

the proper course to adopt, and much speculation must ensue. The following classification might not be amiss: 1, those in which the right subclavian and common carotid arteries should be ligated; 2, those into which wire should be introduced; 3, those in which nothing should be done.

It may be that those in the first and second would be equally benefited by either procedure. That each has been beneficial to a very high degree there can be no question; in fact, greater benefit has been obtained by these two methods than any other.

The *modus operandi* of the second is more easily understood than that of the first, even though the first has been followed by more permanent and universal results. But the great underlying principle upon which rests the method of ligating the subclavian and common carotid arteries does not seem to have been discovered until the time of Wardrop. He it was who demonstrated that less resistance was necessary to produce consolidation of the contents of the sac than was formerly thought to be. It is, therefore, to be supposed that the obstruction of the innominate, or its branches, would be sufficient to more or less retard the rate of blood-flow through the sac. This retardation would necessarily seem to correspond with the opening into the sac, hence the amount of lymph deposit would be influenced. Now, it is not necessary to close a vessel that complete consolidation of an aneurysmal tumor may ensue. So it is that lymph may be deposited within the sac, first in the depression of its wall, and especially at the opening of the innominate.

The case herein reported was first referred by Dr. H. A. Beeson of Leesburg, Ohio, in the spring of 1897. Male; white; age, 40; family history negative. He complained of pain in right infra-clavicular region, extending beyond sternum, and in right arm, especially exaggerated on movement of arm, incapacitating him for his work—that of a blacksmith and wagonmaker. On examination, a swelling was found extending from middle third of right clavicle, slightly beyond median line, and extending over two or three intercostal spaces. No bruit could be found at this time. On questioning him, found that twenty-two years previous he had a suspicious sore upon the genitals. The diagnosis of aortic aneurysm due to syphilis was made, and the patient put on anti-syphilitic treatment. The few reports from him after were that he was improving, being at the end of three months able to resume his work. On the 15th of February last, Dr. Beeson again brought the patient to me. The pain complained of at his previous visit was even now not so severe; but he was becoming more and more short of breath, and was gradually losing flesh. Examination again showed swelling, slightly greater than before, and now a very decided bruit was found in medial line near junction of second and third portions of sternum. The bruit was especially distinct on the introduction of stethoscope into patient's mouth. The pulse was about eighty—full and strong. It is to be regretted that the sphygmograph was not used. An operation was advised and made. The patient was chloroformed, and under as nearly aseptic conditions as possible, the subclavian and common carotid arteries of the right side were ligated with kangaroo tendons; the former requiring seven, and the latter five minutes. The wounds were dressed with collodion. The patient made an uneventful recovery, and returned home at the end of twenty-one

days. After the third day, the bruit was less marked, growing gradually less as time progressed, until now no bruit is to be heard, but there appears to be great commotion within the dust walls on auscultation. The operation caused no appreciable change in the circulation, and the temperature was only slightly elevated for a few days, on the second day reaching 100. The chest prominence at time of patient's dismissal from hospital was much less than before operation, and pulsation that was distinct three weeks before almost gone, showing the rapid progress of probable consolidation. He has gained about twelve pounds, and now reports that he feels better than at any time for eighteen months.

The following conclusions are submitted:

1. The remedy lies within the domain of surgery.
2. There are but two such methods at the present time to be considered: (a) Obstruction of the right subclavian and common carotid arteries; (b) Introduction of wire or needles into the sac, with or without galvanism.
3. Either one or both of the operations should be applied in all cases after a thorough saturation with the iodids.
4. Ligation is attended by less danger, less mortality, greater and more permanent and universal benefit.
5. Ligation of the subclavian and common carotid arteries is less dangerous than ligation of the innominate. In point of fact, the latter should not be done.
6. The iodids should always precede and follow any surgical interference.
7. Extreme atheroma might contraindicate ligation.
8. Extreme atheroma might possibly indicate the introduction of needles, or wire, with or without galvanism.
9. Atheroma to some degree is present in the majority of arch aneurysms.
10. It is impossible to technically classify arch aneurysms.
11. The results of ligation in the case herein contained have been far more beneficial than was ever anticipated.

## REMOVAL OF THE EPITHELIOMATOUS TONSIL, BY THE EXTERNAL ROUTE (PHARYNGOTOMY), WITH A REPORT OF TWO SUCCESSFUL CASES.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. F. JONAS, M.D.,  
OMAHA.

It is not our purpose today to discuss epithelioma from an etiologic or pathologic standpoint: these subjects belong to those who are more competent, and should receive consideration only from those whose authority is based on experimental research. As practical surgeons we are chiefly concerned in the clinical and operative aspects of this insidious, relentless and fatal disease.

We will direct our attention to the tonsil when affected by epithelioma. This, on first thought, does not seem to be the place for discussing diseases of the tonsil, but nearly every special field that is more or less surgical, will have in it more or less work for the

general surgeon. The field of laryngology and rhinology, in common with others, contains many diseases whose surgical magnitude and responsibility seem to require a general surgeon for their management. The cases which will serve to illustrate our theme today were referred by the specialist to the surgeon, therefore the cases were transferred from the department of laryngology to that of general surgery, and hence their presentation at this time and place.

The results from operative and other treatment of malignant disease of the tonsil have been so unsatisfactory, perhaps more unsatisfactory than when located in any other accessible cavity, that Butlin, after very careful research, exclaims: "The prospect of permanent relief by operation in any case of malignant disease of the tonsil is very small, even if there can be said to be any. Removal of the disease through an external incision (pharyngotomy) has hitherto proved a dangerous proceeding, and has not yielded as good results as operations through the open mouth." In future cases, pharyngotomy cannot be recommended and, unless the results produced by it are far better for the next series of cases than those which it has yielded hitherto, it must be condemned as an unjustifiable proceeding." This is certainly emphatic language by an eminent authority. And yet we cannot stand idly by without an attempt to remedy the existing condition.

With improved technique, increased experience and a more thorough knowledge of the dissemination of epithelioma and the more encouraging results from extirpation of epithelioma in other glandular organs, more especially epithelioma of the breast, as operated according to the painstaking and minute attention to detail as taught us by Halstead, we have been prompted to renewed efforts when the disease has attacked the tonsil. Fortunately, primary epithelioma of the tonsil is a rare disease, so infrequent indeed that those of large experience have seen very few cases.

I desire to place on record two cases of epithelioma removed by the external route, by the operation known as pharyngotomy.

*Case 1.*—M. H., mechanic, aged 40, American, married, has always enjoyed good health, except for recurrent attacks of tonsillitis extending over a period of five or six years, the attacks recurring at least once a year, and often ending in supuration. During the intervals his throat was sensitive, much accumulation of mucus and frequent hacking cough. His family history was negative, none of his immediate relatives having been affected with carcinoma or tuberculosis.

During the last year, and since his last attack of tonsillitis, he has had increased tenderness and sensitiveness in the right tonsillar region, with occasional expectoration of blood, which he believed to have come from the right tonsil. Deglutition became difficult and painful. He had lost in weight, which he believed to be due to his inability to swallow proper food, his diet during the last three months having consisted largely of fluids. On inspection, the right tonsil was found to be enlarged, ulcerated on its median side. It was found to be very sensitive to the touch, bleeding easily. On palpation with the finger it was found to be hard and irregular over its entire surface. It was slightly movable. The pillars of the fauces were not involved, and the entire process, from the mouth seemed to be confined to the tonsil itself. The pharynx and naso-pharynx were reddened and slightly edematous. The opposite tonsil was moderately enlarged, but to the touch with the finger, as well as in appearance, presented nothing that would suggest malignancy. Beneath and slightly posterior to the angle of the right lower jaw was found an enlargement, the size of a hickory nut, which was painful and tender on pressure. The diagnosis of epithelioma of the tonsil was made. It now became a question whether this mass should be removed through the mouth by excision, galvano-caustic snare, or by the external route through the submaxillary triangle. On

further examination it was found that the entire growth could not with certainty be removed through the mouth. A pharyngotomy was then decided upon.

Under chloroform anesthesia, a triangular flap was reflected forward, the lines of incision extending along the lower margin of the lower jaw, beginning about midway on the horizontal ramus and extending to the mastoid process, and thence downward along the anterior margin of the sterno cleido mastoid muscle, to a point opposite the cricoid cartilage; the submaxillary and superior carotid triangles were exposed. The enlarged and affected gland was situated within the submaxillary triangle; by means of blunt dissection the surrounding structures were separated without much hemorrhage. The sterno cleido mastoid, together with the carotid artery, the internal jugular vein and pneumogastric nerve were retracted posteriorly with blunt hooks. The diaphragm, mylo hyoid, hyo glossus were likewise retracted. The tongue now became unmanageable, interfering with respiration, so it was drawn forward and held by means of a vulsellum forceps. The left index finger was now introduced into the mouth and pressure made outward against the tonsil. The head was drawn strongly to the left side, and by means of a blunt dissector the tonsil was gradually separated, and the growth removed. The pharynx and larynx could now be inspected. With curved scissors and pincette the ragged margins of the wound were trimmed. No blood seemed to have entered the larynx. The pillars of the fauces were drawn together with catgut and the external wound closed with deep interrupted silk sutures. No drain. The healing process was uneventful. The patient was nourished with a feeding tube nearly two weeks, after which time deglutition gradually improved. The patient was last seen nearly four years after the operation, with no trace of recurrence.

*Case 2.*—H. M., farmer, aged 56, married, muscular, well nourished. He was always well until eighteen years ago, when he suffered from pneumonia, from which he completely recovered. He has been of constipated habit for nearly twenty-five years; has had hemorrhoids in mild form. His digestion has been imperfect, eructations of gas and occasionally of fluids, which he described as being at times sour, at other times bitter and again salty in taste. For many years he has had chronic pharyngitis, always greatly aggravated on exposure to cold, producing hoarseness and much tenderness during deglutition. About one year ago he began to experience pain, sometimes of a lancinating character, and tenderness in the left side of the throat when swallowing. He coughed much, expectorating a muco sanguinolent substance, and occasionally clear blood in considerable quantity, which temporarily gave relief from pain. His medical attendant, believing that he had to deal with an hypertrophied tonsil, attempted its removal, and did remove the larger part with a tonsillotome. Within a short time the pain increased, the muco-purulent expectoration appearing in augmenting quantities, until in a few weeks he was unable to sleep without opiates. He consulted Dr. Kinsler, who diagnosed epithelioma of the tonsil and referred the case to the writer for operation.

On inspection a hard, nodular, ulcerating, easily bleeding mass, occupying the site of the left tonsil, projecting toward the uvula and extending upward along the anterior and posterior pillars of the fauces to the soft palate, and downward to the margin of the epiglottis. This mass was lightly movable, very tender, and bled easily. On external palpation was found, immediately beneath the horizontal ramus of the jaw at its angle and extending forward nearly one third of its length, a hard ovoid mass the size of an English walnut, immediately adherent to the soft sublingual gland. Below this mass could be felt three hazelnut-sized nodules.

The diagnosis of epithelioma of the left tonsil with involvement of the submaxillary lymphatics and the sublingual gland was confirmed.

Excision of the affected structures by an external route was determined and was done April 26, 1898. A strong silk suture was passed through the point of the tongue for the purpose of controlling this organ. A tracheotomy tube was at hand in case of necessity.

An incision was made, beginning at the mastoid process and extending downward to a point opposite the lower margin of the thyroid cartilage, and a second, beginning at the point of commencement of the first and extending forward along the lower margin of the horizontal ramus of the inferior maxillary to its middle point. This flap was, by rapid dissection, turned downward and forward, giving ample room for all manipulations. The external jugular vein was ligated between two ligatures and divided. On palpation a number of distinctly infiltrated glands were felt beneath the sterno cleido mastoid. This muscle was divided diagonally and its ends reflected, giving

easy access to the involved structures. By blunt dissection it was found that the glandular enlargements were intimately and firmly attached to the internal jugular and both internal and external carotids. The pneumogastric nerve was isolated and the vein and arteries ligated, greatly facilitating the extirpation of all the nodes, together with the sublingual gland, which was plainly involved. After an exact hemostasis the head was drawn toward the right, the tonsillar mass was seized from the wound with a four-pronged vulsellum forceps and pressure from the throat outward with the index finger of an assistant; the pharynx was opened with curved scissors and the mass rapidly clipped away. It was now possible to inspect the pharynx, and several remaining masses were easily clipped away. The hemorrhage was slight and easily controlled. No blood had entered the larynx. After copious flushing and swabbing an attempt was made to approximate the buccal and pharyngeal mucous membranes with strong catgut, but with only partial success. The deeper soft structures were coaptated with same suture material and the integument with a subcuticular silkworm gut. A gauze drain was placed in the lower angle of the wound. The external wound, except where the drain was placed, united *per primum*. Feeding through a stomach tube began the day following the operation. The gauze drain was removed on the third day. It soon became evident that a communication with the pharynx had formed by way of the drainage canal, air and fluids escaping through it, making deglutition impossible, necessitating an unusually long period of artificial feeding through the feeding-tube, about six weeks. The fistula gradually closed. The pharyngeal wound granulated slowly but completely.

During the first ten days after the operation, a great difficulty was experienced in preventing the insufflation of mucus and the secretions from the pharyngeal wound; several severe attacks of laryngeal spasm were exceedingly alarming. On the third day the patient suddenly discovered that his vision in the left eye was abolished. On examination by Dr. Harold Gifford, he found a choked optic disc, which he believed to be due to an embolus. The central retinal artery was blocked by an embolus or thrombus, more probably the latter, as the extreme edema of the disc made it probable that the postciliary arteries also were blocked. It was also interesting to note that the tongue became atrophied on its left side, interfering somewhat with articulation. He continued to improve for nearly three months after his operation, when he was attacked with catarrhal pneumonia and died. No evidences of recurrence in the throat. He never, however, regained the power to swallow solid food; only thin liquids could be taken without the feeding tube.

In reviewing the technic present in our cases, it would seem that ample access to the diseased structures was obtained. The procedure is at best a severe and mutilating one. In the main the method followed in our cases was that of Cheever of Boston, who first removed a malignant tonsil by pharyngotomy. It seems that so extensive an operation as proposed and carried out by Czerny is hardly necessary. After a tracheotomy he made an incision, beginning at the angle of the mouth, extending downward to the anterior margin of the masseter muscle and thence to the level of the hyoid bone. The jaw was exposed and divided between the second and third molar teeth; the fragments were separated and the tumor removed, after requiring a section of the glosso-pharyngeal, hypoglossus, styloglossus and stylohyoid muscles and gustatory nerve. The bone fragments were reunited with silver wire. Nor does the method of Mikulicz seem necessary. He reflected a triangular flap as in our cases, the incision being very long. The jaw, after being exposed above its angle, was divided, and the ascending ramus resected, in order that better access to the gland might be had. We found that, after a thorough and extensive enucleation of all the cervical glands, whether visibly infected or not, after a division of the sterno-cleido-mastoid and its divided ends were reflected and hemorrhage carefully controlled, with a wide separation of the wound margins by retractors, and the head being strongly drawn to the opposite side, and strong traction downward of

the arm and shoulder on the affected side being made, sufficient room was obtained for all necessary manipulations. In both of our cases the entire larynx and naso-pharynx could be inspected, so that a thorough removal of all affected tissues could be made under direct ocular inspection.

In neither of our cases was a preliminary tracheotomy necessary, chiefly because all hemorrhage was controlled and the dissection made to the mucous membrane before the pharynx was opened.

The loss of vision in the left eye of our second case was undoubtedly due to an embolus, but to state just how an embolus could reach the eye is not easy to solve. It is the first observation of this kind made by us, after many ligations of the common, internal and external carotids and jugular veins, in the removal of nearly every variety of neoplasms in the region of the neck.

### THE WAX-PARAFFIN DRESSING.

Presented to the Section on Surgery and Anatomy at the Forti-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY SAMUEL H. FRIEND, M.D.

MILWAUKEE.

The wax paraffin dressing, as announced in the *Medical News* of October 23, 1897, is a mixture of equal parts of unpurified yellow beeswax and hard paraffin.

*Composition:* Equal parts, by weight, of unpurified yellow beeswax and hard paraffin.

*Preparation:* Melt these substances together, preferably over a sand bath (though a water bath will also answer), and after melting keep them liquified for one-half hour to complete mixture. The specific gravity of yellow wax is between .955 and .967; the melting point 63 degrees to 64 degrees C. (145.4 degrees to 147.2 degrees F.) Hard paraffin has a specific gravity of .900, and a melting point at 43 to 65 degrees C. (109 to 151 degrees F.) The object of boiling the two substances together for one-half hour is to diffuse them as much as possible. By covering the mouth of the bottle with wire gauze or absorbent cotton the mixture will attain a higher temperature and produce a more equal diffusion. Ehrlenmeyer's flask is useful to hold the dressing, as the glass of this flask is thin and offers a large base to melt the mixture quickly, although any bottle may be used. Forty to fifty grams of the dressing will melt within four to six minutes. As already detailed, the specific gravities and the melting points of the wax and paraffin are not the same, and as the substances are never equally diffused, the paraffin melts first, so that the mixture should not be used until the entire mass is melted. Another point worthy of note is that immediately after the mixture is melted its temperature at the bottom of the bottle is 105 C., while the top is 122 C. This difference of the temperature lasts but two minutes, at the end of which time the bottom layer registers two to three degrees higher than the top. The dressing is either directly spread upon wounded surfaces or upon dressings of absorbent cotton or gauze.

*Properties:* This mixture is sterile. It is light in weight, cohesive, rigid, ductile, tenacious, adhesive, air, water and germ proof, and has an agreeable odor, and solidifies instantly. As it is a perfect non-conductor it retains an even temperature about the