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Tonsillar Hemorrhage

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A NEW INSTRUMENT FOR CONTROLLING TONSILLAR HEMORRHAGE.¹

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THE instrument which I present to the Section this evening is one designed to be of service to the surgeon in controlling alarming or persistent hemorrhage after tonsillotomy. Although the necessity for such a device is comparatively infrequent, yet, when it exists, it is extremely urgent. That there are occasions, after amputation or incision of one or both tonsils, when some sure method of controlling bleeding is demanded, is evident from the appended list of fifty reported cases in which the hemorrhage was sufficiently profuse to endanger life. Three of these cases terminated fatally.

It is useless for me to discuss here the various safe methods of operation on the tonsils, with which you have become familiar through the writings of Morell Mackenzie, Lefferts, Delavan, Knight, Moure, and others. Sufficient to say, that in this enlightened age, with the perfected tonsillotome and the different applications of the galvano-cautery to this purpose, either for igni-puncture or with the loop, as utilized by Knight in his electric tonsil snare, it is indeed unfortunate if the surgeon, with

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this wide field to choose from, meets with uncontrollable hemorrhage. However, such accidents may and do happen to the most experienced operators, through no negligence on their part. If the subject for operation fails to disclose that he is a hæmophile, and inspection and palpation do not discover to the surgeon that there exist vascular anomalies, other conditions being favorable, it is justifiable to consider the case as one adapted to a cutting operation. In connection with these remarks, it may not be uncalled for to mention and emphasize one condition of the tonsil that sensible operators have learned to approach with respect, and as a rule exclude from their cutting procedures, namely, the small, white, and indurated gland frequently seen in the adult pharynx.

In looking over the literature concerning tonsillar hemorrhage, it will be observed that the whole gamut of styptics has been traversed, and very rarely, if ever, have any of these drugs proven of service, unless combined with pressure. The much vaunted combination of tannic and gallic acids, three parts of the former to one of the latter, as suggested by Mackenzie, may be of some use to control capillary bleeding that would probably cease spontaneously in a few minutes if left alone. Certainly it could not be expected to seal the mouth of a spurting artery of any considerable size, that is surrounded and held open by dense fibrous tissue. As a rule, then, it may be said that these drugs are inadequate to the emergency for which they have been recommended. If the hemorrhage is really of a serious and dangerous character, then some surgical or mechanical interference becomes imperative to prevent exsanguination, unless by a happy chance the patient goes into a condition of syncope, when the bleeding ceases as the arterial tension is lowered. In some few cases of serious hemorrhage, where the artery is exposed, simple torsion with the forceps is all that is required. Oftentimes, though, the walls of the vessel will be found brittle or cannot be seized, and it will then be necessary to transfix the stump of the tonsil,

if enough of it remain, with a needle, and surround the mass with a silver-wire ligature. These two methods, with the use of the actual or galvano-cautery applied to the bleeding points, practically include all minor surgical aids. It has been quite thoroughly demonstrated that the ligation of either the common or internal carotid arteries singly cannot be relied upon, so that the only hope in this direction is to tie both of these vessels, or the external carotid near its origin from the common carotid artery. The idea of tying one of the great vessels of the neck is apt to appear rather formidable to many, and justly so, if the same result may be attained by other means.

As to what constitutes an "alarming" hemorrhage arising from the tonsils, no general precept can be laid down; each individual case must be judged in itself, therefore the amount can only be defined as relative. It may be stated, in a general way, that after the excision of a tonsil in a child, it is customary to expect bleeding, varying in quantity from one drachm to two ounces. If the amount more nearly approaches the maximum degree mentioned, it is usually quite brisk for two or three minutes, and then subsides altogether. If the operation has been conducted under the primary effects of a general anæsthetic, a certain proportion of the amount of blood already designated is apt to find its way into the stomach and be vomited later; this may excite apprehension on the part of the patient or his family, who fear that it indicates a return of the bleeding. They should therefore be warned of the probability of this event.

The vast majority of subjects presented for operation are children under fourteen years of age, and have been sufferers from tonsillar hypertrophy for a year or more. For this reason they are likely to have an anæmic appearance, pasty complexions, open mouths, dull, expressionless eyes, and undeveloped physiques. To the group just described every drachm of blood needlessly lost at the time of operation means a delay in their restoration to

good health. To the others of more robust constitution the loss of a little more blood is of no great moment, as nature speedily repairs the deficit. Every precaution should be taken to guard against secondary hemorrhage, and this may best be accomplished by operating at the patient's home, so that he may be put to bed at once. Whoever is left in charge of the patient should be instructed to see that he is kept perfectly quiet for the succeeding twenty-four or forty-eight hours, and not permitted to use the voice more than is absolutely demanded. Profound sleep after deep ether narcosis should not be allowed for several hours, as there have been reported several instances of serious results, due to a return of hemorrhage which remained undetected. Only cold, soft food will be found acceptable to the patient, and is all that should be given. Small pieces of broken ice, held in the mouth, will be grateful to the patient's lacerated throat, and tend to prevent a recurrence of the bleeding. After several days have elapsed, a mild antiseptic spray or gargle will be found of service. These simple preventive measures, conscientiously fulfilled, will render the chances of a secondary hemorrhage infinitely small and insure peace of mind to all parties concerned.

The general consensus of opinion on the subject of checking tonsillar hemorrhage convinces one that the simplest and most successful method has been that of direct pressure to the bleeding surface. So far the mechanical aids to this procedure have been found faulty in contrivance, or impracticable for actual use, and the surgeon has been obliged to resort to nature's only provision for this unexpected event, to wit, the use of his fingers. It matters not whether the bleeding occurs from a large, spurting artery that has been severed in one tonsil, or is in the character of prolonged, excessive oozing from both sides of the fauces, he will be forced to introduce one or two fingers, of one or both hands into the mouth, as the case may be, and keep up pressure with them until the result is accomplished. In a few cases with which the

Fifty Cases of Alarming Tonsillar Hemorrhage.¹

Sex.	Age.	Disease.	Instrument used.	Result.	Operator, reporter, and remarks.
Male	21	Hypertrophy of tonsils.	.....	Recovery.	Cayot : Thèse, Paris, 1868, No. 275, p. 52. Jarjayav operated ; right tonsil removed.
Male	35	.....	.....	Recovery.	Broca : Paris, operator, 1869. Both tonsils removed ; patient a hæmophile ; hemorrhage stopped in two hours by direct application of ice.
Female	20	.....	.....	Recovery.	Ditto : Operator. No details.
Male	.....	Hypertrophy of left tonsil.	Bistoury.	Recovery.	Dr. Wharton P. Hood : <i>Lancet</i> , 1870, vol. ii., p. 600. Small calculus within tonsil ; vomiting stopped hemorrhage.
Male	31	Syphilitic enlargement of right tonsil.	Hook and bistoury.	Recovery.	Ditto : No details ; both tonsils excised ; sulphate of zinc administered ; vomiting, hemorrhage stopped.
Male	Young.	Hypertrophy of tonsils.	Amygdalotome.	Recovery.	Dr. Glanier : <i>Oester. Zeitschr. f. prakt. Heilk.</i> , Wien, 1872, xviii., No. 52, p. 839. Patient a hæmophile ; syphilitic ; common carotid ligated.
Male	.....	.....	.....	Recovery.	Mary : Thèse, Paris, 1875, No. 29. Operation by patient himself. Hemorrhage stopped with perchloride of iron.
Male	.....	.....	.....	Recovery.	Agnew's System of Surgery, vol. ii., p. 991. McCauby, London Hospital, ligated common carotid artery for hemorrhage after tonsilotomy.
Female	Middle.	.....	Probably bistoury.	Recovery.	Ditto : Velpeau reported four cases of dangerous hemorrhage from injury to the internal carotid.
Male	18	Hypertrophy of tonsil.	Amygdalotome.	Recovery.	Dr. A. M. Faunleroy, Amer. Med. Weekly, Louisville, <i>et.</i> , 1875, p. 498. Patient was very full-blooded ; ice-packing upon neck employed.
Male	24-25 8½	Double tonsillar angina ; hypertrophy.	Guillotine.	Fatal.	Dr. L. D. Kaxtonline : <i>Louisville Med. News</i> , <i>h.</i> , 1876, pp. 280, 281. Hemorrhage stopped by patient walking home with mouth open.
Male	20	.....	Amygdalotome.	Fatal.	Broca : Paris, operator, 1879. No details.
Female	.....	.....	.....	Recovery.	Ditto : Nov., 1879. Cause of hemorrhage, anomalous internal carotid artery.
Male	.....	.....	.....	Recovery.	Dr. Saint Germain : No details ; hemorrhage stopped by ice applied around the throat.
Male	.....	.....	.....	Recovery.	Dr. Cidon : 1880, <i>Hygiea</i> , Stockholm, xlii., 1881, p. 256. Ligation of common carotid.
Male	.....	.....	.....	Recovery.	Dr. G. M. Lefferts : Arch. of Laryngol., New York, iii., 1882, p. 37. Pressure applied directly on surface.
Female	.....	.....	Mackenzie's amygdalotome.	Recovery.	Ditto : Hemorrhage from artery at right stump ; artery twisted, hemorrhage stopped.
Female	.....	.....	Amygdalotome.	Recovery.	Ditto : Artery twisted.
Female	.....	.....	Amygdalotome.	Recovery.	Ditto : Ditto.
Male	46	Hypertrophied tonsils.	Mackenzie's amygdalotome.	Recovery.	Felix Semon : Rep. St. Thomas's Hospital, 1882, p. 85. Hemorrhage from both tonsils ; ice, gargles of alum, tannic acid and perchloride of iron failed to stop bleeding. Controlled by digital pressure.
Female	.....	.....	Mackenzie's amygdalotome.	Recovery.	Ditto : Rep. St. Thomas's Hospital, 1883, vol. xiii., p. 129. Persistent oozing from both tonsils ; styptics and digital pressure failed ; patient put to bed and the bleeding stopped in three hours.
Male	.....	.....	Mackenzie's amygdalotome.	Recovery.	Dr. Clinton Wagner : Tr. of the Am. Laryngolog. Assoc., 1886, New York, 1887, viii., p. 185. Artery twisted with forceps.
Male	.....	.....	.....	Recovery.	Ricordeau : Thèse, Paris, 1886 ; Reclus, operator. Both tonsils removed.
Male	.....	.....	Mackenzie's for right tonsil, and tonsil-sickle for left tonsil.	Recovery.	Dr. J. Walker Downie : Edinb. M. J., xxxii., 1886-87, p. 116. Hemorrhage stopped by actual cautery.
Male	.....	.....	.....	Recovery.	Dr. Briddon : Med. News, Phila., May 28, 1887. Hemorrhage from small spurting vessel for three days ; injected persulphate of iron, which controlled bleeding.
Male	31	.....	Cautery.	Recovery.	Dr. Werner : Oct. 11, 1887. Med. Cor. Bl. d. Würtemb. <i>krzsl.</i> Ver., Stutt., lviii., 1888, p. 241. Manual compression of carotids for ten days.
Female	18	Hypertrophy of tonsil.	Amygdalotome.	Recovery.	Christopher Lewis : Brit. Med. Jour., Sept. 15, 1888. Large vessel behind anterior pillar severed ; orision failed ; combined external and internal pressure with finger controlled bleeding.
Female	.....	.....	Amygdalotome.	Recovery.	Ditto : Profuse hemorrhage came on five hours after operation. Pressure with perchloride of iron swab controlled the bleeding.
Female	Middle.	.....	Amygdalotome.	Recovery.	Ditto : Hemorrhage came on two hours after operation. Firm and continuous pressure with perchloride swab stopped the bleeding.
Female	Adult.	Acute inflammation of tonsil.	Bistoury.	Fatal.	Reported by Dr. H. C. Murphy : Albany Med. Annals, 1888, ix., p. 18. Fatal hemorrhage resulting from puncture of tonsil with knife.
Male	.....	.....	Mathieu's amygdalotome.	Recovery.	Dr. S. E. Fuller : Amer. Jour. of the Med. Sci., Phila., xcv., 1888, p. 357. Common carotid ligated ; saline solution (12 oz.) transfused into radial vein.
Male	.....	.....	.....	Recovery.	Dr. L. E. Blair : Albany Med. Ann., 1888, pp. 41-47. Hemorrhage from left tonsil ; ice and compression.
Male	.....	.....	.....	Recovery.	Ditto : Hemorrhage from right tonsil ; stopped by compression.
Male	.....	.....	.....	Recovery.	Dr. E. W. Clarke reported and performed ligation : Dr. T. M. Markoe, operator, N. Y. M. J., xviii., 1888, p. 7. Hemorrhage stopped by ligation of the stump.
Male	.....	.....	Amygdalotome.	Recovery.	Dr. Daly : Tr. of the Am. Laryngolog. Assoc., 1888, N. Y., 1889. Hemorrhage stopped by compression.
Male	.....	.....	Amygdalotome.	Recovery.	Dr. D. Bryson Delavan : Tr. Am. Laryngolog. Assoc., x., 1888, N. Y., 1889, pp. 153-165.
Female	.....	.....	Fahnestock's Guillotine.	Recovery.	Ditto : Patient was a hæmophile.
Male	.....	.....	.....	Recovery.	Dr. R. J. Lewis : Med. News, Phila., liii., 1888, p. 640. Hemorrhage stopped by application of a tenaculum through base of tonsil, and twisting it.
Male	.....	.....	.....	Recovery.	Dr. A. Vander Veer, reporter ; Dr. Alden March, operator : Albany Med. Annals, ix., 1888, pp. 41-47. No details given.
Male	.....	.....	.....	Recovery.	Dr. F. Park Lewis : J. of Ophth., Otol., and Laryngol., N. Y., i., 1889, pp. 115-117. Hemorrhage four quarts in seventeen hours from left tonsil.
Female	14	Hypertrophy of tonsil.	Mathieu's amygdalotome.	Recovery.	Dr. J. S. Butler : N. Y. Med. Rec., Nov. 9, 1889. Hemorrhage from right tonsil ; ice, tanno-gallic acid, and pressure failed ; stump surrounded by silver-wire ligature, and left in position for two days.
Male	.....	.....	Amygdalotome.	Recovery.	Maure : Société de Chirurgie, April 20, 1890. Severe hemorrhage from left side on the night following operation ; controlled with difficulty by iced drinks and pressure. A similar bleeding occurred eight hours later without apparent cause.
Female	.....	.....	Amygdalotome.	Recovery.	Dr. W. E. Greene : Jour. Ophth., O., and Laryngol., N. Y., 1891 ; iii., p. 138. Hemorrhage five hours after operation ; continuous pressure for one-half hour controlled it.
Female	.....	.....	.....	Recovery.	Ditto : Bleeding began in both stumps one hour after operation ; controlled by cauterization.
Female	.....	.....	.....	Recovery.	Dr. T. C. Duim : Univ. Med. Mag., May, 1891. Hemorrhage following peri-tonsillar abscess ; ligation of the common carotid.
Male	3½	.....	.....	Recovery.	M. M. Krasin : Drevnik obsh. vrach, pri imp Kazan Univ., 1892 ; iii., pp. 110-123. Two cases of hemorrhage threatening life after tonsilotomy.

¹ Thirty-one cases reported in the above table appeared in an article by Dr. Jonathan Wright, New York Medical Journal, August 30, 1890, p. 235.

writer is familiar, this pressure has been required for several hours continuously; not a pleasant task, even when the operator is helped and relieved by competent assistants. At best, digital compression must be limited, uneven, and unsatisfactory, as the hands become tired. I am in hopes that we have here an efficient substitute for this exhausting and indifferent mode of checking tonsillar hemorrhage. The instrument is readily placed in position, and its effect may be noted, when it is *in situ*, by the use of the head-mirror, which is rather a difficult task when the patient's oro-pharynx is occupied by the surgeon's fingers.

Description of the Instrument.—It is six and three-



quarter inches in length and consists of two parallel steel blades, locked together at the point where they join their handles. To the tips of the blades, which are four inches long and are curved outward and backward in their last half inch, there are attached on the outside, and at right angles, ovoid pads, through which the compression is exerted. The pads are of metal and are symmetrical; each one is an inch long and half an inch wide at its base from which it gradually tapers to the apex, where it measures one-eighth of an inch in width. The surface of the pad is directed outward and backward, is convex in shape, perfectly smooth, and has rounded edges. The handles of the instrument are bent downward, and are continuous with the shafts; they are connected at their extremities by a threaded screw rod that passes through

and emerges from the right one ; at the outer side of the latter there is a milled wheel that travels on this rod, serving to hold the pressure at any given place. A spring of moderate strength has been inserted between the handles to create enough resistance to the pressure of the hand to insure a firm grip on the instrument when it is in use, and to close it when at rest. By the approximation of the handles the pressure-pads may be separated to four inches, a limit which will be found to be more than ample for the purpose intended.

In shape the instrument has been as closely as possible adapted to the conformation of the mouth. The curve at the extremity allows it to clear the base of the tongue, thereby preventing useless irritation and discomfort to the patient, with consequent gagging. The only parts of the instrument that come in contact with the mouth or pharynx are the pads, with which the direct pressure is made. If desired, the pressure of the instrument may be supplemented by the hands of an assistant placed on the outer side of the subject's neck, support being thus given to the tissues against which the force is being exerted. If deemed necessary, the pressure-pads may be wound with a styptic cotton, to hasten the formation of blood clots in the injured vessels. The instrument is readily taken apart and cleansed, and may, therefore, be rendered perfectly aseptic.

In order to derive satisfaction from the use of the instrument the manipulation should be as follows: Having placed the patient in the best obtainable light, and his mouth being widely opened, the tongue should be depressed with a spatula held in the operator's right hand, and the tip of the instrument, directed by the movements of the left hand, quickly introduced and carried back into the pharynx, so that the pressure-pads will be at a point slightly beyond the bleeding surfaces; the distal end should then be opened widely enough to cause firm pressure with the pads upon the area of wounded tissue. This is done by closing the spring handles with the grasp

of the left hand. The tongue depressor may now be discarded, leaving the right hand free to work the wheel running on the thread of the connecting rod. By virtue of this wheel, which works rapidly, the amount of compression exerted on the bleeding parts may be nicely adjusted, and increased or diminished at will. Whenever it is wished to greatly augment the pressure, it should be accomplished by means of the handles and not by turning the wheel; the latter is primarily designed to hold the degree of force applied at a fixed point, as determined by the surgeon, thus it is made constant and even. These details having been properly carried out by the operator, and the practically unlimited power at his command considered, makes the question of his ability to arrest hemorrhage from the tonsils a less doubtful one than formerly.

Naturally, the first thought that arises in one's mind in considering a device of this kind, and intended for use in the sensitive region of the oro pharynx, is whether it can be tolerated by the subject on whom it is designed to be employed? My experience with the instrument convinces me that it can be borne in any throat, providing the operator is possessed of a moderate degree of skill and manual dexterity. It has been tested by application to the tonsillar regions of many subjects, varying in age from ten to fifty years. Usually the adult subject, with which we have mostly to deal, has some control over the faucial and palatal muscles, and, as general anæsthetics are rarely given for a tonsillotomy after the age of puberty has been attained, the co-operation of the patient may be relied upon to some extent, as affecting posture and the exercising of enough will power to prevent gagging. The muscular contractions caused by the presence of the instrument are less than those produced by the fingers when employed for the same purpose, and with delicate management may be so far overcome that pressure on the cut vessels will be endured long enough to allow them to become closed by blood coagula.

Should the patient lose all control of himself, fearing that he is about to die, and persuasion failing, force should be used in subduing him in order to prevent such a catastrophe. In the event of such an occurrence, a mouth gag would be of service to insure the instrument being retained in position.

An analysis of these fifty reported cases of alarming tonsillar hemorrhage shows that only four of them were under fifteen years of age, and five others are mentioned as being "young," presumably young adults.

That the use of ether is advisable, to induce a condition of general anæsthesia in a very young subject for tonsillotomy, is generally conceded by those who have had an extensive practice in this branch of surgery; besides causing the absence of pain, it has the advantage of placing the subject under the entire control of the operator, and in case of excessive bleeding renders the use of such an instrument as this one comparatively easy.

The instrument is placed before you with the hope that, in using it, the surgeon will be spared many moments of anxious suspense after operation on the tonsils.

The tonsillar hæmostat was made for me by C. E. Riker, surgical-instrument maker, of this city.

