," but when it didn't stop and the patient had bled to the point of exsanguination, everybody including the surgeon was in a panic, and if the patient recovered it was with the memory of a terrifying experience. The point of bleeding: There seems to be no point in the fossa where we may not find bleeding, but in the great majority of cases of bleeding which have required active measures to control the hemorrhage, the bleeding has been from the tonsillar branch of the facial artery. I think the reason that men attribute the bleeding to other vessels is the fact that the tonsillar artery varies greatly in the point where it pierces the capsule. It may pierce the capsule at any point from the base of the tonsil to the supratonsillar fossa and sometimes it does not pierce the capsule at all, for occasionally after the removal of the tonsil the large vessel can be seen lying exposed but uninjured, traversing the fossa from bottom to top. Thus we see that this large vessel may be injured anywhere in its course from the region of the lower pole to the supratonsillar fossa. The spurting from this vessel is nearly always up as it generally pierces the tonsil about the junction of the lower and middle third. Several times I have had this artery to spurt out of the patient's mouth and strike the anesthetist or other persons standing around the patient's head. Sometimes this vessel is very large, on one occasion when I removed the left tonsil from a patient she leaned over a fountain cuspidor and to my surprise she almost instantly filled the bowl

with blood. As quickly as possible I put her head back and caught the vessel with artery forceps. I allowed the forceps to remain for half an hour. When I removed it the bleeding was as profuse as ever and I replaced it and allowed it to stay for an hour. When I removed it the bleeding recurred with undiminished force, I then placed two Michel skin clips on the vessel, one above and one below the forceps which effectually controlled it.

I wish to say a word about true secondary bleeding. My cases of secondary bleeding have all come on the fifth day. In twenty-

four years I have had six cases of secondary bleeding from the tonsils and three cases from the adenoids. I have noticed a characteristic about this type of bleeding which I have not seen recorded. I wonder if the experience of other men coincides with mine in this respect? The characteristic I have noticed is that after the hemorrhage is checked it has a tendency to recur at intervals for about thirty-six hours. This could not be observed in the cases of bleeding from the adenoids as I packed them post-nasally and allowed the packing to remain thirty-six hours. This type of bleeding in my cases has not been alarming except in

the case of the adenoids, all three of which cases bled profusely. Secondary bleeding is undoubtedly connected with the separation of the slough. Infection takes place beneath the slough in all probability as I have noticed an odor in these cases.

The most profuse bleeding I have had has been in cases of frail thin women. The point of most persistent bleeding has been from a small vessel which emerges from the posterior pillar at about the junction of the upper and middle third. It is most important to see that the bleeding from this apparently insignificant vessel is effectually checked, because it may go on unnoticed for hours. Our first intimation is when the patient throws up an enormous quantity of blood. Concealed hemorrhage is the "bete noir" of the general surgeon and we must learn our lesson from him. He closes no cavity until hemorrhage is absolutely checked and our problem is precisely analogous.

In making this contribution to the already voluminous literature of the tonsil, I am only paying tribute to the importance of the subject, and in closing this paper I wish to make a plea for the more serious consideration of the operation of tonsillectomy. Dr. H. W. Loeb has shown how a throat after an apparently clean operation can harbor a piece of tonsil responsible for the gravest type of constitutional infection. I have had several cases of this type where an inspection of the throat gave the impression that a clean tonsillectomy had been done. A careful search disclosed a small crater like opening and underneath was found a piece of tonsil harboring a pocket of pus. Where such grave consequences can ensue upon the leaving behind of a small piece of diseased tissue it behooves us to use the utmost care in making our operations absolutely clean.

We cannot estimate the harm that results from looking upon the operation lightly and of small importance and going through it hurriedly and carelessly.

Let us do a clean thorough workmanlike job, granting to the operation the dignity and the importance that it deserves.

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