

from the axis of vision was in some degree diminished. The sensibility to light, which, from the time of the accident, had been too great, seemed slowly returning to its natural state.

The treatment of case 3d consisted, together with the antiphlogistic regimen, principally of cathartics and antimonials, which were particularly required after the operation on the left eye, on account of the obvious tendency to destructive inflammation. After this was pretty much subdued, antispasmodics were occasionally administered. The inflammatory symptoms in cases 4th and 5th were so slight, as to call for nothing more than, now and then, some mild laxative.

*Newburyport.*

*Case of tying the Carotid Artery, and the Extraction of a Tumour from the Neck.* By R. D. MUSSEY, M.D. Professor in Dartmouth College.

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**O**N the 22d of February, 1822, Dr. G. Heaton, aged 51, a physician from Vermont, consulted me respecting a tumour on the left side of his neck. He first noticed it early in December, 1821, in the form of a hard lump, a little below the angle of the jaw. In less than three months, it had acquired nearly the size of one's fist.

Its surface was irregular, and its hardness not uniform. A protuberant part at its exterior aspect, was comparatively soft and elastic, while its body was hard. The skin did not adhere, but its colour was slightly changed, from a trifling enlargement of its vessels over the most prominent part. On relaxing the platysma myoides, an obscure motion could be given to the tumour, but no position of the head or neck could disengage from it, the sterno-cleido-mastoid muscle. This muscle was distinct, from the clavicle to the lower part of the tumour; but at this point it seemed to terminate abruptly, and to be entirely identified with the diseased mass. Occasionally there was darting pain in or about the tumour, and deglutition was a little impeded by its encroachment upon the larynx and œsophagus.

I consulted my colleagues, Dr. Oliver and Dr. Dana. Our united opinion was, that the tumour tended rapidly to malignant ulceration, or to fungus with hemorrhage, and that the only remedy, the knife, could afford but a very uncertain prospect of a radical cure. We could not urge the operation, although we believed it would probably prolong life, which, otherwise, must,

in a few months, fall a sacrifice to the disease. With these prospects before him, the patient, on being assured that he need not expect to die in the operation, determined to submit to the knife.

The nature of the tumour, so far as it could be inferred from its rapid growth, from the touch, and from the state of the mastoid muscle imbedded and lost in its substance, and the uncertainty whether the morbid mass did not extend to the vertebræ, involving the great cervical vessels and nerves, conspired to render the contemplated operation sufficiently formidable. The necessity of dissecting out all the diseased substance, and the difficulty, if not impossibility, of accomplishing this without previously stopping the circulation in the vessels by which it was fed, induced the resolution to tie the carotid artery as a preparatory step to the removal of the tumour. This resolution was fortified by the consideration that the records of surgery had not yet decided what influence, if any, this method of cutting off the supply of blood, can exert towards repressing the growth or preventing the reproduction of morbid parts. The case related by Mr. Goodlad in the 7th vol. of the *Medico-Chirurgical Transactions* seemed to be in favour of the practice. As it was inconvenient to attend immediately to the operation, the patient was directed to take less animal food than usual, and to avoid distilled and fermented liquors.

On the 28th of February, assisted by Dr. Oliver and Dr. Dana, I performed the operation. In the opinion of all present who had seen the tumour six days before, its volume had decidedly increased within that period. From the tip of the ear downward, it measured accurately, four inches, its lateral diameter was three and a half inches, and the distance of its most prominent exterior part, or apex, from the outer side of the larynx as the line of its base, was more than two and a half inches. How much deeper into the neck it extended than this line of admeasurement, could not be determined.

#### OPERATION.

The patient was laid upon his right side with the head drawn a little backward. With this position of the neck, which was unusually long, there was sufficient space below the tumour to cut down upon the carotid. An incision about two inches in length, and reaching to within half an inch of the clavicle, was made upon the inner border of the mastoid muscle. The artery was sought for, and its sheath exposed just below where it is crossed by the *omo hyoideus*. On crowding outwards the mastoid muscle and the internal jugular to bring the carotid more

fully to view, the eighth nerve was dimly seen through the cellular tissue in which it lay imbedded. Very gentle pressure upon this nerve, with the hilt of the scalpel gave acute pain.

The sheath was carefully dissected from the anterior part of the artery to the extent of three quarters of an inch; and at this stage of the operation we had an opportunity of witnessing a fine demonstration of Parry's doctrine of the pulse. There was no hemorrhage, and a strong sunshine fell directly into the wound. At the bottom of this, lay the naked artery, pulseless as a metallic cylinder, and exhibiting its vasa vasorum, in the form of a delicate scarlet network, spread over its surface. On applying the finger, or the hilt of the knife to the vessel, so as to lessen its caliber, a bounding pulse was both felt and seen. We could not help pausing a moment to contemplate this interesting exhibition.

A ligature of waxed thread, (as we had been unable to procure suitable ligatures of animal substance) was passed between the artery and its sheath, by means of a blunt silver needle, of small curvature, with a moveable hilt. On tying the ligature upon the artery, the patient felt none of the pain in the corresponding side of the head and face, mentioned by some operators. The wound was then closed by a strip of adhesive plaster. In order to expose the tumour, two incisions were made; one from the tip of the ear, to a little distance below the tumour along its anterior part; the other at right angles with the first, passing over the apex of the swelling towards the back of the neck. On dissecting back the integuments, traces of muscular fibre, the remains of the mastoid muscle were visible. Most of the muscle was lost in the diseased mass, and the few fibres which remained, were inseparable from it. The muscle was therefore divided below the tumour, where it appeared of the natural firmness and colour; that part only of the muscle which was below this point of division being allowed to remain.

The tumour had no capsule; it had shot irregularly into the surrounding cellular substance, and had seemed to convert into its own nature, the glandular and muscular textures which lay in its way, or rather, with which it came in more immediate and firm contact. When the main body of it was removed, and the wound sponged clean, an opportunity was afforded of discovering any lobuli of the diseased mass which might remain. Two or three of these were detected and removed; one in particular, which projected a little way between the carotid and the internal jugular, was dissected away with care. A great part of the parotid and submaxillary glands was dissected out in consequence of their being firmly interwoven with the tumour, and

seeming to have derived from it a morbid character, as evinced by a change in colour and hardness for some depth into their substance.

The removal of this tumour exposed to view the internal jugular, the common carotid and its fork lying collapsed, and the open mouths of the divided branches. Most of the digastric muscle was also laid bare, part of the splenius, and several of the small muscles connected with the larynx, the styloid process and the os hyoides, the extremity of which last, with its appropriate muscles attached, projected some way into the cavity. With these parts in view, it was interesting to witness, in the process of deglutition, the motions of the larynx and the os hyoides, and the actions of the muscles connected with them.

In dissecting back the integuments from the angle and body of the lower jaw upon which parts the tumour had a little encroached, an inferior branch of the facial nerve was divided. This gave a permanent twist to the mouth; the under lip being drawn towards the opposite side, while the upper lip and angle of the mouth remained as before. Two nerves emerged from the posterior part of the tumour some way above its middle, which I took to be the divisions of the accessory nerve, although they were unusually large. When these were cut through, the patient started violently; not, as he afterwards assured me, from the pain it occasioned, but from the suddenness of the sensation of the parts *giving way*, as he expressed it. A copious gush of black blood frequently interrupted the progress of the dissection, and in one instance, viz., when dissecting through the parotid gland, we noticed a slow trickling of *florid* blood. The patient probably lost, in all, a pint of blood, and possibly more than that quantity.

The dressings consisted of two or three stitches, some strips of adhesive plaster, a compress and roller. The operation of cutting down upon the carotid and tying it, occupied eighteen or twenty minutes, that of dissecting out the tumour, an hour and a half.

An hour and a half after the operation, the patient took 25 drops of the tincture of opium, and got considerable sleep during the night. The next day he was a little restless, with the pulse at 92. He took an ounce of the sulphate of magnesia, which operated moderately, as a cathartic. After this, the pulse did not rise above 84 in a minute, and the patient had but little pain in the wound, and rested well, though for some days, he complained of soreness, and difficulty in swallowing.

His food, for the first week, was milk with farinaceous preparations. The wound healed chiefly by adhesion, the ligature

upon the carotid came away on the 28th day, and the patient returned to his family immediately after. Previously to his returning, I advised him to take, daily, for some weeks, 10 to 15 grains of the phosphate of iron, with some rhubarb or soap pill, if necessary, to keep the bowels open; to avoid distilled and fermented liquors, and exposure to wet and cold. In June, I was informed that he was then in good health, and that there was no symptom of a reappearance of the disease.

The tumour when cut through, presented appearances which served to confirm the opinion previously entertained of its malignant character. That portion of it which was the most elastic or puffy before extraction, had the homogeneous texture, and nearly the consistence, of the medullary part of the brain. Near the base of the tumour, the texture was much more firm, with numerous fibres or bands running in various directions; and in one part, where the texture was softer, a small insulated cavity was cut into, which contained a dark bloody serum.

On reflecting upon the foregoing case, I cannot help considering the tying of the carotid, as an essential part of the operation. From the first, I have had but little hope of a permanent cure; but if, without an entire removal of all the morbid mass, a reappearance of the disease was to be expected, I am confident that no part of the operation was more necessary than the tying of that large vessel. And if it be admitted, that a radical cure of a malignant tumour can ever be effected by the knife, while any portion of it is left behind, the inference seems natural, that such portion, being possessed of a comparatively low degree of vitality, will be more sure to die, from being deprived of most of its accustomed nourishment.\*

*Dartmouth College, Hanover, N. H., August 21, 1822.*

\* Although arteries which run in a straight course, do not pulsate when dissected up from their sheaths, or in other words, when free from compression, it is not precisely so with those which pursue the curvilinear direction. In recently dissecting a tumour from the neck, in which the upper part of the right half of the thyroid gland was implicated, I laid bare and tied the superior thyroid artery, previously to dividing it. As it lay nearly in a semicircular form, I dissected its sheath from it for the space of three fourths of an inch, chiefly with reference to the pulse. At each systole of the heart, a slight motion was communicated to the vessel, like what might be expected from the blood impelled in a right line, but we could not satisfy ourselves that its diameter was augmented.