

## ALARMING HEMORRHAGE FOLLOWING TONSILLOTOMY:—ITS CAUSE AND CARE.\*

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That post-operative tonsillar hemorrhage is worthy of deep consideration, is attested by the careful attention drawn to it by most text-books, and by the great number of conservative writers upon the subject.

Fatal cases appear to be few, but in all probability it is due more to the undesirability of heralding such facts, than to their non-occurrence. <sup>1</sup> Ricordeaux, in his thesis—1886—reports two deaths due to hemorrhage after amygdalotomy, operated upon by Broca; one in a male of twenty-five years of age—the other in a male, eight and a half years old, who had an anomalous internal carotid. Holinger of Chicago, in discussing the subject, at the fifty-third annual meeting of the Illinois State Medical Society, related a death from hemorrhage, following amputation of a tonsil, which occurred in the practice of one of his friends. Mackellar of Decatur, Ill., in the same discussion, mentioned another fatal case, operated upon by a fellow practitioner. <sup>2</sup> Dr. A. Barkan of San Francisco, Cal., reports the death of a male child, aged six, after removal of tonsil with a tonsillotome. This child had a strumous diathesis. Dr. J. A. Stucky, of Lexington, Ky., reports the death of a male patient, aged fifteen, whom he considered a bleeder. In this case there was continuous venous oozing, which would not yield to a cold spray of hydrogen peroxide, ergotin and morphine internally, or iron per sulphate locally. Here we have six fatalities with scanty data as to the cause, other than that the tonsils were removed and the patients died of hemorrhage. Whether they were all haemophiles, or whether all had misplaced arterial supply, we do not know.

If death can occur from tonsillotomy, it behoves those who are daily performing this operation to fortify themselves as much as possible, against such a contingency.

Even though the hemorrhages were not fatal, sufficiently undesirable is one where exsanguination takes place, impairing the general health of the patient, and inducing chronic anæmia, so persistent in

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<sup>1</sup> Wright: *N. Y. Med. Journ.*, Aug. 30, 1890.

<sup>2</sup> *Occidental Med. Times*, vol. 8, No. 3.

its course as to baffle the skill of the physician to overcome it. Myles and Hall report cases of persistent anæmia lasting over one year following tonsillotomy.

Considering the thousands of amygdalotomies performed without alarming hemorrhage, it would seem that some special causes may be enumerated in the order of their importance, for occasioning them, such as:

(1) Hemorrhagic diathesis, or hemophilia.

In the great rush attending a large clinic, time enough is not allowed for questioning the patient or parents, as regards hemophilia. Even if queries were made, the indefinite answers given would not materially profit the operator. The symptoms of hemophilia, such as swollen and tender joints—hæmatoma following injuries—and continuous bleeding after cuts—are all indefinite when obtained through the illiterate parents of our clinical patient, consequently we have to take our chances when attending to this class of cases.

(2) Fibroid tonsils, where the glandular substance is largely enmeshed with fibrous tissue, which prevents the arterioles from contracting when cut.

This is the most frequent condition obtaining for the removal of tonsils, and although the danger is obvious, yet the pathological import is sufficient to warrant the operation.

(3) Age; occurring more in adults than in children. Due entirely to the increased fibrosis and greater vascular supply.

(4) Sex; more frequent in males than in females. In a report made from a search of the \*Surgeon General's Library in Washington, consisting of thirty-one alarming hemorrhages, only six were in women. In the twenty-three cases from my own search, eight are women.

(5) Acute inflammation, when the tonsils are engorged with blood. Concensus of opinion discourages removal when this condition exists.

(6) Anæmia; when there is a marked deficiency in fibrin, the coagulating element of the blood. Ordinarily one would await the constitutional upbuilding of the patient before operating.

(7) Malignancy; where there is increased vascular supply. In these cases measures are generally taken to overcome the hemorrhage by ligation of the common carotid before removing the mass.

(8) Abnormalities<sup>3</sup> in the distribution of the blood vessels of the tonsil.

As: (1) Abnormal distribution of the ascending pharyngeal artery. (Wounded by Billroth while operating with a bistoury.)

<sup>3</sup> De Santi, *Lancet*, Jan. 13, 1894.

- (2) Abnormally large tonsillar artery.
- (3) Abnormal internal carotid.
- (4) Large vessel in the anterior pillar of the fauces. (A case of hemorrhage from this cause is mentioned by Weir.)
- (5) Wound of large venous plexus, at the lower and outer border of the tonsil.
- (7) Arterio-sclerosis.

These conditions are usually determined only after removal of the tonsil, as the tonsillar mass conceals the hidden enemy, but when one observes several large vessels running from the pillars across to the tonsil, it is safer to cut these off by the electric cautery some time before the operation.

#### Exciting Causes.

- (1) Traumatism, where the pharyngeal pillar is injured, or where the incision has gone deeper than the tonsillar quishion.

Traumatism can be avoided by less aggressiveness on the part of the operator, but frequently the pillar of the tonsil is attached, and all efforts to detach it are entirely unsuccessful, and the operator proceeds to cut through or snip out a piece of one fold. Here we would criticise the operator, yet we are assured by eminent authorities that the tonsillar pillar is never attached, and it is only the plica-tonsillaris or opercular fold which we see and that it does no harm to cut through this. In the enucleation of a tonsil, the instrument frequently enters deeper than we can appreciate, and cuts beyond the quishion, injuring some large arterial trunk. This is frequently caused by the anæsthetist pushing too hard externally upon the tonsil. With a Mackenzie tonsillotome, ample pressure can ordinarily be exerted by the operator, to engage all the tonsillar tissue advisable to be removed.

- (2) Local anæsthesia combined with an astringent, as cocaine and adrenalin, which predisposes to a secondary hemorrhage.

This combination is being used less and less.

Galvanic cautery—cautery amygdalotomes—electric tonsil snares, etc., have all been largely supplanted by Mathieu's and Mackenzie's tonsillotomes, or the cold snare—the reduction of hemorrhage by use of the former, being outweighed by the pain following such a large cauterized area.

Granted then, that we do have hemorrhage following tonsillotomies endangering the welfare of patient and operator, and that there are causes for such which are obtainable too late for practical prevention, what measures are to be taken to minimize these dangers and relieve the anxiety of the operator?

Suppose we have operated away from the office or clinical operating room, remote alike from trained assistance or surgical appliances, what should we do? Delavan and others assure us that if we sit the patient upright, and induce syncope, the hemorrhage will stop. This has proven so in many instances, yet there are six authenticated cases where this did not occur. Surely there was syncope though it is not mentioned, in fact very little is ever mentioned about unfavorable cases. Should syncope occur the bleeding preceding it is alarming to say the least, and to a timid operator distressing. It is likewise hard to ease the fears of the inquiring family. Ingals suggests tannin, both as a local application and as an injection into the tissue. Yet this has been ineffectual in many instances.

We all know that galvano-cautery will check small bleeding areas—not large ones. But it is inconvenient to carry a large four-celled storage battery to every operation.

The Paquelin cautery is another means of stopping it, but with a mouth full of blood and the patient writhing and swallowing and possibly not entirely free from the effects of an anæsthetic, it is somewhat difficult to keep from cauterizing the entire fauces. Torsion by means of a ligature through the tonsillar folds and twisting with an artery forceps offers another means of stopping the hemorrhage.

A piece of gauze, or a handkerchief soaked in tannic acid, and held upon the bleeding surface is suggested, but a busy practitioner could hardly give the time requisite for controlling the hemorrhage to say nothing of the exhaustion attending the procedure. Some have caught up the bleeding vessel with artery forceps and ligated it. This would be feasible in certain cases, where there was one bleeding point. The purse-string suture, around the bleeding stump sounds easy, but appears impracticable in a small throat. Gelatin, locally, subcutaneously, and per rectum, has its advocates in Carnot, Klemmner, Wiedner, and Von Boltensern.<sup>4</sup> The latter having used it successfully in hæmophilia, and to control hemorrhage from the lungs, stomach, kidney, nose and bladder.

The formula advocated is:—

Gelatin, 50 parts.

Calc. chloride, 10 parts.

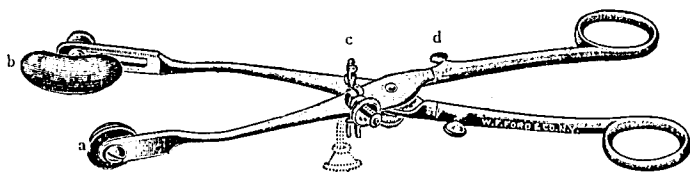
Aqua destill, 1000 parts.

Ligation of the carotid might also stop it, but this is rather a serious sequence to such a simple operation as tonsillotomy is supposed to be, and in some cases bleeding has still continued from the other carotid, through its anastomosis.

<sup>4</sup> *Wurzbürger Abhandl.*, vol. 3, 1902-3.

French suggests *veratrum viride* by injection directly into the peritonsillar tissue. Head, of Chicago, also advocates this. The iron salts and other styptics, as adrenalin, alumnol, silver nitrate, acetotartrate of aluminum, tanno-gallic acid, etc., have their ardent advocates, but when the blood flows freely enough to be classed under the head of dangerous and styptics all fail, no time should be lost in applying some mechanical measure which we know will be efficient.

A most effective instrument in my hands has been the tonsillar hæmostat of Mickulicz-Stoerk. It consists of two blades so constructed, that the inner with its ovoid compressor of hard corrugated rubber fits into the cavity between the tonsillar pillars. The other blade with its cushion of chamois skin engages behind the angle of the jaw, and exerts pressure externally over the tonsillar area. The two handles are brought together by thumb and finger manipulation, and the blades held firmly by a set screw, when the handles can be detached. Before applying, the inner compressor should be wrapped with gauze, which enables it to cover a wider area and cause less trauma. In applying these forceps, care should be exercised in the amount of pressure brought to bear on the tissues, as necrosis is liable to follow externally as well as internally, by too much pressure. The author has modified the set screw on this instrument by making it work on a ball and socket joint, thus enabling the operator to always have the latch on top irrespective of the tonsil to which the hæmostat is applied.



**Tonsillar Hæmostat.**

a Hard rubber Compress (internal). b External Cushion. c Set Screw. d Detachable Handles.

I have had occasion to apply this hæmostat in three cases. Two years ago, while attending to my clinical work at the Manhattan Eye and Ear Hospital, I received a telephone message requesting me to see a patient at the Grand Union Hotel, who was having a severe tonsillar hemorrhage. I at once secured a Mickulicz-Stoerk tonsillar hæmostat, and rushed over to find a large plethoric man of about thirty-five, bleeding profusely from the left tonsillar area. Every styptic had been employed to control the hemorrhage for at least two hours, but to no avail. In my endeavor to arrest it by hæmostatic pressure, I found it no easy matter to apply it so as to overcome the bleeding entirely. The inner compressor would slip each time I re-

leased the handles. But upon wrapping the inner compressor with gauze, the pressure held, and the bleeding completely stopped. The hæmostat was kept on from three p. m. until twelve that night (nine hours) and then removed, when the bleeding recurred as freely as ever. I again applied and left it on until twelve the next day, when upon removal no recurrence took place. There was considerable discomfort experienced through the night, though the patient had frequent hyperdermics of morphine. Considerable œdema existed for several days externally where the quishon pressed, and all over the cervical area adjacent. The man was too weak to get out of bed for four days, and it took him some months to fully recover from the loss of blood prior to the application of the hæmostat.

The next application was upon a young man of about twenty, from Dr. Chappell's clinic at the Manhattan Eye and Ear Hospital, who was operated upon by one of the house surgeons. His tonsils were large and fibrous and entirely free from attachment to the tonsillar folds. Here the operator cut deeply into the tonsillar tissues, and apparently into a large vascular area, though no one point of bleeding could be determined. The bleeding was so profuse that styptics were not resorted to, and the hæmostat was immediately applied and left on for sixteen hours, when, upon removal, no hemorrhage occurred. In this case there was no constitutional disturbance as in the other, and but little œdema followed, owing to the rapid control of the hemorrhage with the hæmostat.

In the third case the patient was a little girl, aged six, also from Dr. Chappell's clinic. The tonsils were large and fibrous, and free from adhesions. There was no history of hæmophilia, and the patient was in fairly good physical condition. The operation was performed by an assistant surgeon of the Manhattan Eye and Ear Hospital, under gas and ether anæsthesia. The Mathieu tonsillotome was used. The right tonsil was removed first, with but slight hemorrhage. The left tonsil was then removed, and upon its lower extremity, a small piece of either tonsillar tissue or quishon was apparently torn out rather than cut off. It was not the tonsillar fold, as they were intact. Profuse hemorrhage followed this, which did not yield to peroxid, adrenalin, or aceto-tartrate of aluminum. Shortly the operator applied the tonsillar hæmostat, but the bleeding continued, although not so profusely. I was then asked to see the case again, as I had witnessed the removal of the tonsils, but did not remain to see the results. I removed the hæmostat to get a glimpse of the exact bleeding area. The blood welled up from the lower angle of the wound between the pillars in such profuse quantities, that it convinced me no styptic would control it. I wrapped the hard rubber

compressor with gauze, soaked in a mixture of compound tincture of benzoin and iodoform, and applied to the bleeding area. The hemorrhage stopped immediately. By this time the patient had lost considerable blood, and the symptoms of exsanguination appeared, such as great thirst, gasping for breath, etc. We gave her saline enema, strychnine, and one thirty-secondth of a grain of morphia, hyperdermically. These were repeated at three hour intervals, until twelve the next day (twenty-one hours), when we removed the forceps and bleeding recommenced. A new pad soaked in alcohol was adjusted to a Mickulicz-Stoerk hæmostat with detachable handles, and applied as before. The discomfort of the hæmostat was mitigated by the morphine, but the thirst was irritating. The bowels expelled all nutritive enema, and the difficulty in swallowing was intense. The œdema of neck and neighboring tissues was considerable, and the external pad was beginning to excoriate the surface. The hæmostat was removed at two the following day, having been applied for forty-seven hours. Upon removal the hemorrhage had stopped, and no further bleeding took place. A slough in the throat, and small quantities of necrosed tissue came away for several days, followed later by a general purulent discharge. Externally, a slough also began, which occasioned some alarm, for fear that the two would meet and erode a large artery in the way. However, under the influence of ichthyol, externally applied, and the use of a mouth wash internally, both proceeded to heal satisfactorily. In addition to ichthyol, antiphlogistine was applied externally, and it seemed to reduce the œdema rapidly. The external wound was five weeks in healing. Her maximum temperature had been 101° F., pulse 120, and respiration 36.

These cases bear their testimony to the quick efficiency of the tonsillar hæmostat. They also show that it is not so easy to apply it properly, and that too much pressure long continued may result in slough. I am sure that less slough would have resulted, had we used the detachable handle hæmostat first, as not so much pressure is required to hold it in place. The hæmostat is easily carried to an operation, and is a sure means of controlling the hemorrhage—if such occurs. It is the sheet anchor of the throat surgeon, and dissipates all fear as to possible fatal hemorrhage, except in hæmophilia.

I append the report of all alarming hemorrhages following tonsillectomy, collected by Dr. Wright from a search of the Surgeon General's Library at Washington, from 1868 to 1890, consisting of thirty-one cases, also the result of my own investigation from 1890 to date, 23 additional, including the three of my own. This makes a total of fifty-four cases. Out of this number, six have resulted fatally. Two of the six deaths occurred before the modern methods of removal were introduced, the other four, under the present surgical methods.

It is interesting to report that the patient operated upon by Dr. Fuller, of Brooklyn, in Dr. Wright's report, when the common carotid was ligated, and saline transfusion into radial vein was given to control the hemorrhage, was again operated on 15 years after for tonsillar abscess by Dr. Wright, which was followed by an alarming secondary hemorrhage into the cavity of the abscess, and was, with great difficulty finally controlled.

## CASES OF ALARMING HEMORRHAGES AFTER AMYGDALECTOMY.\*

| Sex.                     | Age.   | Disease or condition requiring operation. | Instrument Used.                                  | Ultimate result. | Operator.        | Reference and Remarks.  | Method used for control of Hemorrhage.  |
|--------------------------|--------|---|---|------------------|------------------|---|---|
| UNITED STATES.—17 cases. |        |   |   |                  |                  |   |   |
| Female                   | Middle | Hypertrophy of right tonsil.              | Amygdalotome (no pattern ment'ned)                | Recovery.        | A. M. Fauntleroy | Am. Med. Weekly, Louisville, ii, 1875, p. 498. Patient was very full blooded. | Ice packing upon neck employed.   |
| Male                     | 18     | Hypertrophied tonsil.                     | Tonsillo-Guillotine                               | Recovery.        | L. D. Kastenbine | Louisville Med. News, i, 1876, 280, 281.                                      | Hemorrhage stopped by patient walking home with mouth open. Pressure applied directly upon surface. Artery twisted. |
| Male                     | 25     | Hypertrophied tonsil.                     | Tonsil bistoury                                   | Recovery.        | G. M. Lefferts   | Arch. of Laryngol., New York, iii, 1882, 37.                                  | Artery twisted. Artery twisted.   |
| Male                     | 35     | Hypertrophied tonsil.                     | Mackenzie's amygdalotome.                         | Recovery.        | G. M. Lefferts   | Hemorrhage from artery at right stump.  | Artery twisted. Artery twisted.   |
| Female                   | Young  | Hypertrophy of right tonsil.              | Amygdalotome                                      | Recovery.        | G. M. Lefferts   |   |   |
| Male                     | 30     | Enlargement of left tonsil, acute inflam. | Amygdalotome                                      | Recovery.        | G. M. Lefferts   |   |   |
| Female                   | 30     | Enlargement of left tonsil, acute inflam. | Mackenzie's modification of Physick's guillotine. | Recovery.        | Clinton Wagner   | Tr. of the Am. Laryngol. Assoc. 1886, New York, 1887, viii, 189.              | Artery twisted with artery forceps.   |
| Male                     | 25     | Hypertrophy of tonsil.                    | Mathieu's amygdalotome.                           | Recovery.        | S. E. Fuller     | Amer. Jour. of the Med. Sci., Phila. xcv, 1888, 357.                          | Carotid commun. ligated; saline solution (12 oz.) transfused into radial vein.                                      |
| Male                     | 21     | Quinsy.                                   | Mathieu's amygdalotome.                           | Recovery.        | L. E. Blair      | Albany Med. Ann., ix, 1888, 41-47. Hemorrhage from left tonsil.               | Ice and compress.   |
| Male                     | 27     | Amygdalitis                               | Mathieu's amygd'lot                               | Recovery.        | L. E. Blair      | Hemorrhage from right tonsil.   | Stopped by compress.  |
| Male                     | 22     | Hypertrophy of both tonsils.              | Volzella and angular scissors.                    | Recovery.        | E. W. Clark      | N. Y. M. J., xlviii, 1888, 7.   | Performed ligation.   |
| Male                     | Young  | Hypertrophy of both tonsils.              | Physick's amygdalotome.                           | Recovery.        | T. M. Maakoe     | Tr. of the Am. Laryngol. Assoc., 1898, N.Y., 1889.                            | Ligation of stump. Compress.  |



## CASES OF ALARMING HÆMORRHAGE AFTER AMYGDALECTOMY.—CONTINUED.

| Sex.                                   | Age.  | Disease.                                | Instrument used.                          | Ultimate result. | Operator.                   | Reference and Remarks.  | Methods used for control of hæmorrhage.                            |
|--|-------|---|---|------------------|-----------------------------|---|--|
| Male                                   | 34    |   | Amygdalotome (no pattern ment'ned).       | Recovery.        | D. Bryson Delavan.          | Tr. of the Am. Laryngol. Assoc., x, 1888, N. Y., 1889, 153-163.   |  |
| Female                                 | 7     |   | Fahnestock's                              | Recovery.        | D. Bryson Delavan.          | Patient was a hæmophile.  |  |
| Male                                   | Adult |   | Guillotine (no make mentioned).           | Recovery.        | R. J. Lewis                 | Med. News, Phila., lili, 1888, 640.   | Application of a tenaculum through base of tonsil and twisting it. |
| Male                                   |       |   |   | Recovery.        | Alden March                 | Albany Med. Ann., ix, 1888, 41-47.  |  |
| Male                                   | 48    | Tonsillar hypertrophy.                  | Mathieu's amygdalotome.                   | Recovery.        | F. Park Lewis.              | J. of Ophth., Otol., and Laryngol., N. Y., i, 1889, 115-117. Hæmorrhage, 4 qts. in 37 hours from left tonsil. |  |
| AUSTRIA.—1 case.                       |       |   |   |                  |                             |   |  |
| Male                                   | 31    | Syphilitic enlargement of right tonsil. | Hook and bistoury.                        | Recovery.        | Guntner.                    | Oesterr. Zeitschr. f. prakt. Heilk., 1872, xviii, No. 52, p. 839. Patient a hæmophile, syphilitic.            | Common carotid ligated.  |
| FRANCE—8 cases: 6 recoveries, 2 fatal. |       |   |   |                  |                             |   |  |
| Male                                   | 21    | Hypertrophy of tonsils.                 |   | Recovery.        | Gavat.                      | These, Paris, 1868, No. 275, p. 52.   |  |
| Male                                   | Young | Hypertrophy of tonsils.                 | Amygdalot.; operation by patient himself. | Recovery.        | Jarjavay<br>Mary<br>Vernuil | These, Paris, 1875, No. 29. Right tonsil removed.   | Hæmorrhage stopped by perchloride of iron.                         |
| Male                                   | 35    |   |   | Recovery.        | Mary<br>Broca               | 1869. Both tonsils removed; patient a hæmophile.  | Direct application of ice.   |

## CASES OF ALARMING HÆMORRHAGE AFTER AMYGDALECTOMY.—CONTINUED.

| Sex.                   | Age.  | Disease.                              | Instrument used.  | Ultimate result. | Operator.         | Reference and Remarks.   | Methods used for control of hæmorrhage.                    |
|------------------------|-------|---------------------------------------|---|------------------|-------------------|--|--|
| Female                 | 20    |                                       |   | Recovery.        | Mary Broca.       | No details.  |  |
| Boy                    |       |                                       |   | Recovery.        | Ricordeau.        | These, Paris, 1886. Both tonsils removed.  |  |
| Male                   | 24-25 |                                       |   | Fatal            | Reclus.           | 1879. No details.  |  |
| Male                   | 8½    | Double tonsill'r angina; hypertrophy. | Amygdalotome (no pattern ment'ned)                              | Fatal            | Ricordeau.        |  |  |
|                        |       |                                       |   | Fatal            | Broca.            | Nov., 1879. Cause of hæmorrhage, anomalous internal carotid.                       |  |
| Male                   | 20    |                                       |   | Recovery.        | Saint-Germain     | No details.  | Ice applied around throat.                                 |
| GERMANY—1 case.        |       |                                       |   |                  |                   |  |  |
| Male                   | 31    |                                       | Cautery (probably thermo-cautery).                              | Recovery.        | Werner            | Oct. 11, 1887, Med. Cor.-Bl. d. würtemb. arztl. Ver., Stuttgart, lviii, 1888, 241. | Manual compression of carotis for 10 days.                 |
| GREAT BRITAIN—3 cases. |       |                                       |   |                  |                   |  |  |
| Male                   |       | Hypertrophy of left tonsil.           | Bistoury  | Recovery.        | Wharton P. Hood.  | Lancet, 1870, vol. ii, 600. Small calculus within tonsil.                          | Vomiting stopped hæmorrhage.                               |
| Male                   |       |                                       |   | Recovery.        | Wharton P. Hood.  | No details; both tonsils excised.  | Sulph. of zinc administered; vomiting, hæmorrhage stopped. |
| Male                   | 34    | Chron. follicul'r anginalitis.        | MacKenzie's for right tonsil and tonsil-sickle for left tonsil. | Recovery.        | J. Walker Downie. | Edinb. M. J., xxxii, 1886-'87, 116.  | Actual cautery.  |

## CASES OF ALARMING HEMORRHAGE AFTER AMYGDALECTOMY.—CONTINUED.

| Sex.            | Age.  | Disease.                | Instrument used.            | Ultimate result.  | Operator.        | Reference and Remarks.   | Methods used for control of hæmorrhage.                    |
|-----------------|-------|-------------------------|-----------------------------|-------------------|------------------|--|--|
| SWEDEN.—1 case. |       |                         |                             |                   |                  |  |  |
| Female          |       | Hypertrophy of tonsils. | Forceps and blunt bistoury. | Recovery          | Lidon            | Hygeia, Stockholm, xlii, 1881, p. 256.   | Ligation of common carotid.                                |
| Male            | Adult | Hypertrophy             | ?                           | Recovery          | M. Lucas         | Championniere, La Semaine Medicale, May 7, 1890.   | Tampon, ergotine, presure.                                 |
| Male            | 11    | Hypertrophy             | Mack, tonsillotome.         | Recovery          | William H. Hall  | N. Y. Medical Jour., Sept. 20, 1890.   | Pressure, ice, sypitics.                                   |
| Female          | 18    | Hypertrophy             | Mack, tonsillotome.         | Recovery & anemia | William H. Hall  | N. Y. Medical Jour., Sept. 20, 1890.   | Persul. of iron, ice, presure, gallic acid.                |
| Male            | 23    | Hypertrophy             | Mack, tonsillotome.         | Recovery          | M. Thorne        | The Cin. Lancet Clinic, Oct. 18, 1890.   | Syncope stopped hæmorrhage.                                |
| Male            | 25    | Hypertrophy             | Mack, tonsillotome.         | Recovery          | M. Thorne        | The Cin. Lancet Clinic, May, 1891.   | Tanno gallic acid, iron persulphate, tonsion with forceps. |
| Female          | ?     | Hypertrophy             | ?                           | Recovery          | Mr. Buisvet      | Revue de Laryng, Nov. 15, 1891. Grave hæmorrhage, convulsions, aphasia.                            | Cocaine.   |
| Female          | 8     | Hypertrophy             | Mack, tonsillotome.         | Recovery          | P. R. W. DeSanti | Lancet, Jan. 13, 1894. Secondary hæmorrhage, 24 hours after. Unconscious, convulsions, air hunger. | Tanno gallic acid.   |
| Female          | 15    | Hypertrophy             | Mack, tonsillotome.         | Recovery          | P. R. W. DeSanti | Lancet, Jan. 13, 1894. Secondary hæmorrhage 48 hours after, and continued 4 days.                  | Tanno gallic acid.   |

CASES OF ALARMING HÆMORRHAGE AFTER AMYGDALECTOMY.—CONTINUED.

| Sex.   | Age.  | Disease.               | Instrument used.       | Ultimate result.  | Operator.           | Reference and Remarks.   | Methods used for control of hæmorrhage.        |
|--------|-------|------------------------|------------------------|-------------------|---------------------|--|--|
| Male   | 19    | Hypertrophy            | Mack, tonsillotome     | Recovery.         | P. R. W. DeSanti    | Lancet, Jan. 13, 1894.   | Cautery.                                       |
| Male   | 6     | Hypertrophy and struma | Tonsillotome           | Fatal             | A. Barkan           | (San Francisco) Occidental Med. Times, March, 1894. Death 12 hours after operation.  |  |
| Female | Adult | Hypertrophy            | Mathieu, tonsillotome. | Recovery.         | A. W. Calhoun       | Atlanta Med. and Surg. Jour., Aug., 1895. Secondary hæmorrhage 5 days after operation.                                       | Cautery.                                       |
| Male   | 31    | Hypertrophy            | Mathieu, tonsillotome. | Recovery.         | F. A. Bottome       | Medical Record, Aug. 29, 1896. Secondary hæmorrhage 60 hours after operation.  |  |
| Female | 49    | Abscess                | Galvano Cautery        | Recovery.         | J. W. S. McCullough | Medical Record, March 20, 1897. Secondary hæmorrhage 74 hours after operation.   | Pressure, iron, ice, ergotine, antipyrin.      |
| Female | 20    | Hypertrophy            | Tonsillotome           | Recovery.         | Jules Broeckaert    | La Belgique Medic., Nov. 20, 1897. Secondary, 7 days after operation.  |  |
| Male   | 25    | Hypertrophy            | Tonsillotome           | Recovery.         | R. C. Myles         | Transactions Am. Laryn. Rhinol. and Otol. Soc., June 2 and 3, 1899.  | Electric cautery, tanno gallic acid, compress. |
| Female | 11    | Hypertrophy            | Tonsillotome           | Recovery & anæmia | R. C. Myles         | Transactions Am. Laryn. Rhinol. and Otol. Soc., June 2 and 3, 1899. Secondary, fourth day; whooping cough, anæmia, one year. |  |

CASES OF ALARMING HÆMORRHAGE AFTER AMYGDALECTOMY.—CONTINUED.

| Sex. | Age.    | Disease.                 | Instrument used.                  | Ultimate result. | Operator.      | Reference and Remarks.  | Methods used for control of hæmorrhage.                       |
|------|---------|--------------------------|-----------------------------------|------------------|----------------|---|---|
| Male | 15..... | Hypertrophy and bleeder. | Tonsillotome                      | Fatal            | J. A. Stuckey  | Transactions Am. Laryn. Rhinol. and Otol. Soc., June 2 and 3, 1899. Secondary, 7 hours after; Temp. 101 at time; venous oozing. | Cold peroxide, ergotine, morphine, strichnia, persul of iron. |
| Male | Adult   | Hypertrophy              | ?                                 | Recovery.        | J. Quinlan     | Laryngoscope, April, 1900.  |   |
| Male | 23..... | Hypertrophy              | Galvano Cautery                   | Recovery.        | M. D. Lederman | Laryngoscope, April, 1900. Secondary, 5 days after.   | Cocaine, alum, ice.   |
| Male | 7.....  | Hypertrophy              | Tonsillotome                      | Recovery.        | A. H. Urban    | American Med., July 4, 1903. Secondary, 25 hours after.   | Paquelin cautery.   |
| Male | 10..... | Hypertrophy              | Mackenzie tonsillotome.           | Recovery.        | R. McKinney    | N. Y. and Phil. Med. Jour., Dec. 26, 1903. Secondary hæmorrhage, 4 days after.  | Monse's solution.   |
| Male | 7.....  | Hypertrophy              | Mackenzie tonsillotome, scissors. | Recovery.        | R. McKinney    | Chloroform anaesthesia. Profuse bleeding.   | Monse's solution and ice.                                     |

\*Since this table was compiled I note the report of a case of hæmorrhage after amygdalotomy, in a child seven years old, during active inflammation of the tonsils. (Moure, reference in Jour. of Laryng., 1890, No. 8.)