

Early history of the operation of ligature of the primitive carotid artery : with a report of forty-eight unpublished cases : and a summary of forty-four cases, with remarks, by Valentine Mott / by James R. Wood.

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Publication/Creation

New York : H. Bailliere, 1857.

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Wood
Mott

EARLY HISTORY
OF THE
OPERATION OF LIGATURE
OF THE
PRIMITIVE CAROTID ARTERY,

WITH A REPORT OF

Forty-Eight Unpublished Cases,

AND A

SUMMARY OF FORTY-FOUR CASES, WITH REMARKS,
BY VALENTINE MOTT, M.D.

BY JAMES R. WOOD, M.D.,

Surgeon to Bellevue Hospital, President of the N. Y. Pathological Society, etc., etc.

(Reprinted from the New York Journal of Medicine, for July, 1857.)

New York:
H. BAILLIERE, 290 BROADWAY.
1857.

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LIGATURE

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PRIMITIVE CAROTID ARTERY.

LIGATURE of the common carotid artery is justly considered a most important surgical operation. Although, ordinarily, not difficult of execution, yet, the consequences which are liable to follow the complete and permanent obstruction of one of the two vessels which supply the brain with the greatest share of its blood, will always render this operation a subject for grave consideration before its execution. Cerebral softening, with its concomitant symptoms, secondary hæmorrhages, etc., etc., are complications of the original disease for which ligature of the carotid may have been undertaken, which no prudent surgeon will heedlessly encounter.

Ligature of the carotid derives additional importance also from the variety of diseases and accidents for which it has latterly been undertaken, as for the arrest of malignant growths of the face and head, for epilepsy, etc. In many diseases for which it has been performed, its propriety is still questionable, owing to the meagreness of published reports of cases. It is with a view to place on record my experience in this operation, in order that it may be available to those interested in determining such questions, that I have been

induced to draw up my own cases for publication. Aware that among my medical friends of this city there were a large number of unpublished operations upon the common carotid, I was led to request from them reports of their cases, in order to place on record all the attainable unpublished material of our city bearing upon this operation.

I have here to acknowledge my obligations to my friends for their kindness in complying with my request, and trust that the opportunity of examining so large a collection of hitherto unpublished cases, will, in part, compensate them for their trouble.

It may prove not uninteresting or unprofitable to preface our record of cases with a brief examination of the history of this operation.

I.—*Early History of Ligature of the Common Carotid Artery.*

The early history of the operation of ligature of the common carotid artery is involved in obscurity. Hebenstreit, in a German translation of *Bell's Surgery*, mentions a case in which the carotid artery having been wounded in the extirpation of a scirrhus tumor, the surgeon immediately applied a ligature, and arrested the hæmorrhage. This is generally admitted by authorities to have been the first case on record of ligature of the carotid, although no date is given.

Averill, in the second edition of his *Treatise on Operative Surgery*, (London, 1825,) p. 31, says, "Dr. Cheston, of Gloucester, used to mention, that Mr. Warner, of Guy's Hospital, in removing a glandular tumor from the neck, wounded the carotid artery, and that the flow of blood was so profuse, the patient fell back and fainted, when Mr. Else instantly passed a ligature, and secured the vessel; this happened near fifty years ago." The date of this operation would be about 1775.

In the London *Lancet*, October 6, 1832, there is a report of a clinical lecture delivered in Westminster Hospital, July 14, 1832, by Mr. Lynn, the assistant for many years of John Hunter. Mr. Lynn states that, forty years ago, he was in the habit of frequently removing tumors from the neck with fortunate results. His success in these operations induced a colleague to attempt extirpation of the parotid gland. In the course of his dissection, he cut off a number of arteries, and generally so near the main trunk as to leave no room for the successful application of ligatures. The patient continued to lose blood almost daily for a fortnight, until she was so debilitated as to be in great danger of dying from ex-

haustion. At this juncture, Mr. Lynn was called in, and the following is his account of the operation which he performed: "If the hæmorrhage was not arrested, she must inevitably die in a day or two. Local ligatures were perfectly inapplicable. Cruickshank had lately been tying the carotids of dogs, and I saw no reason why the same operation should not be performed with impunity in the human subject, and if he liked, I would undertake to tie the primitive carotid. I accordingly cut down upon this artery, just below its bifurcation by the side of the larynx, and found no difficulty in penetrating through the skin, platysma myoides, fascia, and sheath, and in ultimately tying the vessel with a single ligature. The hæmorrhage instantly ceased, and no unusual effect was observed in the patient. She lived a fortnight after the operation, and died evidently of the debility induced by the hæmorrhage and her previous suffering. The case was fatal, but I felt satisfied the principle of the operation was established. This I believe to be the first instance of ligature of the carotid, and it certainly occurred long previous to any case that is recorded." According to the statement of Mr. Lynn, his operation must have been performed about the year 1792.

In Mr. Abernethy's Surgical Works, vol. 2, published in the year 1804, the report of a case in which this surgeon applied a ligature to the common carotid, is found. The history of the case is given with much minuteness, and is intended to illustrate the treatment of severe injuries of the head. The patient, a man, was gored in the neck by a cow; the horn entered by the left side of the cricoid cartilage, and penetrated to the cervical vertebræ; it passed upward as high as the base of the skull, and emerged behind the angle of the jaw, injuring severely the parotid gland. The internal carotid artery was torn across, and several arterial branches were severed. The hæmorrhage was very profuse, but pressure arrested it. The only resort in the emergency was ligature of the common carotid, and this, Mr. Abernethy cautiously performed. The ligature was at first gradually tightened and then relaxed; as no cerebral symptoms occurred, and the bleeding was arrested by the ligature, it was firmly tied. The patient improved for several hours, but convulsions finally supervened, and death took place thirty hours after the operation. No date is given of this operation in the relation of the case, but Mr. South (*Chelius' Surgery*) supposes it to have been performed about 1778-9.

With the beginning of the present century, the history of this operation really commences. The dates of the operations are fixed with exactness, and the histories of cases are given with accuracy.

First Authentic Case of Ligature of the Carotid.—The first case on record within this period is that of Mr. Fleming, an English Naval Surgeon. The history of this case was first published in the *Med. Chir. Jour.* for January, 1817, long after the death of the operator, by Dr. Coley, an assistant surgeon of the same vessel.

Case.—On the 9th of October, 1803, a servant, on board His Majesty's ship *Tonnant*, attempted to commit suicide. On examination of the wound, which bled profusely, it was found that the trachea, the two superior thyroid arteries, and the internal jugular vein had been divided, and the outer coat of the carotid had been grazed. Except the swelling which followed and prevented deglutition, and a troublesome cough, the case progressed favorably, to the eighth day, when the carotid ruptured during a violent fit of coughing. The patient was deluged with blood, but syncope arrested the hæmorrhage. The surgeon at once laid bare the artery, and though he had never heard of a similar operation, placed a ligature around the carotid. The bleeding was effectually arrested, and the patient made a good recovery.

Second Authentic Case of Ligature of the Carotid—First Operation in this Country—First in which the Artery was Tied in the Extirpation of a Tumor.—Dr. Cogswell, of Hartford, Ct., was the next to perform this operation, and came near disputing the palm of priority with the English Naval Surgeon, as but eighteen days intervene between the two operations. This was the first in which the carotid was tied in the removal of a tumor. It was published originally in the *New England Jour. of Med. & Surg.* October 1824, twenty-one years after the operation.

Case.—The patient, a female, æt. 35 years, first consulted him in 1800, for a tumor upon the left side of the neck, occupying nearly the whole of the hollow between the outer angle of the jaw and the superior part of the sternum, pressing upon the trachea. He advised its removal, to which the patient assented, and the operation was easily accomplished. Two years after, a tumor appeared in the parotid gland of the same side, which gradually enlarged, until it extended over the whole side of the neck. The patient refused an

operation until her sufferings became severe, and her danger imminent. Extirpation was finally undertaken November 4, 1803. In the progress of the dissection, the tumor was found to surround the carotid; and, to effect its removal, it was found necessary to sever the artery; accordingly a ligature was passed around it, and the artery divided. The wound rapidly healed, the ligature separating on the fourteenth day; the patient grew strong and hearty, and a successful result was anticipated. On the twentieth day, however, a slight hæmorrhage commenced from one of the anastomosing arteries under the fore-part of the jaw; no efforts were made to restrain the hæmorrhage until the physician, six miles distant, arrived, when the loss of blood was so great that the patient sunk and died.

First Case of Ligature of the Carotid for Aneurism.—The next recorded operation was by Astley Cooper, who ligated the carotid for aneurism of that artery. This is the first instance in which a ligature was applied to the carotid for aneurism, and is very properly the subject of the first paper published in that store-house of medical facts, the *Medico-Chirurgical Transactions*.

Case.—The patient was a female, æt. 44 years; the aneurismal tumor appeared five months before, rather above the middle of the neck on the right side; it gradually extended, until it reached the jaw, and below the middle of the neck. The operation was performed November 1, 1805, and a double ligature applied; except a troublesome cough, nothing unfavorable occurred until the eighth day, when her left arm and leg became paralytic. From this symptom she had nearly recovered, when inflammation of the sac and parts adjacent occurred, with great tumefaction of the neck, impeding respiration and deglutition. She died on the twenty-first day.

Second Case of Ligature of the Carotid in this Country.—The next operation was performed in this country, by Dr. Amos Twitchell, of Keene, N. H. To Dr. Twitchell, as to Abernethy, Fleming, and Cogswell, the operation was entirely novel. He was not then aware of its having been performed, as no case had yet been published, except Abernethy's. This case was subsequently published in the *New England Journal of Med. and Surg.*, Vol. I.

We have before us the original manuscript of Dr. Twitchell, from which the following abstract is prepared:—

Case.—J. T., æt. 20 years, in a mock-fight October 8, 1807, received an injury to the right side of the neck, supposed to have been caused by the wadding and burning powder of a pistol discharged near him. The wound was very deep and extensive, involving the parotid gland, temporal, masseter, and pterygoid muscles, fracturing the superior maxilla so as to expose the antrum Highmorianum, severing the external carotid, and penetrating to the pharynx. Simple dressings were applied, and the process of suppuration progressed favorably until the tenth day, (October 18, 1807,) when the wound was fairly cleaned of all the sloughy tissues, and presented a healthy surface. The internal carotid artery was now exposed from near the bifurcation of the common trunk to the point where it curved to enter the canal in the petrous portion of the temporal bone. Directly upon this curve was seen a dark speck, of a line or two in diameter, which on examination was found closely adherent to the coat of the vessel. Fearful that a slough was about to separate; which would expose his patient to the danger of sudden hæmorrhage, he expressed his apprehensions to the attendants, and was about leaving the house when the accident occurred. The patient was instantly deluged with blood which spouted to the distance of three or four feet. Compression was instantly resorted to, which effectually controlled the hæmorrhage.

Dr. Twitchell thus describes the operation: "The patient had fainted, and fifteen or twenty minutes had elapsed before he was so much revived that I dared make any attempt to secure the artery. Then, still keeping the thumb firmly pressed on the orifice, I proceeded to clean the wound of blood, and having done this, I made an incision, with a scalpel, downward, along the course of the artery, to more than an inch below the point where the external branch was given off; which, as stated above, had been destroyed at the time of the injury. Having but one hand at liberty, I depended upon the mother of the patient to separate the sides of the wound, which she did, partly with a hook, and occasionally with her fingers. At length, partly by careful dissection, and partly by using my fingers and the handle of a scalpel, I succeeded in separating the artery from its attachments; and passing my finger under it, I raised it up sufficiently for my assistant to pass a ligature around it. She tied it with a surgeon's knot, as I directed, at about half an inch below the bifurcation."

On removing the compression, hæmorrhage recurred from

the rupture in the artery with a jet ; to arrest this flow, a graduated compress of sponge was applied and firmly secured. This had the desired effect, and the patient made a good recovery.

First Successful Case of Ligature of the Carotid for Aneurism.—The next operation was by Astley Cooper, who tied the carotid for aneurism. This was the first successful case of ligature of that artery for aneurism. It was published in the first volume of the *Med. Chir. Trans.*

Mr. Cooper's Second Case.—H. H., æt. 50 years, had a pulsating tumor beneath the angle of the jaw of the size of a pullet's egg. It had all the peculiarities of an aneurism, and ligature of the common carotid was proposed for its cure. The operation was performed June 22, 1808, at Guy's Hospital ; two ligatures were applied, and the artery was divided between them. No unfavorable symptom occurred ; and the patient made a perfect recovery.

First Case of Ligature of the Carotid for Aneurism by Anastomosis.—Mr. Travers first applied a ligature to the carotid for aneurism by anastomosis ; the operation was successful. The case is recorded in the second volume of the *Med. Chir. Trans.*

Case.—A healthy woman, æt. 34 years, some months advanced in pregnancy, felt a sudden snap on the left side of the forehead, which was followed by pain, and a copious effusion into the cellular substance of the eyelid of the same side. The eye became prominent ; the tumor pulsated, and assumed all the peculiarities of an aneurism by anastomosis. Compression of the carotid arresting the pulsations of the tumor, ligature of that artery was determined upon, and on May 23, 1809, the operation was performed. The case terminated favorably, the tumor finally entirely disappearing.

First Case of Ligature of the Carotid in New York city, being also the First Successful Case of Ligature of the Carotid for Aneurism in this country.—The first operation of ligature of the carotid in this city, was performed by Dr. Wright Post, January 9, 1813, and published by Dr. Mott in the *Medical Magazine*, vol. 1, p. 155.

Case.—The patient was a negro, æt. 35 years. The tumor was situated upon the right side, below the angle of the jaw, and measured six inches in length, four inches in breadth, and two inches in height. Two ligatures were applied, and the

artery was cut between them. The case did well, and the patient was discharged at the end of about four months, the tumor at that time rapidly disappearing. He returned again at the end of two months, the tumor being large, tense, and fluctuating. It soon after opened, and a hæmorrhage to the extent of thirty ounces occurred. It opened in a second place, and discharged pus and blood; severe hæmorrhage occurred several times, and once he was thought to have lost two quarts. The tumor was the seat of violent inflammation, and so increased in size as to press upon the œsophagus, causing dysphagia. Poultices were constantly applied, and suppuration was free. Though greatly reduced by loss of blood, and the inflammation of the aneurismal sac, he finally convalesced.

Second Case of Ligature of the Carotid in New York.—Dr. Post ligated the common carotid a second time, for aneurism, on November 28, 1816. It is reported in the *Transactions of the Physico-Medical Society*, vol. 1.

Case.—The patient, who came from the country, had a pulsating tumor for four years, immediately behind the angle of the jaw. It gradually increased in size, and as the patient suffered from a painful throbbing in the head, which was attributed to the tumor, she sought medical advice. A difference of opinion seems to have existed among surgeons as to the nature of the disease, some considering it an enlarged lymphatic gland, others, an aneurism. On admission to the N. Y. Hospital, the tumor was decided to be aneurismal, and ligature of the carotid was recommended. The operation terminated favorably, the patient leaving the Hospital in about a month, the tumor being little more than one-fourth as large as at the time of the operation.

This patient died several years after, and the tumor, still of the size of a small fist, was removed. On examination, the carotid was found running along its base, but the internal appearances of the tumor were such as to leave a doubt as to its character, whether aneurismal or not.

Such is briefly the early history of the operation of ligature of the common carotid artery, traced with as much accuracy as our literary resources will allow. All the operations occurring previously to 1800, are too vaguely reported to add any facts of practical value to its history.

With the beginning of the present century, as already remarked, the real history of this operation commences. Although the operations in the successful cases of Mr.

Fleming and Dr. Cogswell date anterior to the publication of Mr. Abernethy's Surgical Works, yet, to this latter surgeon must ever remain the honor of having first placed upon record the details of a case of ligating the common carotid.

It is not a little flattering to our national pride to notice the part borne by the profession of our country in this capital operation. It will ever redound to the honor of the American medical profession that among the pioneer settlers was found the boldness to undertake, and the skill and judgment to successfully execute, one of the most novel and important operations in the history of surgery. Neither Dr. Cogswell nor Dr. Twitchell were aware that the operation had ever been attempted upon the human subject. In both instances, therefore, it was an entirely original operation, so far as the operators themselves had knowledge. Dr. Cogswell lived to enjoy a well-earned reputation, a brilliant ornament of his profession, and an honor to his country. Dr. Twitchell, endowed with one of the most original minds of New England, the intimate associate of Webster, is dead, but his memory will live while the records of our profession shall remain.

II.—*Report of the Unpublished Cases of Ligature of the Common Carotid in the city of New York.*

My own operations upon this artery are nine in number. These cases I shall proceed to give in detail:—

Case 1.—Division of the Superior Thyroid and Lingual Arteries by a Suicide—Ligature of Carotid—Recovery—Death from Subsequent Hæmorrhage and Exhaustion.—On the 26th of June, 1839, I was requested to visit Mrs. R., residing in Cherry street, who, in a fit of jealousy, had attempted to commit suicide by cutting her throat with a razor. On arriving at her house, I was informed by Mr. Geo. Armstrong, whose tenant she was, that she was dead; also, that she had been seen by a physician who had left before I arrived; found her lying on the floor, her clothes and the carpet saturated with blood.

Upon examination, five wounds on the neck were found; one transversely across the neck, separating the hyoid bone from the larynx, and both wound and larynx were filled with coagulated blood. Removing the coagula with curved forceps, I made pressure upon the thorax, which caused a very considerable quantity of blood to escape from the larynx and trachea. In this way I succeeded in establishing respiration in a very few moments.

On the left side there were four wounds, one extending from the mastoid process obliquely downward and inward to the mesian line, as low as the crico-thyroid space, dividing partially the sterno-cleido mastoid muscle. The other wounds were superficial.

As reaction was established, the hæmorrhage became again somewhat profuse, sufficiently so as to produce syncope. Upon examination I ascertained that the superior thyroid artery, and the lingual artery, were divided so near to their origin from the external carotid, that it was impossible to apply a ligature to either of them; the superior thyroid arose from the external carotid so near its origin from the common carotid that I deemed it advisable to apply the ligature to the primitive carotid, which I did without any difficulty. I then proceeded to dress the wounds with sutures and adhesive strips, and endeavored to cause the patient to take some stimulants which she positively refused.

Mustard was applied to the feet and epigastrium, and external warmth by bottles containing warm water. I remained with her for about two hours, when reaction was so far established that I felt warranted in leaving her.

At seven P.M., I saw her again. Found that she had removed a portion of the dressing, notwithstanding she had been closely watched by her friends at my request, she having indicated her determination to destroy herself. I redressed the wounds, and placed her in a straight jacket. Her pulse at this time was 130 per minute; skin warm; and, with the exception of her mental disturbance, she was comparatively comfortable.

June 27, seven o'clock, A.M.—Had slept for two hours during the night; pulse 120, and very feeble. She consented to take a little beef tea. At twelve o'clock M., same day; comfortable; had partaken of beef tea twice; pulse 110; more composed. Seven o'clock P.M.—No material change; had taken nourishment several times; free evacuations from bowels and bladder.

June 28, eight o'clock, A.M.—Had passed a comfortable night; had taken food and twenty-five drops black drop, which I had directed to be given at late bedtime. At eight o'clock P.M., she had, with much persuasion, taken further nourishment. Directed black drop to be repeated.

June 29, nine o'clock A.M.—Patient had rested comfortably during the night; pulse 98, and much more tranquil; complained of great thirst. Directed that she should have small

quantities of ice-water to drink. Six o'clock P.M.—Considerable discharge; the wound gaping considerably, with discharge from the wound, separating the thyroid bone from the larynx; pulse 90, tranquil; had slept several hours during the day.

June 30, nine o'clock A.M.—Had a comfortable night; pulse 84; dressed the wound on the anterior part of the neck; very little effort at union. This wound was dressed daily, and on the fifth of July, the oblique wound on the left side of the neck was also dressed, and I was gratified to find that it had healed by first intention throughout almost its entire extent, the only part that had not united was over the left side of the larynx. The wound in the neck continued to do well, healing slowly by granulation.

July 6.—The sutures were removed, and the lips of the wound approximated by adhesive strips. The head was flexed upon the chest, and retained there by suitable head-dress and bandages, which appliances had been used from the first.

July 8.—Patient was tranquil, and appeared to regret the attempt she had made to destroy herself; pulse 82; had slept well the previous night; upon dressing the wound, found the ligature of the carotid artery loose in the wound, which I removed. This was on the twelfth day after the operation.

She continued to do well, partaking of proper food in sufficient quantities; slept well, and desired that her husband would forgive her for wronging him. The anterior wound continued to close gradually, and on July 20, it was thought prudent to remove the straight jacket which she had worn to this date. Her bowels had occasionally been moved by enemata.

July 25, two o'clock A.M.—I was requested to see her, the messenger stating that she had again attempted to kill herself. I ascertained that she had been quiet during the forepart of the night, and apparently sleeping the most part of the time. During the absence of her nurse for a few moments, she, with her fingers, tore open the anterior wound to a much greater extent than that originally made by the razor. I dressed the wound and placed her in the straight jacket again. The inflammation attending this tearing asunder the parts was so great, that she died exhausted on July 28, notwithstanding nourishment had been introduced into the stomach through the stomach-tube.

Case 2.—Carotid Aneurism—Ligature on the Distal Side—Recovery.—Betsy Brown; colored; born in New Jersey; æt. 36 years; had been an inmate of Bellevue Hospital, at that time there being accommodations in that institution for the colored sick of the city. She had had syphilis, and was treated with mercury. She sought my advice at my office in December, 1840, for a pulsating tumor at the lower part of the right side of the neck, a short distance above the sterno-clavicular articulation, and at the right side of the trachea. It was about the size of a black walnut, and evidently aneurism of the carotid artery, a short distance above its origin from the arteria innominata. She had been seen by several surgeons of this city, two having expressed it as their opinion that the innominata was involved in the disease, but upon careful examination I concluded to tie the common carotid, on the distal side of the tumor, as recommended and practiced by Brasdor, and other surgeons. Accordingly, on the thirteenth of the same month, I applied a ligature to the common carotid, above the point where the omo-hyoid muscle crosses it.

This was effected without any difficulty, the pulsation ceasing the moment the ligature was tightened, and the tumor diminishing very much in size. The wound was dressed with one suture and adhesive strips.

The patient complained, for a short time, of fullness, and, as she expressed it, a queer feeling about her brain. This passed off before I left, as I remained with her for more than an hour.

December 14.—Patient slept well during the night, states that she feels perfectly well; pulse 70, and natural; bowels moved with medicine; partook of suitable diet which was prescribed.

December 15.—Somewhat restless during the night; slight chill; good deal of thirst; pulse 92; slight erysipelatous inflammation about the wound. Directed a saline cathartic; lemonade for drink, and lead and opium wash locally.

December 16.—Patient had slept well; inflammation pretty much subsided; pulse 80. It was necessary to remove the dressing from the wound because of having been loosened by the lotion which had been applied. Adhesive strips were applied as before.

December 17.—Patient doing well; tumor very much reduced in size, appearing to be not larger than a hickory-nut by the feel, and of considerable firmness.

December 18.—Patient doing well; dressed the wound, which had healed by first intention, except at the point of suture and ligature. Patient continued to do well.

December 24.—Twelve days after the operation, the ligature was found to be loose, and was removed.

January 10.—Saw the patient, she stated that she was perfectly well. Saw her occasionally for the next six months, the tumor gradually decreased, and, as far as I know, she had no farther trouble.

Case 3.—Aneurism by Anastomosis of Cheek and Orbit in Child, aged six months—Ligature of Carotid—Recovery.—On the 10th of February, 1842, I was requested to see the infant son of Mr. T., æt. 6 months, born in New York. He had an aneurism by anastomosis of the right cheek, involving the orbit of the same side. At birth, the aneurism was quite small, but for the last month had increased very rapidly. I found a point, about three-fourths of an inch from the internal canthus of the right eye, ulcerated, and at times bleeding very freely. To arrest this hæmorrhage was the object of my visit. The usual means such as pressure, cold, etc., were applied and had the desired effect for the time, but in a few days the hæmorrhage returned, and continued until my little patient was so much exhausted, and the portion of the tumor involving the orbit increasing so much in size, that I proposed to the parents the propriety of tying the carotid artery, as the only means of saving their child, and even that a very doubtful expedient. After a few days, they informed me that they had concluded to allow me to perform the operation, which I did on the second of March, in the usual manner, above the point where the omo-hyoid muscle crosses the great vessels of the neck. There was not more than a tea-spoonful of blood lost; before the dressing was completed, the little fellow was quietly sleeping, and continued to do so for about an hour; when he awoke, he partook of food, and was as playful as though nothing had transpired. I used no suture, the dressings consisting simply of adhesive strips.

March 3.—Was doing well, slept well, and partook of food.

March 4.—A little cough; directed a drop of elix. paregoric in a tea-spoonful of syrup gum arabic. The syrup to be continued through the day, and if the cough continued a drop of elix. paregoric at bedtime.

March 5.—Doing well; continued the syrup. At this visit dressed the wound, which had healed by first intention,

except at the point of the ligature. No hæmorrhage since the operation; tumor very much diminished on cheek and orbit; skin corrugated considerably over tumor on cheek, and much darker than previous to the operation, at which time it was of almost a crimson color. The patient continued to do well.

March 11.—Nine days after the operation, the ligature was found loose in the wound and removed. Nothing transpired worthy of note after this date, except gradual decrease of the tumor for some months after the operation.

I saw the child some three years after the operation, there had been but little change in the size of the tumor, but the integuments were much more natural in their color and the tumor much firmer. About that time, his parents removed to the West, since which I have heard nothing from him.

Case 4.—Epilepsy—Ligature of Carotid with Marked Relief.—On the 12th of August, 1843, I was requested to visit Michael Logan, residing in Madison Court, Madison Street. He was born in Ireland; æt. 37 years; single; bricklayer by occupation. I found him just recovering from a convulsion, decidedly epileptic in its character: he had been subject to these fits for the last eight years. At first, they occurred once in three or four months, but in the course of a year they returned about once a month, sometimes more and sometimes less time intervening between them. For the last eighteen months they had occurred, on an average, once in twenty-four hours, and sometimes as often as three times in a single day. I was informed that he had been under the care of Dr. Morris M. Rogers, David L. Rogers, the late Dr. Willett, and many other medical gentlemen; but of late, little had been done in the way of medication, except in the use of nostrums, which he had used freely; was also informed by his brother that, until within the last three or four years, he had been addicted to self-pollution, but that he believed he was not now, nor had he been for some years, as he had been under the supervision of his friends, and nothing of the kind had been discovered. His face was very much flushed; eyes suffused, the lids swollen; and he complained of great pain in the head. I merely prescribed quiet and rest at this visit.

August 13.—I saw him in the morning, and found his face flushed, eyes suffused and the lids swollen, almost as much as on the day previous; he complained of great pain in the head, and added that that was nothing new, that pain

was constant; and his friends stated that he usually presented the appearance I have already described; his pulse was full, about 85 per minute; appetite good; and I was surprised to find that his intellect was comparatively good, astonishingly so, for one who had suffered for so long a time, and so frequently, from epileptic convulsions. His memory appeared to be sound, he conversed intelligently in respect to his case, referred to his former vice, corroborating the testimony of his brother; stated that he was perfectly dependent upon others, for he was afraid to be alone because of his liability to have a convulsion at any moment. He further stated that he was willing to submit to any operation, if there was a chance of relief from it. I attended him until about the 2nd of September; and, after consulting with several of my medical friends, Dr. Rogers and others, I suggested to him the propriety of tying his carotid artery, explaining its functions, etc. He and his friends readily consented to the operation, and on the 2nd of September, I applied a ligature to the carotid of the right side. The operation was performed in the usual way and place, above where the omo-hyoid muscle crosses the large vessels of the neck. The dressing consisted of a suture and adhesive strips. The moment I tightened the ligature he said his head felt light and before I left he stated that he "felt better than he had for months, yes, than for years." I was requested to see him at eight P.M., messenger stating that he had a convulsion. On my arrival it had subsided, and his friends informed me that it was slight.

September 3.—He had passed a comfortable night; his head comparatively easy, more or less pain; appeared excited on seeing me, and expressed his gratitude to me for relieving him of his suffering. He had hardly completed this sentence, when he had a slight convulsion, which I attributed to the excitement referred to.

September 4.—Has been comfortable since my last visit; pain continues, but not so great as before the operation; flush of face, suffusion of eyes, and œdema diminished.

September 5.—Patient continues about the same; dressed the wound, which was healed by first intention, except at point of ligature and suture; removed suture.

September 6.—Has had no convulsions; very comfortable; slight pain in head; had to apply adhesive strips, the nurse having loosened those applied yesterday, by spilling water upon them. In the evening, had a slight convulsion, thought

by his friends to have been caused by a fire in the neighborhood, at which he was much alarmed.

September 7.—Comfortable; face and eyes more natural; pain in head about the same.

September 8.—Very comfortable; slept well, and feels very much elated.

September 9.—Has been comfortable, with the exception of dizziness; his friends inform me that he loses consciousness, but has no spasm. This state of things is of short duration, and in a few moments passes off, and he becomes bright as before.

September 10, 11, and 12.—Nothing of note, except, as he says, an occasional dizzy turn; trouble in head, which he describes as a fullness, rather than a decided pain.

September 13.—Fresh strips of plaster applied.

September 17.—Ligature loose in wound, and removed; this is the fifteenth day after the operation; these "dizzy turns," as he pleases to call them, still continue; the flush of countenance, and suffusion of eye, have very much subsided, although he has much more color than he should have.

October 1.—Has been comfortable since last date; does not complain of sensation of dizziness so often; is up and walks out, a luxury he has not enjoyed in a long while.

October 10.—Was requested to see him again. He had a slight convulsion, which lasted but a few minutes; was out walking in the sun, and was compelled to sit down upon the stoop, and there remained with a friend who was with him till it passed over.

He continued to have a slight convulsion once in two or three months; the pain in the head continued more or less, but he always expressed himself as much relieved; in fact, he was altogether a different man, for he was enabled, after the operation, to tend a small store. The convulsions did not recur sufficiently often, or with sufficient severity, to prevent him from attending to his business; they lasted but a few moments, and on their subsiding, he was as well as before the attack.

He died of cholera, in the summer of 1849.

Case 5.—Malignant Disease of Right Antrum—Ligature of Right Common Carotid—Relief. (Published in the *N. Y. Journal of Medicine* for September, 1856.)—Peter Gallagher; æt. 53 years; native of Pennsylvania; was admitted into Bellevue Hospital June 12, 1856. He has been intemperate from the

time he was twelve years of age, and some of the time had used liquors to the greatest excess. By occupation, he is a tailor; is of feeble constitution; has generally enjoyed pretty good health; has not had syphilis; has had gonorrhœa several times, but no trouble following it except a slight stricture of the urethra; no hereditary taint traceable; has led an itinerant life. In March, 1855, he was on a spree in North Carolina. Awaking one morning, after a debauch, he found that his right cheek had been resting on some sheets of zinc, in the upper portion of a building; had taken cold; and on looking into a glass, he discovered a small swelling on his right cheek, below the eye, with some redness.

The swelling did not increase much, nor give him much pain or any trouble, till December, 1855, at which time he applied mustang liniment to his face. He states, that in forty-eight hours after its application, the swelling acquired its present size, but he continued the use of the liniment at intervals. The patient's opinion is, that the cold he took and the liniment produced all the trouble. He states that cold water and cold and wet weather produced pain in the tumor.

After the application of the liniment in December, 1855, the tumor pained him severely, and for three weeks he did not obtain much relief. His teeth in the right superior maxilla also commenced to pain him, and began to decay. They were all extracted, with the exception of the last molar, to the left central incisor. The gums are tender and spongy, and a fungus between them extends down on a line with the upper lip, rendering mastication of food almost impossible. He has had but little constitutional irritation, and has been confined to the bed only a day or two. The tumor extends from the mesian line of the upper lip, to the lobe of the right ear; from the alveolar process to the eye, which is closed by the pressure; perfectly occluding the right nares, and at times the left; the patient breathed through his mouth. Five weeks previous to his admission to the hospital, the tumor was opened by a surgeon in North Carolina. There was a profuse hæmorrhage, and a few drops of pus were discharged. Upon admission, the tumor was conical, uniform in shape, raised at least three inches above the surface, and elastic to the feel. There was some sanious discharge; this was examined under the microscope, and found to be of a malignant character. The diagnosis was encephaloid disease of the antrum. His health was compar-

atively good; had no pain in the tumor; and the treatment was directed to the improvement of his general condition. At the consultation held June 14, it was determined to ligature the common carotid artery.

The operation was set down for the 28th. It was attempted to place him under the effects of ether, and afterwards of chloroform. The patient could not inhale well, on account of the tumor, which pressed upon, and nearly obliterated, both nostrils, and caused such difficulty of breathing, and such violent motions of the neck, that it was discontinued, and the operation deferred.

July 2.—I tied the primitive carotid artery in the usual place, just above where the omo-hyoid muscle crosses the great vessels. The internal jugular vein was not seen during the operation. The patient bore the operation well. The wound was approximated by the interrupted suture and strips of adhesive plaster. At the evening visit, the patient was very comfortable; pulse 100; complains only of deglutition, produced probably by the dressings; the integuments appear slightly swollen; no pulsation in the temporal artery of the right side; an anodyne was ordered.

July 3.—The patient slept well last night; pulse 97.

July 5.—Pulse 92. I dressed the wound to-day, and found union by first intention.

July 9.—Doing well, except slight diarrhœa, for which mild astringents were used. Dressed the wound to-day; the tumor is rapidly disappearing.

July 12.—Dressed the wound; the tumor rapidly disappearing; sleeps well; every thing favorable; pulse 88.

July 13.—Made slight traction on the ligature; found it still firm; pulse 96; there were two or three drops of healthy pus around the ligature.

July 14.—Did not pass a good night; was somewhat delirious; pulse 100; slight erythema round the ligature; tumor diminishing daily; ligature still firm. Pulv. Doveri ordered to check diarrhœa.

July 15.—Had a restless night; pulse 100; bowels too free; on slight traction of the ligature, there was a discharge of a little blood with pus. Ordered—equal parts of tr. opii. camph. et mist. cret. prep.; a tea-spoonful after each passage from the bowels.

July 16.—Pulse 88; removed the ligature with slight traction, it being the fourteenth day after the operation.

July 17.—Passed a good night; pulse 88; considerable discharge of pus from the wound.

July 18.—Pulse 100 ; diarrhœa worse. Dr. Crane, visiting for me, directed for diarrhœa 3 ss doses of tr. opii camph. et tr. catechu, with sodæ bicarb. grs. v., every two hours ; there being inflammation about the wound, a poultice was applied.

July 19.—Pulse 88 ; diarrhœa not relieved ; inflammation around wound subsided ; dressed this morning without a poultice.

July 21.—Diarrhœa relieved.

July 22.—Diarrhœa returned with severity. Dr. Crane, visiting for me, ordered pills of acid tannici, grs. ij., pulv. opii. gr. ss., one every four hours. For food, arrowroot prepared with brandy and spice ; pulse 80.

July 23.—Pulse 88 ; three passages during the night ; continued the prescription of yesterday. There is no discharge of matter from the part of the wound where the ligature was healing by granulation.

July 24.—Pulse 88 ; the tumor gradually disappearing ; to-day the integuments appear inflamed ; two stools to-day.

July 25.—Pulse 88 ; integuments still more inflamed ; directed lotio plumbi et opii.

July 27.—Pulse 96 ; slight erythema about the wound ; inflammation subsiding.

July 31.—Pulse 96 ; two stools during the night and day ; had an attack of epistaxis to-day. Directed a bladder of ice to be applied, but the patient would not continue it on account of the pain it produced.

August 2.—Pulse 96 ; no stool last night, two to-day ; another attack of epistaxis to-day ; not much blood lost at either time, the inflammation has subsided in the integuments ; the tumor has diminished greatly in size, it is quite small at the present time.

August 3.—Pulse 96 ; one stool last night, two to-day ; another attack of epistaxis to-day. Ordered — powdered matico leaves to be used as a snuff ; patient, for the last few days, has been walking about.

August 5.—Pulse 100 ; pills composed of pulv. opii. gr. ss. sulph. quiniæ, grs. ij ; ext. gentian grs. ij. ; one every four hours.

August 8.—Pulse 116 ; two stools to-day ; the tumor discharged to some extent from its opening ; no opening in the mouth.

August 10.—Pulse 106 ; integuments considerably inflamed ; applied lotio plumbi et opii.

August 11.—Two stools during the night ; inflammation less.

August 13.—Bowels regular ; pulse 120 ; inflammation of integuments nearly disappeared.

August 18.—Bowels regular ; some discharge from opening ; some exuberant granulations where ligature was removed ; argenti nit. and adhesive strips.

August 20.—Pulse 120 ; bowels checked ; integuments of tumor a little inflamed.

August 21.—Pulse 116 ; bowels regular ; applied lotio plumbi et opii to the tumor.

August 25.—Pulse 112 ; bowels regular.

August 26.—Pulse 108 ; bowels regular ; condition good ; some discharge from openings of the tumor ; the granulation somewhat exuberant ; applied argent. nit. and adhesive strips. The patient went out of the hospital on a pass to-day.

August 27.—Pulse 100 ; bowels regular ; the granulations about where ligature was have disappeared.

August 29.—Pulse 92 ; bowels regular ; general condition very good ; no induration about the wound where the granulations were. The patient had a generous diet, with port wine or brandy daily. The diarrhœa was the most troublesome complication, the stools passed almost involuntary, never more than six a day.

September 1.—Discharged, much relieved.

Case 6.—Second Operation of Ligature of Carotid on same Subject, 171 days after the First Operation—Death.—The patient again entered the hospital September 26, 1856. The tumor had again ulcerated, and was extending and inflamed. The inflammation was subdued, but the disease steadily progressed until the left side of the nose became involved, and the eye was pushed upward. He was much troubled by the upper teeth of the left side, which were easily extracted, the gums being soft and spongy, and teeth loosened. On endeavoring to swallow fluids, much of them passed out of the left nostril ; his general condition was not good, and he was placed upon generous diet and stimulants.

December 20.—The strength of the patient gradually failing, it was determined, at the consultation, to ligature the left common carotid, which operation I performed in the usual place, above the crossing of the large vessel by the omo-hyoid muscle ; the patient not being under the influence of an anæsthetic. The artery was found enlarged ; there was no pulsation, and had been none, of the right temporal artery ; pulse was increased in frequency immediately after the artery

was tied. Three hours after the operation, five o'clock P.M., the integument was blanched and the tumor shrunken; patient was restless, and complained of dryness of mouth and fauces; he did not complain of any cerebral symptoms, nor did he immediately after the operation; pulse 100. Ten o'clock P.M.—Pulse 126; has had some sleep.

December 21.—The pulse natural; and the discharge of the tumor, which had ceased after the operation, had again commenced.

December 22.—The tumor discharges freely and bleeds easily upon removing the dressing; the right side of upper lip falls in upon inspiration, from shrinking of tumor which had before extended to plane of upper lip; profuse salivary discharge.

December 23.—Was restless; sleeps little; pulse 90; complains still of thirst, and has little appetite: pulse 120.

December 24.—Sutures removed; union obtained; condition of patient tolerably good.

December 25.—Pulse 116; appetite somewhat improved; flow of saliva diminished; tumor lessened very much.

December 30.—Tumor very much diminished; patient is much better; feels, and has felt better since the operation with the head elevated and compressed by a bandage.

January 22.—First part of this month patient did very well, except being troubled occasionally with flatulence and diarrhœa, which was easily checked, with occasional inflammation of the integuments, and a free and fœtid discharge from the tumor.

January 26.—Had a violent chill.

January 27.—Restless; diarrhœa has commenced; his memory is failing.

January 30.—He is delirious; fluids commence to pass through the opening in the cheek.

February 1.—Began to feed him by means of the stomach tube; skin is sallow, straw color; patient is much emaciated and cachectic; the antrum is now completely opened, so that the tongue can be seen through it. No pulsation in either temporal artery; no enlargement of glands in neck; no evidence of the disease in other parts of the body.

February 18.—Died from exhaustion.

Subsequently to the ligature of the left carotid, the tumor which was extending in every direction, having passed to the left of the nose, pushing it before it, commenced to recede and seemed to terminate itself in destruction by entire

sloughing of all the parts diseased, which had evidently been starved out by want of nutrition, the antrum being exposed, and not a vestige of original diseased structure remaining.

It is greatly to be regretted that no autopsy could be had, but the friends positively refused to allow any to be made.

Case 7.—Aneurism of External Carotid—Ligature of External and Common Carotid—Cured.—In the summer of 1847, I was consulted by John Tomlinson; æt. 36 years; native of New York; single; ship-carpenter by trade. He stated that for some months past he had suffered from pain at the angle of his jaw, extending down the right side of his neck, with more or less of twitching, as he described it, of the parts in those regions. For the last two months, he had been treated by a physician for a tumor, as large as a Madeira nut, about and below the angle of the lower jaw, on the right side of the neck. Ointments of different kinds, poultices, and iodine were the local applications prescribed. The pain increased to such an extent that he was compelled to resort to opiates for relief. He also stated that he was constantly annoyed by a buzzing noise in the ear of the right side. Upon examination, I discovered a tumor pulsating, and the pulsations were synchronous with those of the heart. There was also a distinct aneurismal thrill in the tumor. Upon making pressure on the primitive carotid artery, the thrill was not discernable. The tumor diminished very much in size, but the pulsations did not entirely cease, though they were much more feeble during the pressure upon the carotid. The pulsation of the temporal artery of the right side, during the pressure on the carotid, was scarcely perceptible to the touch; still, it could be felt.

I diagnosticated the case as one of aneurism of the external carotid artery, and proposed to apply a ligature to the primitive carotid, also to the internal carotid, which I did on December 6, 1847. I first applied a ligature to the internal carotid, about half an inch from its origin from the common trunk; and I then ligatured the common carotid, midway between the anterior belly of the omo-hyoid muscle and its bifurcation into the external and internal carotids. On tightening this ligature, the pulsation and thrill in the tumor ceased at once, and the tumor diminished very much in size.

From the fact of his having complained of pain and spasm of the muscles receiving twigs from the descendens noni, I deemed it proper to exsect a portion of this nerve, for fear that some morbid condition of it might continue, and the pain persist after the operation.

The wounds were dressed with the suture and adhesive strips.

December 7.—Patient is doing well and slept comfortably.

December 8.—Doing well; tumor hardly perceptible.

December 9.—Same as yesterday.

December 10.—Dressed the wounds, which were united by first intention, and removed the sutures.

December 14.—Found the ligature of the external carotid loose in the wound, and removed it; dressings reapplied to wound over the common carotid.

The patient has not suffered from pain or spasmodic action of the muscles of the right side of the neck since the operation.

December 19.—Ligature of the common carotid removed by making very gentle traction. The tumor continued to diminish, and in January, 1849, was hardly perceptible.

*Case 8.—Malignant Disease of Anterior—Immense Fungous Growth—Ligature of Carotid—Sloughing of Tumor—Great Relief.—*December 5, 1854. A. W., æt. 23 years; residing in Brooklyn, L. I., mechanic, single, consulted me at my office for an immense tumor, filling the whole mouth, and enormously distending the left cheek, and extending into the fauces; so deep as almost to preclude deglutition, and interfering very considerably with respiration. The lower jaw was so much depressed by a fungous growth projecting from the mouth, as large as a medium sized orange, that it nearly touched the sternum. He stated that there was a constant oozing of blood, and at times severe hæmorrhages. He was much emaciated, and very feeble; pulse 115 per minute; at times he passed, per rectum, large quantities of blood which he had swallowed, its source being from that portion of the tumor occupying the posterior part of the buccal cavity and the fauces. The tumor was so large that it was with the greatest difficulty that I could pass my finger the distance of two inches within the mouth. He informed me that he was not able to swallow fluids, except after hæmorrhage, when the tumor diminished in size, and then only in small quantities, by means of a tea-spoon, while in the recumbent position.

A sketch of his face, with the tumor projecting from his mouth, was taken by Dr. G. F. Woodward, which I now have in my possession, and, without exception, it presents one of the most hideous spectacles I ever witnessed. He informed me that, some six months previous to this, he

*Lower jaw
of fauces.*

discovered a swelling on the inside of his lower jaw, opposite the last molar tooth, on the left side; that it appeared to be attached to the jaw, and soon invaded the gums. Two of the teeth loosened on that side, and were removed. The tumor gradually increased for three months, when the soft parts ulcerated, mastication became very difficult, and hæmorrhage occurred frequently during mastication. For two months previous to my seeing him, the tumor had grown very rapidly, and all the teeth posterior to the incisors had fallen out or been extracted. He had consulted several surgeons, who had refused to render him surgical aid, on account of the advanced stage of the disease, and the anæmic condition of the patient. I thought it proper to offer him the only relief, stating that it was a doubtful, and, at best, a temporary one, which consisted in cutting off the supply of blood to the diseased parts, by applying a ligature to the common carotid of the left side, and also to the right, at some future period, if I deemed it practicable. He consented to my ligaturing the left carotid, which I did on December 7, 1854, at the usual place, above the crossing of the omo-hyoid muscle. As soon as the ligature was applied, that portion of the tumor projecting from the mouth diminished very considerably in size, and became of a dark and livid color. The cheek of the left side, which was very much distended, also shrunk, and the integuments over the tumor became loose, and could be moved with ease. During the evening he was enabled to take considerable nourishment, with much greater facility than he had for six months previous to this time. Directed that he should have an anodyne draught at night.

December 8.—Slept comparatively comfortable; has taken nourishment since the last visit; no hæmorrhage since the operation; tumor very much shrunk, of a dark color, and the stench from it intolerable, which is a great source of annoyance to the patient. Directed dilute Labarraque's solution of chloride of soda to be applied to it. Evening visit.—Found the tumor in a sloughing condition; there was nausea and vomiting. Directed essence of beef and brandy, and dilute creosote to tumor, to be applied with a camel's hair pencil, so far as practicable.

December 9.—Patient has slept some; nausea and retching not so troublesome; discharge from mouth and nostrils very offensive; deglutition much better, and has taken considerable nourishment, with stimulus. P.M.—Seen by Dr. Woodward. Directed to take anodyne draught; solution of

creosote to be continued by means of a swab ; some diarrhœa, evidently from the swallowing of the putrid discharges from tumor.

December 10.—Patient comparatively comfortable ; slept considerably ; the tumor so much diminished as to enable me to make an examination of a good portion of the diseased part ; found that it consisted of two portions—the one occupying the anterior portion of the mouth, and projecting from it ; the other, the posterior portion, and extending into the fauces. I deemed it important to get away this sloughing mass, as soon as possible, because of its intolerable stench, producing nausea, and also causing the diarrhœa from which he was suffering, and which could not be remedied so long as the cause continued. I, therefore, applied a strong silken ligature around the anterior portion of the tumor, as near to its connection with the jaw as possible, drawing it as tightly as I could, and directed the creosote to be continued. Ordered—rich soups and brandy ; anodyne at night ; no hæmorrhage has occurred.

December 11.—Patient as comfortable as circumstances will permit ; sleep frequently interrupted by the profuse discharge from the mouth ; has taken nourishment and stimulants freely ; feels stronger ; pulse 98, and much stronger than it has been since the operation. The ligature around the tumor was found loose, because of the shrinking and decomposition of the parts it embraced. I applied another, and, by making traction, by means of the ligature, I was enabled to separate it from the jaw ; no blood followed its removal. The mouth was cleansed, and he was enabled once more to nearly close his jaws. The relief afforded my patient by the removal of this disgusting and highly offensive mass may be readily conceived. I was now enabled to obtain a fair view of the posterior part of the tumor, which was evidently much shrunken, and in a sloughing condition. Its attachments to the jaw were much more extensive than the tumor I had removed, and much firmer in texture at its base than the first tumor. I made an ineffectual attempt to pass a ligature around it, because of its size, and the fact of its extending so deep into the fauces. The same treatment directed as yesterday, with the addition of an opiate suppository in the rectum, the diarrhœa being somewhat troublesome.

December 12.—Patient has had a comfortable night ; very much elated because of the relief afforded him at yesterday's

visit; has taken nourishment freely; pulse 90, and stronger. Applied a ligature around the remaining portion of the tumor by means of a double canula, used in the removal of polypus uteri. After passing the ligature around the tumor, the canula was removed, and the ligature made as tight as possible. With a pair of curved scissors and double hook I then removed a very considerable portion of this sloughing mass; dressed the wound on the neck; found it looking well, and healed throughout most of its extent; directed the creosote wash to be applied to the tumor as before; anodyne at night.

December 13.—Patient very comfortable; removed some portions of tumor with scissors and hook; had taken his usual nourishment, with the addition of some animal food cut very finely; anodyne at night, as usual.

December 15.—Patient very comfortable since last date; dressed the wound on neck; doing well; suture removed; removed some portions of tumor; applied another ligature to tumor; upon tightening it, about two table-spoonfuls of blood were discharged, which very much alarmed the patient. Directed finely powdered ice to be taken into the mouth, after which hæmorrhage ceased.

December 17.—Patient doing well since the last visit; neck dressed; and upon making traction upon the ligature, the remaining portion of the tumor was separated from its attachments; there was a slight hæmorrhage, which was checked by the use of ice; bowels in good condition; appetite good; anodyne at night continued.

December 23.—Patient very comfortable since last visit; pulse 90; wound dressed; and upon very slight traction, ligature came away, being the thirteenth day after the operation.

December 24.—Patient doing well; much better in every respect; the bone appears not to be involved in the disease. The disease commenced in the periosteum of the jaw; was malignant in its character, and of that form so classically described as fungus hæmatodes by the elder Hey of Leeds. This patient continued to do well for some two months, during which time I had cognizance of him. The soft parts at the point of connection of the tumor did not heal. A fungus grew from them which bled occasionally, but was kept in subjection by the frequent application of nitrate of silver.

He was then placed under the use of iron; his appetite

and strength improved, so that he was enabled to be about in a very comfortable condition, when my attendance ceased. He, about that time, fell into the hands of a professed cancer doctor, under whose treatment he died about six months after, as this quack reported, of consumption.

Case 9.—Hæmorrhage from Incision into Tumor of Neck—Ligature of Carotid—Hemiplegia—Death.—I was requested by Dr. John Conning, the Resident Physician of Bellevue Hospital, to see a patient with a large bleeding fungus of the neck. I found a man with an immense tumor occupying the angle of the jaw, and the upper portion of the neck on the left side; who informed me that a surgeon of this city had recommended its removal; the patient consented, and the Doctor made a free incision into the tumor some six inches in length; the hæmorrhage was so profuse, that the parts were brought together at once, and by the aid of compresses and ice contained in bladders applied to the parts, the hæmorrhage was for the time arrested.

About a week after the operation, with the removal of the dressings, the lips of the wound were found embracing a fungus, from which there was a constant discharge of blood, at times profuse; he was anæmic, and so excessively debilitated by loss of blood, that it appeared he must die in a very short time. I proposed at once to apply a ligature to the common carotid, which I did at the lower part of the neck, an inch and a half above the clavicle, this is the only instance in which I have found it necessary to tie the carotid artery below the crossing of the omo-hyoid muscle. The hæmorrhage was arrested, the patient directed nourishing diet, strong meat soups, brandy, etc.; he rallied for the time; about three o'clock the next morning, the right side of the body was discovered to be paralyzed; his intellect continued comparatively good until the next evening, when he gradually became comatose, and died on the fourth day after the operation. No *post-mortem* examination was allowed by the friends.

Remarks on Forty-four Cases of Ligature of the Common Carotid Artery; communicated by VALENTINE MOTT, M.D., Emeritus Prof. of Surg. in Univ. Med. Coll., etc., etc.

No. 1 DEPAU PLACE. }
Bleecker Street, April 11, 1857. }

DEAR DOCTOR :—If you think the inclosed recollections are worth anything, they are at your service.

Truly yours,
V. MOTT.

DR. JAS R. WOOD.

The carotid artery was first tied for aneurism, in this city, by the late Prof. Wright Post. The aneurism was of a large size and at an advanced stage; after the operation, the sac gave way, and an enormous quantity of coagula was discharged, followed by extensive suppuration, but the patient ultimately recovered.

He tied it also a second time in a young woman from Massachusetts, in whom a tumor of the neck was supposed to be an aneurism. The tumor diminished after the operation, but after some months it began again to increase, and after the lapse of two or three years she died from the pressure and irritation of it upon the trachea and larynx.

The autopsy revealed its true nature, and that it was a glandular tumor lying directly upon the carotid artery. This only communicated the pulsatory character to it.

A description of the *post-mortem* appearances, together with a drawing of the tumor by the physicians who made the examination, I have in my possession. The most distinguished surgeons of our city participated in the case; at that early period I was only a guest at the feast. In my operations upon this artery some things are worthy of note.

In the five instances in which I have tied both carotids in the same patient, there has not been any secondary hæmorrhage. The interval between the operations was from two months to one year. One exception to this must be made, in which, with the consent of the patient and the approbation of my colleagues, I tied the second carotid after an interval of about fifteen minutes; the case was altogether desperate and one of great suffering. A few hours after the operation, coma came on, followed by stupor, which ended in death, within forty-eight hours from the operation.

In two cases I have tied this artery at a very early age. Both were for aneurisms from anastomosis; one was in the orbit, and had passed over the bridge of the nose into the other orbit; the other was three months old, and the tumor was of an enormous size, upon the upper part of the neck, involving the angle of the jaw and temple. They both recovered.

In two instances I have tied it upon the distal principle, for aneurism of the innominata. The first was upon a counselor-at-law in this city, about sixty years old, of a vitiated habit. About the period of the separation of the ligature, slight arterial hæmorrhage showed itself, and, shortly after, the ligature came away spontaneously. A more profuse

bleeding took place from time to time, and he sunk under it two or three days afterward.

The other case was in a farmer from New Jersey, forty to fifty years of age, of apparently good health; the aneurismal tumor was nearly the size of my fist, with the blood all fluid.

In this, as in the former patient, there was scarcely a discoverable pulsation in the axillary artery, none in the brachial, nor any in the radial or ulnar.

The common carotid was, therefore, tied on the distal side of the aneurism; everything went on favorably, the ligature separated on the thirteenth day, the wound healed kindly. In six weeks he returned home without a vestige of the tumor remaining above the sternum.

There was no return of the aneurismal tumor above the sternum. He died about twelve months after his return home. The autopsy revealed the existence of the aneurism in the arteria innominata, which had shriveled and contracted to a hard and very compact spherical mass.

As before stated, one of my patients died from secondary hæmorrhage, a day or two after the separation of the ligature; two died before the ligatures were cast off. One of these was where the second carotid was tied after an interval of fifteen minutes; the other was the monstrous case of osteosarcoma of the lower jaw, (Prince's case, see *Journal of Medical Sciences*) in which the tumor was nearly the size of his head; the bone was sawed through at the first bicuspid tooth; and the jaw removed at the temporo-maxillary articulation of the opposite side.

He sustained the operation remarkably well, but appeared to die from the collapse which followed it on the third day.

In all my operations upon this artery, which now amount to forty-four, only one ligature, a small and round one has been applied to each vessel.

Conclusions.—The conclusions to which I have come, are the following :—

That in malignant disease of the nares, antrum, sides of the head, posterior fauces, and orbit, ligatures of the common carotid of the side affected is, not only a safe, but proper operation. If the disease is not arrested by the tying of one carotid, the other ought also to be tied, as soon as the increase of the disease is in the slightest degree manifested.

In several of each of these classes of cases, I have operated myself, and have seen it done by others, and never without

manifest advantages to the patient, provided, a recovery from the operation has followed. It is well known that some have only lived three to five days after tying the first carotid.

I have seen a case lately, a malignant tumor in the posterior fauces, originating probably, from the periosteum and bodies of two or more of the cervical vertebræ, closing one side of the posterior nares, obliterating the Eustachian tubes, and impeding deglutition, which was greatly benefited by tying the carotid of that side. The tumor obviously diminished in size, and all the unpleasant symptoms were assuaged.

When he left for home, he promised to return and have the artery on the other side tied, as soon as there was a return of his suffering.

In the first case of this frightful affection in which the artery was tied, the tumor actually sloughed.

In four instances of this disease, which we had previously met with, and in which the artery was not tied, they all lingered out a most painful and distressing existence.

I have seen and known more than one year elapse before it was deemed necessary to tie the second artery. During all this time, the disease was not arrested, but atrophy was constantly going on, and upon tying this second artery, the tumor, *though malignant*, has entirely disappeared.

Two instances of this kind I can now refer to, in which the individuals have enjoyed good health, for years without a vestige of the disease remaining.

In idiopathic epilepsy, or, that arising from a cerebral cause, I have seen only temporary benefit from tying one carotid. In one desperate case I tied the second carotid within six months of the first, with only a mitigation of the violence and frequency of the fits. He died in less than twelve months after the last operation, of tubercular phthisis.

In six cases in which I tied the common carotid, before removing large portions of the lower jaw, for huge osteosarcomatous disease, and three at the temporo-maxillary articulation, I have been pleased with this preliminary step. Not only is the loss of blood comparatively trifling, but the inflammatory tumefaction of the posterior fauces, is decidedly less.

When I began these operations, now thirty-six years since, I had no guide; there was no precedent that ever came under my notice; they were original with me, my object

then was the safety of my patient, and the success of the operation ; both of which followed in a number of my early cases.

This step I have not deemed necessary of latter years, and would not now recommend in practice. But at that period of operative surgery, I deemed it prudent and proper, and although this has been, perhaps, treated unkindly by some, they could and would not have done better than myself.

Report of Four Cases of Ligature of the Common Carotid; communicated by GURDON BUCK, M.D., Surgeon to the N. Y. Hospital.

Case 1.—Encephaloid Disease of Skull—Death.—Albert Mulderberger ; æt. 19 years ; suffering from encephaloid tumor covering the right parietal region, originating in the diploë. Ligature of the right carotid, December 21, 1839. Ligature came away January 3, 1840, thirteenth day. The wound healed favorably, except a fistulous track of one inch in length, from which an arterial hæmorrhage of about two ounces occurred on the 9th of March, and ceased spontaneously, and did not recur. Fistulous track had healed on the 9th of April ; patient survived till November, 1840. The tumor attained an enormous size. Patient was exhausted by repeated hæmorrhages from tumor. The left kidney was found six times its normal size, and had degenerated into the same morbid condition.

Case 2.—Severe Wound of Neck—Recovery.—William Smith ; æt. 39 years ; June 28, 1842 ; patient inflicted a wound on right side of neck, from prominence of thyroid cartilage, horizontally to anterior edge of sterno-mastoid muscle.

July 9.—Repeated profuse hæmorrhages occurred, for which the common carotid was tied. Two hours after operation, hæmorrhage recurred profusely, and was arrested by pressure.

July 12 and 13.—Hæmorrhage recurred again.

July 14.—Enlarged and explored original wound ; found a false aneurism, size of a hazel nut, that had formed around a wound of the superior thyroid artery ; removed aneurismal sac, and tied vessels.

July 26.—Ligature of carotid came away the seventeenth day. Sequel favorable.

Case 3.—Wound of Neck—Recovery.—William McGraw ; æt. 30 years ; July 4, 1848 ; received a deep, narrow wound behind the right angle of lower jaw, from explosion of glass bottle containing gunpowder ; mouth drawn to left side,

and distorted; speech thick and indistinct; deglutition difficult.

July 8.—A false aneurism had formed.

July 9.—A profuse hæmorrhage occurred, for which, applied ligatures to the common and internal carotid arteries.

July 20.—The ligature came away from the internal carotid; eleventh day.

July 21.—The ligature came away from the common carotid; twelfth day.

September 21.—During an effort to vomit, was startled by a sudden arterial hæmorrhage, amounting to two ounces, from the wound of the operation, which had not yet entirely closed; it ceased spontaneously, and did not return. Subsequent recovery complete. Distortion from facial paralysis remained, with atrophy and flabby, wrinkled condition of right half of tongue.

Case 4.—Wound of Neck—Death.—George Murphy; æt. 22 years; May 9, 1852; wounded in neck of right side, and branches of external carotid divided.

May 10.—Tied the common carotid and internal carotid; survived till May 21; found pericarditis, a circumscribed sero-purulent collection in the summit of the right plural cavity, a purulent deposit of the size of the end of the finger on the upper surface of the liver, near the suspensory ligament, and underneath the peritoneum; left knee was distended, with sero-purulent matter.

Report of a Case of Ligature of the Carotid for Hæmorrhage following a Stab in the Neck; communicated by JOHN WATSON, M.D., Surgeon to the N. Y. Hospital.

Case.—A young woman, who had been stabbed in the neck by her paramour, after an unusual loss of blood, was brought to the New York Hospital, about half-past four o'clock, P.M., October 5, 1853. I was not on regular service, but being the first of the medical staff to reach her after her admission, and the case not admitting of delay, I proceeded by candle-light to examine the wound, which had already been filled with sponges and compresses.

Before removing these, I had pressure applied over the lower part of the carotid of the left side, and on removing the dressings, I found a transverse wound, about half an inch long, and two inches above the left clavicle, passing directly down through the substance of the sterno-mastoid muscle. The wound I dilated by a crucial incision, and after dividing

the mastoid muscle transversely, I put a ligature upon the carotid, a little distance above the point of emergence from the chest, but without arresting the tendency to hæmorrhage.

In the course of the operation, I found a rapid welling up of venous blood from one point of the wound, which was arrested only after ligaturing the deep jugular; but still the arterial hæmorrhage was uncontrolled. My next effort was to apply a ligature upon the subclavian; but in the attempt, owing to the immense number of sponges and compresses of some of my colleagues, and the fingers of those assisting me to keep the hæmorrhage in check, I found it impossible to reach the vessels safely. With my finger in what I supposed to be the track of the stab, I could feel the subclavian pulsating. I tried to insinuate an armed artery needle around it, but the point of the instrument glided off beneath a layer of fascia toward the top of the sternum. The fascia, with the sac beneath it, I drew forward, and on tightening the ligature around it, the arterial hæmorrhage ceased and never returned. The whole procedure was an exceedingly embarrassing one, and the patient was kept alive only by the profuse use of stimulants. After the hæmorrhage had ceased, the wound was left open.

October 6.—In the morning, the wound was still dry, and the patient's condition improved; moderate re-action. Ord. the use of a stimulating and supporting course.

October 7.—In the morning, still in a moderately comfortable condition, but at four o'clock, P.M., her respiration became embarrassed, and her speech faltering. Her right pupil soon after became dilated, and she passed into a state of somnolency, bordering on coma. At eight o'clock, P.M., she was hemiplegiac on the whole of the right side; she had strabismus; and the pulse was rapid and feeble. She began to sink, and at one o'clock in the morning of the eighth, she expired.

The *autopsy*, twelve hours after death, showed the hæmorrhage to have issued from a transverse cut in the vertebral artery, which vessel had been almost completely dissevered about half an inch above its origin. The ligature upon the carotid and the jugular were seen in position. It is possible that one of the transverse vessels running toward the top of the shoulder might have been injured, judging from the amount of clotted blood in its track; but this fact was not made out clearly in the examination. How the arterial hæmorrhage could have been so effectually stopped

by the traction of the ligature that lay upon the mass of fascia already mentioned, it is difficult to say, were it not that this displaced fascia, and the clots beneath it, had served merely as a compress upon the divided trunk of the vertebral. The substance of the brain appeared, in places, to have been somewhat softened. The pleura of both sides were found inflamed, and contained a considerable amount of sero-purulent effusion. The instrument with which the wound had been inflicted, had sunk into the body of the vertebra, adjoining the wound in the vertebral artery.

Report of a Case of Ligature of the Carotid for an Erectile Tumor of Cheek; communicated by Dr. A. C. Post, M.D., Professor of Surgery in University Medical College.

Case.—I have only had occasion to tie the common carotid once, as far as I recollect. The operation was performed at the N. Y. Hospital, a number of years ago, on account of a formidable subcutaneous erectile tumor in the cheek. In opening the sheath of the vessels, the deep jugular vein was not exposed. The patient appeared to be doing well for several days after the operation, after which he had rigors, with low delirium and irritative fever. He died, as nearly as I recollect, about the eighteenth day after the operation. On making the autopsy, the deep jugular vein accompanying the artery which had been tied, was found inflamed, with pus in its cavity. There were two phlebolites in the veins of the erectile tumor occupying the cheek.

I had occasion, about a year ago, to tie the external carotid in the removal of the parotid gland from an old woman at my clinique. She recovered well from the operation. She has recently died, but I am not acquainted with the circumstances preceding her death.

Report of Nine Cases of Ligature of the Common Carotid; communicated by W. PARKER, M.D., Professor of Surgery in the College of Physicians and Surgeons, etc.

Case 1.—Ligature of Carotid for Epilepsy—Secondary Hæmorrhage—Recovery.—I tied the left common carotid, on November 8, 1848, for epilepsy. The ligature separated on the thirteenth day, and at that time there was a gush of arterial blood, which jetted several feet and struck against the wall; moderate compression was made, and no further hæmorrhage ensued. The blood was from the distal side of the ligature, I presume. The patient soon recovered from the operation.

Case 2.—Fibroid Tumor of Nares—Recovery.—The right common carotid was tied in a lad, æt. 17 years, for a large fibroid tumor which occupied the posterior nares and pharynx, in July, 1851; the growth of the tumor was arrested, and the boy, now a young man, called on me in the autumn of 1856.

Case 3.—Removal of Tumor.—The right common carotid was tied April 15, 1854, in a lad from the country, æt. 15 years, to secure against a fatal hæmorrhage, attendant on the removal of a large malignant tumor occupying the right side of the face and head. The ligature came away on the thirteenth day. The disease subsequently returned, and the patient died.

Case 4.—Malignant Disease of Antrum—Ligature of both Carotids, with an interval of thirty-two days.—May 6, 1854, I tied the left common carotid artery in a gentleman, æt. 45 years; for malignant disease of the antrum. The ligature came away on the twenty-ninth, or on the twenty-third day after the operation.

Case 5.—Second Operation—Secondary Hæmorrhage.—I tied the right common carotid artery June 7, 1854. Secondary hæmorrhage occurred on the tenth day, or rather night, and would have proved fatal had not Dr. George C. Blackman, now Prof. of Surgery, happened to be present at the time. The blood was from the distal side. The ligature came away on the fourteenth day after the operation, and hæmorrhage occurred from the distal side at two different times after the first bleeding on the tenth night, but it was controlled by cold and pressure, and the wound closed. Patient ultimately died exhausted by the cancerous disease.

Case 6.—Ligature of Carotid for Sloughing of Branches of External Carotid.—January 3, 1855. I tied the left common carotid artery for hæmorrhage from some of the deep branches of the external carotid, which had been opened by sloughs caused by a cancer doctor, who was burning away the parotid gland.

Case 7.—Ligature of Carotid for Aneurism.—May 8, 1856, I tied the common carotid artery on the right side for a traumatic aneurism, caused by a scale of iron, as large as a dime, passing from before backward deep into the parotid gland. The patient had had several nearly fatal hæmorrhages before he came under my observation. I proceeded at once to secure the common carotid, and then opened

the wound and removed the scale of iron. The patient did well.

Case 8.—Ligature of Carotid for Malignant Disease of Antrum.—Tied the common carotid artery in Mr. Eddy, of Brooklyn, with Dr. Dudley, for malignant disease of the antrum; the minutes of the case I have not been able to obtain.

Case 9.—Ligature of Left Common Carotid for an Erectile Tumor, in Left Temporal and Parietal Region—Secondary Hæmorrhage.—Catharine B., æt. 4 years and 8 months, was presented at the clinique, April 6, 1857, with a distinctly pulsating tumor over left temporal region. The tumor made its appearance two years ago, and has been steadily increasing up to the present time. It commences over the middle of the supra orbital ridge, and extends back to an inch above, and on a line with, mastoid process. The dimensions of the tumor are five inches transversely, and two and a half inches vertically; a ridge of bone surrounds the tumor, except at lower border; pulsation and thrill well marked; the size of the tumor diminishing on pressure; it is soft and fluctuating, except when the child cries, when it becomes hard and tense; prominent blue vessels run over the surface of the tumor, though there are no large vessels encircling it; a pressure of the temporal, which is of normal size, produces no effect on the tumor; compression has no effect on the brain.

The left common carotid was ligatured May 13. The ligature was passed around the artery, but was not tightened until the child had recovered from the anæsthesia; the moment it was drawn, pulsation ceased in the tumor; the bulk of the tumor was not sensibly diminished, but, during spasmodic and forced expiration, appeared to be larger and more tense than at other times; no head symptoms were noticed following the operation; the child, after having the wound closed by a few sutures and adhesive strips, resuming her usual state.

May 18.—Patient doing well; wound closing.

May 24.—Severe secondary hæmorrhage. Patient has been out, playing and running, and become heated. Dr. Cooper called, and found her in the yard. When she came up stairs, he made a slight traction on ligature, and the blood immediately gushed in much force, and soaked her clothing. I was summoned in haste; the Dr. was compressing the wound; a graduated compress of sponge was prepared and

confined over the wound by means of a collar of adhesive plaster. Ordered—cold water and morphine.

May 31.—All has remained quiet.

The ligature came away on the twenty-first day after the operation.

Report of a Case of Ligature of the Common Carotid for the Removal of a Tumor; communicated by J. P. BATCHELDER, M.D.

On examining the report of Mr. Spencer Hubbard's case by the late Prof. Stephen W. Williams, formerly of Deerfield, Mass., I find that the carotid artery was tied June 16, 1825. It is also stated in that report that the "wounds upon Mr. Hubbard's face and neck,* except immediately about the ligature round the carotid artery, healed by the first intention on the seventh day after the operation."

Dr. Williams does not state when the ligature came away, and as I have not been able to lay my hand on my own minutes of the case, I can not furnish as precise information upon this point as would be desirable, but my impression is, that it was removed on the thirteenth or seventeenth day after the operation. On account of an intolerable and indescribable sensation occasioned by the attempt to pass the needle under the artery from within outward, in order to avoid injuring the internal jugular or par vagum, I was obliged, after several attempts, to abandon this rule of surgery, and passed the needle in the opposite direction with little trouble or uneasiness; in doing which, the requisite care was taken not to injure either of the above mentioned parts. The cause of this distress was not satisfactorily ascertained, and I do not recollect noticing an allusion to a similar occurrence in the practice of any other surgeon.

At the time, the thought crossed my mind, and seemed to be justified by the attending phenomena, obviously of a nervous character, that the sympathetic, which lies immediately behind the carotid, had been touched by the needle, and suitable care, as stated, was taken in subsequent trials to avoid any contingency of that kind, but the same result followed in every instance; humanity prevailed over professional curiosity, and the needle was readily and easily passed as before stated.

Query.—Was there any anomalous distribution of parts?

* These were made for the removal of a portion of the lower jaw, with a large osteo-sarcomatous tumor in which it was involved.

Report of Five Cases of Ligature of the Common Carotid; communicated by Wm. H. VAN BUREN, M.D., Prof. of Anat. in Univ. Med. Coll. & Surg. to the N. Y. Hospital.

Case 1.—Ligature of Carotid for Malignant Disease of Nasal Fossa—Death from Acute Softening of the Brain on third day.—In the autumn of 1849, an English woman, about 40 years of age, was admitted into Bellevue Hospital for a malignant polypus of nose, distending right nostril, and having already caused, by its pressure, absorption of the nasal and superior maxillary bones, and ulceration of the integuments on the right side of the face, so that a portion of the morbid growth, about the size of an English walnut, protruded in the form of a bleeding fungus. On consultation, it was concluded that the extent and connection of the diseased mass were too great to justify an attempt to remove it, and ligature of right primitive carotid was recommended; within twenty-four hours after the artery was tied, hemiplegia of the left side came on gradually; about sixty hours after the operation the patient died.

On examination of the brain, the right cerebral hemisphere was found extensively softened, apparently from interruption of its nutrition; there was no hæmorrhage; no convulsions; no evidence of previous disease of the brain.

Case 2.—Ligature of Left Primitive Carotid for Cirroid Aneurism of Scalp—Right Carotid Tied six years before—Recovery from Operation and Relief to Disease.—In 1850, I tied the left primitive carotid in a young lady, æt. 17 years, for that rare form of disease of the artery called by Breschet "cirroid aneurism," and so well described by that distinguished anatomist in vol. 3 of the *Memoirs de l'Academie de Medecine de Paris*. In this case, the seat of the disease was the scalp, and it involved principally the branches of the right temporal artery. The disease had existed since early childhood; ligature of the temporal was attempted by a physician in the country when the patient was in her eleventh year, and unmanageable hæmorrhage following, the right primitive carotid was tied by the late Dr. John Kearney Rodgers, after which, by very careful dressing, the bleeding was arrested and the wound healed. The ligature of the right carotid seemed to stay the progress of the disease for several years; when it again began to increase rather rapidly, and I recommended and performed the ligation of the remaining primitive carotid. The ligature came away on the fourteenth day, and the patient recovered well.

By the continued employment of pressure and other means, the enlargement of the arteries of the scalp has been prevented from increasing materially since the last operation, but the patient who is still under my charge is not cured.

Case 3.—Ligature of Left Primitive Carotid for Traumatic Aneurism of Orbit—Recovery from Operation and Arrest of Disease.—Robert Duggan, æt. 21 years, was brought to the N. Y. Hospital with symptoms of fracture at the base of skull, from the falling of the walls of a house in which he was laboring. There was no external injury, but bleeding profuse from left ear; paralysis of facial nerve of left side; and concussion of the brain. He recovered from these symptoms, and, during the fourth week of his convalescence, projection of the left eyeball was noticed, which continued gradually to increase, accompanied by tensive pain and injection of the conjunctival vessels. This was at first suspected to be caused by the formation of an abscess at the bottom of the orbit, but my suspicion of the existence of an arterial lesion being aroused by the unwonted throbbing of which the patient complained, I placed my stethoscope over the eyeball one day, and immediately recognized a well-marked aneurismal thrill. This was arrested by pressure applied upon the main trunk of the carotid; and in subsequent consultation, the ligature of this vessel was advised and performed, with the result of arresting the pulsation, throbbing, and tensive pain at once. The exophthalmia gradually subsided, but this never entirely disappeared; slight aneurismal thrill returned about three weeks after the operation, but this has since subsided, and the patient, whom I have recently seen, suffered no inconvenience from the condition of the eye, except from occasional double vision, which he noticed only when a little out of sorts.

Case 4.—Ligature of Carotid for Wound of Superior Thyroid in Removal of Glandular Tumor of Neck.—In the summer of 1852, I was summoned to the assistance of a medical gentleman, who, in removing a glandular tumor of moderate size from the neck of a lady, finding the connections of the tumor were deeper than he anticipated, cut them across while making traction upon it; a profuse gush of arterial blood followed, which was instantly staunched by summary pressure. The hæmorrhage was so great, even when the pressure was momentarily relieved, that it was impossible to secure the bleeding point. I thought it judicious to place a ligature around the main trunk; after this was accomplished, we dis-

covered that the superior thyroid branch of the external carotid had been cut across, within a third of an inch of the parent trunk; a ligature was placed upon this, and the patient subsequently made a good recovery.

Case 5. — Ligature of Primitive Carotid Artery for Pulsating Encephaloid Tumor of Orbit—Death from Pyæmia on the thirteenth day.—Morris, a negro, waiter, æt. 25 years, entered the N. Y. Hospital on May 5, 1857, with exophthalmia of the right eye; he was a slightly built man, but healthy, until within the last ten weeks; he was first attacked by deep-seated, boring pain on right side of head, about an inch and a half behind the external angular process of the os frontis. This grew gradually more severe, with occasional aggravations of variable duration, radiating in every direction, and especially into the right side of the face and upper jaw. Suspecting the teeth as its cause, he had them all drawn from this quarter, but got no relief; at the end of six weeks, the eyeball began to protrude, and a fortnight later, vision in the eye became extinct, gradually, without diplopia; meanwhile, several hæmorrhages had taken place from the nostril of the same side, and its cavity had become almost entirely obstructed. After the protrusion of the eyeball commenced, the original pain was somewhat alleviated.

When admitted to the hospital, he was under the influence of a recent salivation, with a poor appetite, a cool skin, slow and feeble pulse; he was weak and dejected; the eyelids could not be closed over the protruding ball, and a thick fold of congested and œdematous conjunctiva projected between them, discharging a muco-purulent fluid, mingled with the lachrymal secretion; the pain, although not so severe as at first, was constant, and occasionally, for a few hours, much more aggravated, depriving him, thus, of continuous sleep; the eyelids were œdematous, and no tumor could be felt by the fingers, projecting from the orbit, except over the situation of the lachrymal sac, where there was a doughy and inelastic swelling of limited extent; nothing could be felt in the nostril; the iris contracted normally under the influence of light, but vision was totally extinguished; the most interesting feature presented, was a well-marked pulsation of the eyeball, which, to all appearance perfectly healthy in itself, was projected slightly at each contraction of the heart. This pulsation was arrested by pressure over the primitive carotid of same side. No thrill could be detected by the flexible stethoscope placed upon the ball; there were

enlarged lymphatic glands behind the ramus, and below the base of the jaw, of the same side. The disease had been preceded by no traumatic cause, to which its origin could be attributed; it was diagnosticated as a cancerous growth from the bottom of the orbit, pushing the eyeball out of its socket, and extending through the os planum of the ethmoid into its cells, and thence into the cavity of the right nostril; there was no evidence that the antrum had been invaded; and nothing could be detected by the finger in the fauces and posterior nares. The pulsation was attributed to the soft and vascular character of the malignant growth.

At the end of a fortnight of tonic and palliative treatment, the disease had evidently increased, and as its hopeless character was fully recognized, the patient was advised to submit to ligature of the primitive carotid artery, in the hope that, in view of the vascular nature of the tumor, its growth might possibly be delayed by diminishing its supply of blood. This was done on the 20th of May, and for a week afterward every symptom promised well. There was entire cessation of the pain, for the first time since its commencement, and the eyeball entered so far into its socket that it could be entirely covered by the lids. On the eighth day after the operation, several rigors occurred, followed by a quick pulse, hot skin, sweats, prostration, and other evidences of pyæmia. The adhesions which had formed in the wound broke down, and a rather profuse discharge of a thick chocolate-colored fluid took place from it, attended with the *occasional expulsion of large clots of blood on coughing*. This continued until the death of the patient, which took place on the 2nd of June, the thirteenth day after the operation.

On examination of the body, five hours and a half after death, the wound, from which all evidences of attempted reparation had disappeared, presented a cavity of almost double its original extent. The walls of this cavity were formed by dark-colored sloughy tissue, and at its bottom the ligature was found still slightly attached to what seemed to be a portion of the sheath of the vessels, the carotid artery having been entirely cut through, and its divided extremities retracted from each other to the distance of three-fourths of an inch. On slitting open this vessel above and below the division, it was found entirely closed at both extremities, its lower portion containing a well-formed, healthy-looking clot, which extended down to the bifurcation of the innominata; at a point opposite to the attachment of the ligature, and for

a space of an inch in extent, the internal jugular vein was open, so that the handle of a scalpel could be readily passed into the vessel upward and downward; its coats having been destroyed throughout nearly half of its circumference by ulceration, or sloughing. This lesion, which was no doubt coincident with the commencement of the pyæmia, explained the origin of the phlebitis which gave rise to it, and also the source of the bloody discharge, and blood clots, which were discharged from the wound during life. On examining the thoracic viscera, several abscesses as large as an English walnut, were found in the substance of each of the lungs, and a number of smaller ones upon their surfaces. A dissection of the head, showing the relations and extent of the original tumor of the orbit, prepared by Dr. Agnew, the Curator of the museum of the N. Y. Hospital, which was presented at the Pathological Society on the 10th of June, exhibits the following appearances:—A mass of encephaloid cancer, apparently taking its origin at the bottom of the orbital cavity, fills this cavity entirely, except at the outer and upper portion, and extending posteriorly through the spheno-maxillary fissure into the zygomatic fossa, occupies this cavity also fully, invading and softening the tuberosity of the superior maxilla. Thus, the pain in the side of the head and teeth of the upper jaw is explained; the superior dental nerve and its branches, by which these teeth are supplied, having been subjected to pressure and tension by the growth of the tumor. The tumor in advancing forward has pushed the ciliary ganglion to its outer side, and thus the motions of the iris and nutrition of the eyeball were not interrupted. It emerged at the inner canthus, below the tendon of the orbicularis, and forms a prominent mass over the lachrymal sac and on the side of the nose. Internally, it has caused absorption of the os planum of the ethmoid, occupies all the cells of its right lateral half, and, protruding downward into the right nostril, fills the upper portion of this cavity completely.

Report of Five Cases of Ligature of the Common Carotid; communicated by W. DETMOLD, M.D.

Case 1.—Vascular Tumor of the Cheek—No Relief from Operation.—Operation about the year 1840. Miss M., æt. 26 years; has had from childhood a vascular tumor, extending irregularly over the right side of face; involving the whole thickness of the cheek, part of lips, forehead, etc.; looking blue; not pulsating; thinks it has lately been growing; tied the right carotid; operation made no impression on tumor;

ligature fell on sixteenth day. Patient died, two years after, of tuberculosis of lungs.

Case 2.—Vascular Tumor of Chin and Gums—Actual Caustery after Ligature—Cured.—Was called by Dr. L., of this city, in 1842, to see Mr. L.; merchant; who had a similar vascular tumor as the one above, about the left side of chin, involving the gums; had been operated upon before, with red-hot needles; tumor was increasing, causing absorption of maxilla; tied the carotid of that side, and applied the red-hot iron to gums; laid the tumor open and applied red-hot iron; ligature fell tenth day; tumor cured, never returned.

Case 3.—Aneurism by Anastomosis.—Called by Dr. Gescheidt, in 1845, to see a child eight months old, with a tumor under left ear, having a broad basis, and about the size of half a pullet's egg; feeling of aneurism by anastomosis; skin not discolored; pulsating freely; growing rapidly. I tied the common carotid; tumor collapsed and remained so during the time of observation; family removed to Wisconsin a few weeks after, and not heard from since; ligature fell on the tenth day.

Case 4.—Malignant Disease of Face. 1847.—Malignant tumor of right side of face in woman about forty years; of age increasing rapidly; tied common carotid; think the growth was a little checked for a while; died six or eight months after with open cancer.

Case 5.—Malignant Disease of Superior Maxilla.—Osteosarcoma of superior maxilla far progressed; patient laboring under symptoms of pressure on brain. Tied common carotid; removed superior maxilla; brain became free; patient died three or four days after operation.

Report of a Case of Ligature of the Common Carotid for Malignant Disease of Antrum; communicated by T. M. HALSTEAD, M.D., Surgeon to the N. Y. Hospital. (From Hospital Records.)

Case.—Madelaine Nichols; æt. 54 years; Massachusetts; married; admitted March 30, 1855; (attendance of Dr. HALSTEAD,) with the above on the right side; the history of which is as follows:—Two years ago, was first attacked with pain in upper jaw of right side; the pain constant and lancinating; two months following, first noticed pain about the jaw internally, which has gradually increased, forcing out in its growth the last two molars, until it occupies the upper half of roof of mouth; two months ago, it commenced to ulcerate upon surface, and patient has since been troubled with

hæmorrhage frequently ; mastication of food is attended with great difficulty, and deglutition is much embarrassed ; patient states that tumor has increased in size more rapidly within the last two months. There is very little enlargement externally, the face on right side being nearly symmetrical with left ; patient's general condition is pretty fair. Treatment—decubitus.

March 31.—Patient was attacked with hæmorrhage from tumor, and bled to the extent of 3 iv.

April 1.—Had another attack of hæmorrhage during the night to about the same extent.

April 2.—On consultation, it was determined, with a view of arresting temporarily the growth of the tumor, and preventing the frequent and alarming hæmorrhage, to which patient has been subject, to ligature the common carotid artery ; patient was accordingly etherized, and the right common carotid ligatured just below the spot where it is crossed by the omo-hyoid muscle ; an incision, some three inches in length, being made along the inner margin of sterno-mastoid muscle ; wound brought together by sutures, and cold water applied.

April 3.—Patient came from under influence of ether kindly, and slept well during the night ; wound looks healthy ; complains of some dizziness with dimness of vision in right eye.

April 4.—Still complains of some dimness of vision, while dizziness has subsided ; wound continues to do well ; has been free from hæmorrhage since the operation.

April 6.—Dimness of vision has entirely passed away ; wound has an erysipelatous blush. Ordered—Sutures removed and lot. plumbi et opii applied. No union in edges has taken place.

April 7.—Erysipelas is subsiding. Continue treatment.

April 9.—Blush has entirely subsided ; wound commencing to suppurate ; dressed with adhesive strips. There has been a visible decrease in size of the tumor since the operation, and deglutition is more easy.

April 12.—Wound continues to suppurate freely ; edges look healthy.

April 15.—Ligature still remains in wound, and is firm ; wound granulating kindly. Continue treatment.

April 19.—Continues to do well ; some union in edges of wound ; ligature is still retained. Continue treatment.

April 22.—Ligature has not come away as yet ; wound doing well.

May 3.—Ligature came away to-day ; wound nearly healed ; tumor is now about one quarter its original size. Continued strapping to wound.

May 8.—Discharged relieved.

The tumor decreased in size and almost disappeared. The patient regained health, and remained well for seven months, when the tumor again began to grow ; she died in February, 1856, unwilling to submit herself to any surgical treatment.

Report of Two Cases of Ligature of the Common Carotid ; communicated by D. MEREDITH REESE, M.D.

Case 1.—Ligature of Carotid in the Removal of a Tumor—Hæmorrhage not Arrested—Actual Cautery used—Recovery.—My first case of ligature of the common carotid was performed in the presence of Professors Davidge, Pattison, Alexander, and Murphey, of Baltimore, in 1823. It was successful, although the hæmorrhage from the wound, made in the immediate removal of the tumor, was not diminished, so far as I could judge, and I had to resort to the actual cautery. I tied the artery in two places and divided it between, as was usual in those days.

Case 2.—Ligature of Carotid for Removal of Tumor—Hæmorrhage not Arrested.—My second operation was also preparatory to the removal of a tumor of the neck, in 1829, and in this case, also, I could perceive no advantage, on the score of hæmorrhage, from having applied the ligature.

In neither of my subsequent operations upon the head, neck, or in amputations of portions of the lower jaw, have I consented to ligate the carotid, deeming it unnecessary, and, therefore, unwarrantable.

Report of a Case of Gunshot Wound of Neck—Recovery ; communicated by CHARLES E. ISAACS, M.D., Demonstrator of Anat. Univ. Med. Coll.

Case.—The patient was admitted about January 1, 1855, into the hospital on Blackwell's Island, with a severe gunshot wound, produced in an attempt at self-destruction. The ball, a conical one, entered about an inch below the angle of the jaw, producing a moderate-sized external wound, but tearing the parts extensively within. The hæmorrhage, which was profuse, was restrained by compresses, bandages, etc., but continues to recur at intervals of two or three days. Sixteen days after the injury, I saw him ; on removing the dressing, a small quantity of dark blood, mixed with sero-purulent matter, issued from the wound ; the compresses

were continued; the next day, profuse hæmorrhage recurred; accordingly, on consultation with Dr. Willard Parker, and Dr. Sanger, Physician-in-Chief of the Hospital, it was determined to secure the vessel at the point wounded; as the opening and the dilatation of the wound would be attended with great loss of blood, it was thought best to tie the common carotid first. With the kind assistance of Dr. Parker, I ligatured the carotid just below the point where it is crossed by the omo-hyoid muscle. The wound was then dilated; on removal of the coagula with the finger, profuse hæmorrhage occurred; sponges and compression were employed and the bleeding vessels immediately secured; the finger could then pass in the track of the ball, through the base of the tongue so as to reach the region of the arteries of the external carotid of the opposite side, which had been wounded and were now bleeding slightly; as these could not be seen or reached with a ligature, compression was relied upon to check the bleeding. Careful and cautious research failed to detect the ball, which had not passed out of the body. The parts were brought together with sutures and adhesive strips, with moderate compression on the wound. Hæmorrhage did not recur; (time of removal of ligature not stated;) the wound healed rapidly, and without interruption; at the end of a few weeks, he was discharged from the hospital, cured.

Report of a Case of Ligature of the Carotid for Wound of Superior Thyroid Artery—Hemiplegia. By ISAAC GREEN, M D., late Surgeon to Bellevue Hospital; communicated by Prof. J. W. S. GOULEY.

Case.—Dr. —, a German physician, while confined in the Tombs, and during a fit of despondency, cut his throat with a thumb lancet. The superior thyroid artery of the left side was severed by the instrument in question, and the profuse hæmorrhage which resulted could only be controlled by ligature of the primitive carotid, attempts having been made in vain to secure the bleeding vessel. The operation was accordingly performed at Bellevue Hospital, by one of the attending surgeons, Dr. Isaac Green, after due consultation; pressure having meanwhile been made by the house surgeon, Dr. Stevens.

I may here mention that no anæsthetic was administered, as the patient was very feeble from the excessive loss of blood he had sustained. Stimuli, etc., were resorted to, and everything seemed to be going on well until the next day, when it was noticed that he had no control over his sphinc-

ters ; soon after the right half of his body was paralyzed. His intellect was not materially impaired ; he could answer questions clearly, but a few days after, he became incoherent, finally entirely imbecile, and was confined to his bed for four or five months in a perfectly helpless condition. After this, he improved sufficiently to be able to drag himself about in the wards, still idiotic, and unable to articulate. He lingered in that condition until the middle of the summer of 1854, when he died of cholera, fifteen months after the injury.

I regret to say that, although he died while under my care, I did not have an opportunity to make the autopsy.

I supposed that his condition, after the operation, was due to some anomalous arrangement of the arterial circle at the base of the brain, thereby interfering with the proper nutrition of the organ, or even producing softening ; and, perhaps, also, in a great measure, to the loss of blood previous to the operation.

Report of Four Cases of Ligature of the Common Carotid ; communicated by A. B. Morr, M.D., Surgeon to St. Vincent's Hospital.

Case 1.—Aneurism by Anastomosis—Cured.—Mr. Tobin's child ; female ; æt. $6\frac{1}{2}$ months ; disease, aneurism by anastomosis, covering the left side of the face, increasing rapidly, and had closed the left eye ; lips much enlarged, as well as left side of the nose. Applied ligature to the left carotid on February 1, 1854. Removed the ligature on the seventeenth day after the operation ; nothing unusual happened during that time ; wound healed kindly. The disease gradually disappeared, and was perfectly cured in about six months.

Case 2.—Malignant Disease of Eyeball.—J. Durand ; female ; æt. 7 years ; disease, fungus hæmatodes of right eyeball, attributed to a blow received ten months previous to her applying to me. Having extirpated the eyeball for a similar disease, on several occasions, and a return of the disease taking place within a few months, I concluded to apply a ligature to the right carotid, and extirpate the diseased mass at the same time. Operation performed, April 10, 1854 ; ligature came away from the carotid on April 19 ; the wound healed kindly with ordinary dressings. No return of the disease had taken place when I last saw the patient, which was about a year ago. Chloroform was administered.

Case 3.—Malignant Tumor of Neck—Cured.—Bridget Quinn ; native of Ireland ; æt. 24 years ; disease, malignant

tumor of right side of neck. Removed a large tumor, about the latter part of December, 1854; the disease returned, and was increasing rapidly; performed a second operation on February 3, 1855, and found that the vessels were so thoroughly incorporated with the tumor, that it was impossible to remove the mass, without previously placing a ligature upon the right carotid, low down, which I did, and then removed the entire disease. Ligature came away, February 20, 1855, and the wound healed slowly. I have seen the patient from time to time since, and there is no return of the disease.

Case 4.—Aneurism by Anastomosis.—Julia M.; from Hastings; æt. 23 years; disease, aneurism by anastomosis, covering left side of the face. Applied ligature to left carotid, October 30, 1856; ligature came away, November 21, 1856. I am not now prepared to give this as a case cured by the operation, for I have not seen the patient in some time. When she was last in the city, the disease was fast disappearing, and gave hopes of an entire cure.

Report of a Case of Ligature of the Common Carotid Artery, for Aneurism by Anastomosis; communicated by J. S. THEBAUD, M.D.

A. B.; male infant; robust and healthy; æt. between 6 and 7 months; with neck short, fat, and thick; disease, aneurism by anastomosis, involving right side of the nose from the frontal bone to the ala, and crowding over upon the eyelids; congenital; size of small hen's egg; color, bluish and red; full and tense; evidently supplied by the frontal and nasal branches of the ophthalmic artery.

Operation.—The incision, two inches and a half long, from the angle of inferior maxilla to the middle of the trachea; a little nearer to the trachea than in the usual operation in the adult; tissues divided on the director; no vessels injured; no blood lost; ligature came away on the tenth day; on tightening the ligature, the tumor became soft, flabby, and paler; progress of growth arrested, but has not disappeared. I intend applying ligature to the other carotid, as soon as consent can be obtained from parents.

Report of a Case of Ligature of the Common Carotid, for Malignant Disease of Palate; communicated by W. R. DONAGHE, M.D., Surgeon to the Demilt Dispensary.

Case.—In March, 1856, Jane B.; æt. 15 years; free from any hereditary taint; parents, brothers, and sisters all living and healthy; while washing her mouth, after the extraction

of a tooth, discovered in it a lump the size of a marble. She first came under my notice late in June, when I found a tumor as large as an English walnut, globular in form, mottled, red in color, and elastic to the touch, projecting downward from the right side of the hard palate, just in front of its line of union with the velum palate. The patient was emaciated, anæmic, and sallow, with poor appetite, quickened pulse, and complained of severe lancinating pains on that side of the head; she was advised to have the tumor removed, but declined. In September she returned, wishing to submit to the operation. The tumor had greatly grown, nearly filling the roof of the mouth, pressing down the tongue, and touching behind the vertebral column. The articulation was indistinct; the respiration laborious, and deglutition difficult; the cervical glands were enlarged, and the cancerous cachexia was now fully developed. The patient, at this time, was seen by the surgical staff of the City Hospital, a majority of whom recommended, as the only alternative, ligature of the right common carotid. This operation I performed, September 8, with the assistance of Drs. Van Buren, Thebaud, and Thomas; no unfavorable symptom followed; the ligature came away on the fifteenth day. For six weeks the growth of the tumor was arrested, but there was no material diminution of its size; at the end of that time it began to grow again, with aggravation of all the symptoms; a fungus soon shot out from near its centre. After this I lost sight of the patient, in consequence of her leaving town, but learned that she died, worn out, Feb. 16.

Report of a Case of Ligature of the Common Carotid Artery for Malignant Disease of the Orbit; communicated by GEORGE V. I
WOODWARD, M.D., New York.

Case.—April 14, 1857, I was called to visit James Smart, æt. 33 years; born in Scotland; married; ship-carpenter by trade; residing at Greenpoint, L. I. He stated to me that, two years ago, he complained of pain in the head, immediately over the right eye, which would occasionally dart up from his nose in a direct line through the forehead, and was very severe in its character; soon after, he observed a thin watery discharge, sometimes tinged with blood, and of an exceedingly saltish taste, from his right nostril. He attributed these symptoms to catarrh in the head. A short time after this, he was attacked with chills; these he had every day, but no fever. He was treated by a physician, and took

large quantities of quinine. After recovery from this attack, the symptoms about the head entirely subsided, and he remained comparatively well until about a year ago, when the right nostril began to be obstructed, and finally prevented the passage of air through it. He was told at this time that he had polypus. In the course of two months, he had occasionally slight hæmorrhage from the right nostril.

About Christmas of last year, a slight swelling, pulsatory in its character, was observed in the right orbit, causing the eye to project; this gradually increased up to the time I saw him, when it almost filled the orbit. Six weeks previous to this, the hæmorrhage increased, so that the loss of blood amounted to half a tea-cupful a day. The pain at this time was intense, so much so as to deprive him of sleep. His vision was unimpaired.

I diagnosed the case as disease of decidedly malignant character, and proposed tying the common carotid artery for the purpose of depriving the tumor of its nourishment. To this he assented, and on the 18th day of April, I performed the operation in the usual manner, tying the right carotid artery above the omo-hyoid muscle. 19th.—Patient had slept well, for the first time, in a number of weeks; the pain and discharge from the nostril had ceased; pulse 80; intellect good; pulsation of tumor not perceptible; appetite good. 20th.—To-day there was perceptible decrease in size of the tumor; pulse 75; diet nourishing. 21st.—Slight discharge of bloody serum from the nostril; no pain; feels very well; sleeps well; pulse good; still further decrease in the size of tumor. 22nd.—Dressed the wound; looking very healthy; bowels constipated; relieved by injection; slight increase of discharge of bloody serum from the nostril; milk-punch; generous diet. 23rd.—Patient doing well; much stronger than at any time since the operation; suffers no pain; sleeps and eats well. May 5th.—Patient has been doing well since last date; the tumor so much decreased in size that the eye occupies its natural position; breathes comparatively free from his nostrils; no discharge of blood, but occasional flow of dark-colored and offensive serum from the nostril; wound dressed and ligature found loose; patient's condition in every way improved; strength and appetite good. He continued to do well, and was up and about the house until the 23rd of May, when the pain again returned, which was very severe in its character. Hæmorrhage from the nose, and patient unable to breathe through

right nostril ; eye considerably pushed forward by the tumor, and pulsation of tumor removed. 25th.—Hæmorrhage continued and more profuse ; patient drowsy and inclined to sleep. From this date the tumor grew very rapidly, the eye protruding more and more each day from the orbit ; both nostrils becoming completely occluded, and the pulsation increasing. On the 1st of June, there was partial paralysis of the left side of the body ; the eye so much projecting, that it hangs over the lid and rests on the cheek ; vision, which had been imperfect, now entirely destroyed. The patient sunk rapidly ; paralysis becoming complete, and died on the 8th of June, with all the symptoms of compression of the brain.

Autopsy, twenty-four hours after death.—On removing the calvarium, the dura mater was found adhering very firmly to the os frontis, and as far as two inches above the orbital plate of this bone on the right side, extending about two inches to the left of the mesian line on the left side ; the dura mater very much thickened, and adhering so intimately to the membranes below that it was impossible to separate them. On opening the right ventricle, it was found to contain about twelve ounces of bloody purulent matter, one-half of the anterior lobe of the right hemisphere was involved in the disease, which was cancerous in its character, and was found to be connected with a cancerous tumor occupying the right orbit, the antrum of the right side and both nasal cavities, extending back and occupying the cells of the sphenoid bone, the orbital plate of the frontal bone, the os unguis, os planum, the nasal wall of the antrum of the right side, the superior turbinated bone, the vomer, the ethmoid bone, and its cribriform plate, entirely destroyed by the pressure and invasion of the tumor. The tumor was subjected to microscopic examination by Dr. Gouley, who found it to be cancerous in its character, and that character of *cancer* described by Mr. Hey, of Leeds, as fungus hæmatodes. A decided hereditary taint could be traced. The carotid artery, at the point of ligature, had retracted, leaving a space of three-quarters of an inch between its two extremities, and the clot in the distal portion of the artery extended to within one-quarter of an inch of its bifurcation into external and internal carotid, so that the circulation was completely established between the two arteries. In the proximal portion of the artery, the clot did not extend to its origin from the innominata, but a space of one-half an inch from its origin was pervious and not occupied by clot.

Report of a Case of Ligature of Common Carotid for Malignant Disease of Superior Maxilla. By Dr. STEPHEN-SMITH, Surgeon to Bellevue Hospital. (Notes taken from Records of the Hospital, by Dr. John G. Johnson, House Surgeon.)

Alice Griffiths; native of United States; æt. 53 years; widow; temperate; with no hereditary disease traceable; no syphilitic taint. Her constitution was good previous to the commencement of the present disease. About eleven years ago, being then forty-two years of age, she was attacked with inflammation of the left ear, followed by otorrhœa, which continued for nine months, when the discharge suddenly ceased, and she was attacked with severe "aching" pains in the left side of the head; her menses ceased in the forty-fourth year, re-appearing but once in the next year.

She then enjoyed very good health until the disease in the jaw commenced. In December, 1855, she had a very severe sore throat, in consequence of a cold. This lasted for two weeks. After the cold passed away, she was attacked with ringing in the left ear, followed by dull aching pain in the left alveolar process. The pain was at first paroxysmal and nocturnal.

Three months after this, she noticed a hard tumor involving the left upper gum, and extending to the palate. Two carious teeth and two sound ones were removed, as the supposed cause of the trouble. The tumor continued to increase till she was obliged to consult a physician.

He gave her some preparation of potassa, internally. Sloughing of the tumor immediately followed, leaving a large deep fissure. This was in June, 1856. She was able to continue about her household duties till October 13, 1856, when she was admitted to the surgical wards of Bellevue Hospital. She was then very much broken down by disease and inability to masticate thoroughly her food. She was placed upon the most nutritious articles of diet the house afforded, and wine and tonics were also ordered. A gargle of chlorate of potassa was also used to check the offensive discharge which was constantly oozing into the mouth.

A consultation was called, at which Dr. Mott, among the other surgeons of the hospital, was present. It was not deemed advisable to have any operation at present, and the treatment above mentioned was continued. Erysipelas appearing on that side of the face, another tooth nearest the centre of the diseased mass was removed, which seemed to check the disease. She took her discharge November 20, 1856.

She was re-admitted to the surgical wards on January 23, 1857. The cheek was now much enlarged from the growth of the tumor. The fissure from the slough had nearly filled from the new morbid growth. The tumor now extended back along the mesian line as far as the soft palate (part of which had sloughed away), and both within and without the jaw, from the second incisor of the left side to the last molar. She had great difficulty of swallowing, owing to the size of the tumor, which was now as large as a hen's egg, and also from the tenderness. There was a constant oozing of matter into the mouth, rendering her stomach very irritable, and also oozing of blood from time to time on her attempting to masticate any food, of unusual hardness. Her health had failed rapidly during the time she was out. The left nares was so perfectly occluded, that she was unable to force air through it in blowing. Several consultations were held, but it was not deemed desirable to operate. She was placed on the most nutritious diet the house afforded, with wine and tonics.

Chlorate of potassa was also used as a gargle, and she also continued to wash her mouth with water. While the patient was out of the hospital, she had accustomed herself to the use of large doses of morphiæ sulph. to allay the pain and procure rest, and it was found necessary to continue the use of it, though in much more moderate doses.

April 24.—The tumor, instead of diminishing by the treatment which had been adopted, has increased. The discharge into the mouth and from left nares, is extremely offensive; her hearing is so much impaired upon the left side, that it is with great difficulty that any conversation can be had, or the patient made to understand anything. There is extreme tenderness in the roof of the mouth, and bleeding almost every time the patient attempts to take any food of greater consistency than fluids.

Her general health is rapidly failing; the tumor now extends across the mesian line, backward to the soft palate, and is of the size of a medium-sized lemon. The pains are of a lancinating character, and almost constant; the integuments over the tumor were tense, shining, and painful to the touch. The patient is willing to submit to any operation that will afford her even temporary relief from the pain. The hæmorrhage averages from one to two ounces per day from the roof of the mouth, which is so sensitive, that the patient is unwilling to take her wine from the pain it pro-

duces; the erysipelatous attacks have become more frequent; the breathing is so much interfered with, that the patient is obliged to keep the mouth open in respiration; she is rapidly failing from repeated losses of blood. Under these circumstances, the consultation were unanimously in favor of the ligature of the primitive carotid of the left side.

Operation.—Dr. Stephen-Smith ligated the primitive carotid in presence of a large class of students, April 24, 1857. Drs. James R. Wood, Willard Parker, L. A. Sayre, and J. J. Crane were present and assisted in the operation. Anæsthetics were not used on account of the difficulty in respiration produced by the tumor. The jugular vein was not seen during the operation; there was an unusual number of small vessels in the course of the operation which required to be ligated. The wound was dressed with sutures and adhesive strips. The patient bore the operation with remarkable fortitude, and her pulse scarcely varied. An anodyne was given to procure sleep.

April 25.—Patient slept well last night, though there was considerable excitement in the ward, owing to the fact that several patients had been operated upon that day; her pulse was 92, and full; the wound looking well, the dressings were not disturbed. P.M.—Some œdema around wound; says that she feels less pain in the tumor than before the operation; allows it to be pressed upon more firmly than before operation.

April 26.—Pulse 94, full; wound looking well, except there is more œdema, and a slight erysipelatous blush around the wound. The integuments over tumor are less tense and shining than heretofore; they can be corrugated without the patient making much complaint; discharge from left nares diminished somewhat; there was a slight discharge of blood from inner portion of tumor immediately after breakfast; the wound was dressed; lotio plumbi et opii continued to wound as on previous day; anodyne at night.

April 27.—Pulse 96; the erysipelatous appearance more marked; pil. colocynth co. No. iv. ordered; lotio plumbi et opii to wound; no oozing of blood.

April 28.—Pulse 88; strong; erysipelas subsiding on face; discharge from nose slight; no hæmorrhage; ligatures on small vessels all removed; does not complain so much of mastication of food; wound dressed.

April 29.—Pulse 90; the morphia which had previously been given in large quantities, has been diminished; the lan-

cinating pains have mostly disappeared; the erysipelas no longer noticeable; one grain of morphiae sulph. at night.

May 1.—Wound healing by granulation, except at the edges which had united by first intention; case progressing favorably.

From this time, the wound was dressed daily; patient expressed herself daily gaining in strength, and enjoys refreshing sleep, which she has for a long time been deprived of.

May 14.—Ligature removed, being the twentieth day.

May 17.—Skin can be corrugated over the tumor; complains of no pain; can take brandy without having the mouth irritated by it.

May 18.—In an attempt to vomit, there was a slight discharge of blood from inside tumor.

May 20.—Did not sleep well from the irritation of stomach, and pain.

May 28.—The wound is almost entirely healed; a small point remains where the ligature was removed, which is progressing favorably. The tumor remains about the same size; the integuments are much paler; the pain has almost disappeared; the integuments can be corrugated without complaint on the part of the patient; the hardness still remains; there has been no hæmorrhage from the mouth since the operation, except that mentioned as occurring on the second day, and that following the attempt at vomiting. The breathing is still interfered with; patient unable to force air through right nares; slight discharge from the nares and mouth continues; she has improved in health and strength; the pain has been alleviated; the comfort she has enjoyed since the operation from the arrest of the disease, and improvement of the general health, are daily remarked by the patient.

Remarks.—The preceding collection of cases does not purport to embrace all the operations of ligature of the common carotid which have been performed in this city. This artery has been ligated once by Stevens, Cheesman, and others, whose cases, we regret to say, we have not received. We can not forbear to mention in this connection a successful operation, as early as 1832, by our preceptor, Dr. David L. Rogers, an operator of rare dexterity, and consummate skill, who retired from an extensive and lucrative practice too early for the cause of surgical science.

We may, also, in this connection draw attention, not invidiously, to the communication, of Dr. Mott, which pos-

sesses in itself an interest worthy of especial consideration. No living surgeon, we believe, has had so great and varied an experience in the ligature of arteries as our distinguished townsman. Not only in operations upon the carotid is his individual experience a store-house of important facts, which, in themselves, are sufficient to determine many doubtful points, but it extends throughout the entire series of operations upon the arterial system. We trust that this brief communication, is but the precursor of other similar contributions, which will greatly enrich the medical literature of this country.

In preparing the following summary, we have necessarily included only the reported cases.

Summary.—The common carotid was ligatured for the following causes:—

Hæmorrhage—Whole number, nine; of which six recovered and three died.

Cause of Death.—Two became hemiplegiac; one, a few hours after the operation, dying comatose, no autopsy; the other on the second day, also dying comatose, and revealing, on post-mortem examination, softening of the brain and inflammation of the pleura. One died on the eleventh day, and, on examination, was found to have had pericarditis, with collections of pus in apex of lung, and liver.

Malignant Disease of Head or Face.—Whole number, seventeen, of which four resulted in the apparent cures of the original disease; ten were decidedly benefited, growth of tumor being for a time arrested; two died; one not noted.

Cause of Death.—In one, hemiplegia supervened twenty-four hours after operation, and death occurred in sixty hours; autopsy revealed extensive softening of the brain; in the second case, death occurred three or four days after the operation, from exhaustion.

Aneurism by Anastomosis.—Whole number, ten; of which four were cured; one died; five were benefited.

Cause of Death.—In the fatal case, phlebitis was found to have existed, pus found in cavity of deep jugular vein.

Aneurism of Branches of Carotid.—Whole number, four; all recovered.

Epilepsy.—Whole number, two; both benefited, but not cured.

Removal of Tumor.—Whole number, seven; all recovered.

Secondary Hæmorrhage occurred in five instances, slightly

in two, and severely in three ; all recovered, the hæmorrhage being controlled by pressure.

Date of Separation of Ligature was noted in twenty-four cases—maximum period, thirty-one days ; minimum, nine days ; average, fourteen days and twenty-one twenty-fourths.



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