

# A CASE

OF

ANEURISM BY ANASTOMOSIS IN THE ORBIT,

CURED BY

THE LIGATURE OF THE COMMON CAROTID ARTERY.

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*Read November 1, 1809.*

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**F**RANCES STOFFELL, aged 34, a healthy active woman, of fair complexion, middle stature, and the mother of five children, on the evening of the 28th of December, 1804, being some months advanced in pregnancy, felt a sudden snap on the left side of her forehead, which was attended with pain, and followed by a copious effusion of a limpid fluid into the cellular substance of the eyelids on the same side. For some days preceding she had complained of a severe pain in the head, which was now increased to so great a degree, that for the space of a week she was unable to raise it from the pillow. The œde-

matous swelling surrounding the orbit was reduced by punctures; an issue was set in the temple for a smart attack of ophthalmia which super-vened, and leeches and cold washes were applied. She now first perceived a protrusion of the globe of the eye which affected the sight, and a circumscribed tumour, elastic to the touch, about as large as a hazel nut, appeared upon the infra-orbitary ridge. Another softer and more diffused swelling arose, at the same time, above the tendon of the orbicularis palpebrarum. The lower tumour communicated both to the sight and the touch, the pulse of the larger arteries; the upper gave the sensation of a strong vibratory thrill. The swellings grew slowly, and the skin between the eyes and that of the lower eyelid became puffed and thickened. The globe of the eye was gradually forced upwards and outwards, and its motions were considerably impeded. She had a constant noise in her head, which, to her sensation, exactly resembled the blowing of a pair of bellows. The pulsatory motion of the tumours was much increased by agitation of mind, or strong exercise of body. But the most distressing of her symptoms was a cold obtuse pain in the crown of the head, occasionally shooting across the forehead and temples. She was compelled to rest the left side of her head on her hand when in the recumbent posture, and found the beating and noise to increase sensibly when her head was low and unsupported.

Such was the substance of the patient's report when I was requested to see her by my friend Dr. Cholmeley, Assistant Physician to Guy's Hospital. Her physiognomy was hard and coarse, and the skin in the region of the orbits appeared morbidly thick and wrinkled. The eyebrow of the diseased side was straitened, and driven from two to three lines above the level of the opposite eyebrow. The hollow of the orbit was lost, the superior lid rising convex from the superciliary ridge, owing to the strained elevation of the globe of the eye. The upper half of the inner canthus was filled by the thrilling tumour, which presented a loose woolly feel, was very compressible, and when firmly compressed, offered a slight pulsation. The veins of the superior lid were varicose from distension; the skin was much pursed over the lachrymal sac, and the veins on the sides of the nose turgid. The lower tumour, which projected above the suborbital hole, was of a conical shape, and firmly elastic to the touch. The under lid was raised as far as to the outer angle of the orbit, above the apex of the cheek. This lower tumour could be emptied or pressed back into the orbit, but the pulsation then became violent; and from the increased pressure of the globe upon the roof and side of the orbit, the pain was insupportable. Careful compression of the temporal, angular, and maxillary arteries produced no effect on the aneurism. Upon applying my thumb to the trunk of the common carotid, I found the pulsation cease

altogether, and the whiz of the little swelling was rendered so exceedingly faint, that it was difficult to determine whether it continued or not. The recent increase of puffiness in the skin over the root of the nose, and below the inner angle of the opposite eye, had given alarm to the patient and her friends, who feared, not without some appearance of reason, a similar affection of the right orbit.

When I first saw the disease, I felt persuaded that it could be no other than that described by Mr. John Bell, under the term '*Aneurism by Anastomosis.*' Indeed it bore so strong a resemblance in its principal features to several of Mr. Bell's cases, and in particular to that communicated by Mr. Freer of Birmingham, whose patient refusing assistance expired of hæmorrhage, that I considered the sensible growth of the disease an argument of sufficient force to justify any rational effort at its restriction. From the character of similar cases, and the idea which I had formed of this, it was to be expected, that, although it had been slow in its formation, it would be rapid in its increase; and unlike the aneurism of trunks, would resist controul as it acquired size. I first tried the effect of pressure on the swelling, but, although moderate, it could be borne only for a very limited time, by reason of the pain attending the exasperated action of the arteries. Cold applications had been already made use of without any evident advan-

tage, but indeed the duration and aspect of the disease made this remedy appear trifling. Excision, the only method of which in similar cases experience had confirmed the success, was clearly impracticable without extirpation of the eye; and from the great displacement of the globe, and the obvious origin of the disease within the orbit, I considered the result of such an operation to be most precarious. Being satisfied of the growth of the disease; knowing from a late happy precedent the perfect practicability\*, and under favourable circumstances the moderate risk of placing a ligature on the carotid artery; and particularly reflecting that the obstruction of such a channel, must, at all events, be followed by a sensible and permanent diminution of the impulse of blood destined to the disease, I proceeded to the operation on Tuesday the 23d of May, 1809, in presence of Dr. Cholmeley, Mr. Geo. Young, Mr. Brickenden, and other gentlemen.

The patient was laid supine; the neck raised by a pillow, the chin slightly turned to the left shoulder. An incision, about two inches and a half in length, was commenced at the distance of one inch above the sternal extremity of the clavicle, and carried in an oblique direction along the anterior edge of the mastoid muscle. The fibres of the muscle being exposed, its edge was

\* See a case of Carotid Aneurism, &c. by Astley Cooper, Esq. Medico-Chirurg. Trans. Vol. I.

raised, and the sheath of the vessels cautiously cut open on the tracheal side. Through this opening, which was of very small extent, a curved eyed probe, carrying a stout round ligature, was passed beneath the artery\*, care being taken to exclude the nerve. The probe being cut away, the ligatures were drawn apart from each other, the lower being tied at the lowermost point of the denudation of the artery, the upper at the highest. They were about one fourth of an inch distant; and whilst they were tightened, the division of the internal coat of the vessel could be distinctly felt. The lips of the wound were lightly brought together by adhesive straps, and the ligatures drawn out opposite to the point of their application on the artery.

The patient, before she quitted the table, observed that the pain was numbed, and that the noise in her head had entirely ceased. The small tumour over the angle of the eye was still thrilling, but very obscurely. Two hours after removal to her bed, I found her free from pain, but uneasy from having preserved the same posture. She was fatigued, and anxious to procure sleep.

*Eight o'clock, P. M.*—Patient has been distressed with nausea; dozed frequently, but was as frequently disturbed by nervous startings, and rambles about her husband and children; complains

\* The pulsation of the lower tumour immediately ceased upon compressing the vessel with the finger as it lay over the probe.

of severe pain darting from temple to temple, and soreness of her back and loins; pulse 90, and rather hard; skin cool, slight thirst. The lower tumour, I was concerned to find, had already acquired the thrilling motion of the upper. She was ordered the saline effervescing draught every third hour.

*Second day, eight o'clock, A. M.*—Restless all night, and continually changing posture. From two to four o'clock particularly uneasy: she even attempted to get up and dress herself; appears now pretty comfortable, having had a short refreshing sleep. Pain in the back very severe; that in the head confined to the forehead, and somewhat abated in violence; pulse 124 and hard; tongue lightly furred; some thirst.

*Two o'clock, P. M.*—Restlessness and other symptoms continue; pulse 132.

*Eight o'clock, P. M.*—Says she is much better; free from pain in the head, and has less in the loins; pulse as before; tongue moist; skin cool; has enjoyed some short but refreshing sleep; complains of stiffness in the throat and neck; mind tranquil.

*Third day, ten o'clock, A. M.*—Has passed a pretty quiet night; slept soundly at intervals; pain in her back has ceased. Much agitated by the firing of the Tower guns, and has since had a very

severe pain in the top and back of the head ; pulse 112, fuller, and sensibly softer. The tingling or thrilling sensation is experienced in both tumours upon light contact of the finger ; if firmly compressed, a pulse may be perceived in the lower.

*Ten o'clock, P.M.*—An enema has been administered without effect ; has been troubled with colicky pain in the abdomen, and having had no evacuation, was ordered a purgative saline draught.

*Fourth day, nine o'clock, A.M.*—No sleep till three o'clock, owing to the pain in her head ; pain now less severe. Had a copious evacuation from the bowels at seven o'clock, and the catamenia as expected.

*Four o'clock, P.M.*—Complains of heavy pain in the occiput ; no other symptom of commotion in the system ; pulse 92 and soft ; sits half erect ; has eaten some light pudding with appetite.

*Fifth day, ten o'clock, A.M.*—Has passed an uneasy night from continued pain in the top and back of the head. She complains that though the pain is deeper seated, it renders the scalp tender. The tumours are very considerably diminished, and the eye less prominent. When she first sat up, her head was so light that she was immediately compelled to resume the recumbent position. She still experiences so much of the



same feeling as to require support. I observed that the globe of the eye communicated a slight pulsation. Her sight is short, and objects appear to her larger than natural and misty\*.

*Four o'clock, P. M.*—Is comfortable in every respect, having slept for some hours together; pain in the head has ceased; pulse 84 and natural. Can preserve the sitting posture longer without support.

*Sixth day, noon.*—Ate a mackarel with appetite for dinner; continues free from pain. On removing the dressings, pus flowed out profusely by the side of the ligatures. Above and below them the wound has united by the first intention. Granulations and discharge healthy.

*Seventh day, noon.*—Slept perfectly undisturbed all night; was slightly affected to-day by the ringing of bells, and finds any continued noise painful. I allowed her to eat meat. The thrill of the lower tumour is not perceived when the upper is compressed; but it has besides a feeble though distinct pulsation.

*Eighth and ninth days.*—Going on well in all respects. Granulations and discharge healthy.

\* In the misty vision preceding blindness from idiopathic affection of the retina, objects appear for the most part smaller than natural.

*First of June, tenth day.*—Has had a bad night and much restlessness, owing to a return of the pain in her head, which lasted for three hours, and left the integuments sore. Has been up, and finds she can walk better than she expected. The wound would heal immediately but for the ligatures; they are fast rising towards the surface, but are not yet loose.

*Twelfth day.*—Makes no complaint; sits up and works in her bed without fatigue; eats and sleeps well.

*Fourteenth day.*—Still has occasional pain in the summit and back of the head; but it is more tolerable than before the operation.

*Seventeenth day.*—Sat up to her tea last night, and sits in a room adjoining her chamber this morning; feels weak; fears her eye is more displaced; thinks the brow is pushed higher, and the lower tumour larger. Her husband and friends have expressed the same opinion. The ligatures continue to loosen daily. The left side of the neck is stiffened from the ear to the shoulder, which prevents the free motion of the head. The fibres of the platysma myoides feel rigid and corded, from the inflammation which the wound has excited. She has had shooting pains in the eye since the last report, but they subsided on leaving off a green silk shade, which she remem-

bers to have produced the same effect before the operation.

*Twenty-first day.*—The upper ligature came away without force. The patient finds no inconvenience from sitting up and working all day. She was astonished to find that she could read small print and do fine work with her right (i. e. sound) eye, which she has been unable to do for years. The stiffness of the left side of the neck is decreased. She has been pressing, some days past, for permission to walk out.

*Twenty-second day.*—The lower ligature had come away spontaneously, and was found in the dressings. From it hung the slough of the artery included between the threads.

From this day she was permitted to go out. On the twenty-third she walked two miles, by which, as might have been foreseen, she was greatly exhausted. On the twenty-ninth she returned to her family. The wound quickly healed. At the end of the fifth week she could perform all the duties of her situation as well as before the operation. She expressed herself well satisfied with the obvious diminution of the tumour, the decrease of the pulsation, and the total freedom she enjoyed from pain, which had distracted her for years.

*20th September.*—It is now four months since

the operation was done. The tumours are evidently smaller, and their motion materially diminished. The eye is likewise less projecting. The cold dull pain, though formerly uninterrupted, is now but rarely felt. The artery of the left side may be distinguished very feebly beating below the angle of the jaw. The carotid of the opposite side contracts with more than ordinary force. Mr. Brickenden, who has watched the disease from its commencement, and had observed its more than usual progress before the operation, considers it to have received a decided check from that period. The husband and friends of the patient, as well as herself, are of the same opinion. She suffers occasionally from irregular digestion, to which she has been long subject; but in other respects is as well, and endures as much labour with as little fatigue as formerly.

On Saturday, 28th of October, she miscarried at the period of about ten weeks from conception. The hæmorrhage was so considerable as to induce syncope, and leave her in a state of extreme debility. On the succeeding morning it was observed that the upper tumour was flattened, and the pulsation had altogether ceased. On the Monday ensuing she felt pain in the affected side of the head, and was feverish. In the course of a few hours the cellular substance in the region of the orbit was filled with a serous fluid precisely similar to that experienced in the commencement

of the disease ; the pain was abated, and the œdematous swelling and heat of the surface reduced by a cold lotion. She has now (November) no pain in her head ; but owing to her extreme debility from loss of blood, is subject to occasional palpitation of the heart and giddiness. The upper tumour and the gathers of integument between the eyebrows have totally disappeared. The eye projects less ; the lower tumour is inelastic, and has no preternatural pulsation.

During the Christmas following she was afflicted by the loss of a child, before she had recovered the debility which her miscarriage had induced. She was then seized with faintings, accompanied with a loss of sense and motion, frequent retchings, and discharges of blood by the bowels. For nearly two months she was confined to her bed, and still remained in a state of lowness, from which her apothecary and friends had no expectation of her recovery. In June following she went by my advice to visit some friends in the country, thirty miles distant from London, and remained there for two months. She returned in health, which she has ever since enjoyed uninterruptedly in a higher degree than for many years past.

*May, 1811.*—Mrs. Stoffell is looking florid and healthy. Of the disease, a knob of the size of a large pea over the inner angle of the eye is the only vestige that remains ; she is still occasionally

subject to pain in her stomach, and other symptoms of dyspepsia, a complaint with which she has been troubled for the last fifteen years.

The annexed plate conveys a tolerably accurate idea of the disease, and of the effect of the operation.

Having never seen a parallel case to that which I have related, I am unable to add information on the nature of this rare but formidable species of tumour.

I have thought the case worthy of detail on two accounts ; first, because it furnishes a second conclusive example of the safety of an operation, which has been commonly regarded as impracticable or injurious to the functions of the sensorium ; secondly, because it determines the influence which, by the ligature of the carotid trunk, we possess over the diseased condition of its branches. It appears that, like every other trunk of the arterial system, the carotid may be obstructed without injury to the organ which it supplies ; or, in other words, that the collaterals will convey a quantity of blood sufficient for its nourishment and functions.

The circulus arteriosus formed by the communion of the basilar and carotid arteries at the basis of the brain, seems to be the resource which na-

ture has provided for the preservation of the cerebral circulation under this emergency.

It has been supposed that by the obstruction of one of the carotid arteries, the volume of blood supplying the brain was permanently diminished. The reason for this opinion was suggested by the passage of the carotids and vertebrals through bony canals, which would prevent an augmentation of their capacity. It might be further supposed that the intention of nature in this peculiarity of structure was to prevent the deleterious effect of the pressure which would result from dilatation of the vessels in an organ so delicate. But can it be imagined that the functions of such an organ should be unaffected by the permanent privation of one fourth part of its circulating blood? Besides, if the volume of blood be not increased by diversion into other channels, how should the pressure be increased? The mere change of place could be of no importance, because at whatever point pressure was applied, it would be equally diffused over the mass, as is proved by the symptoms following the depression of a portion of fractured bone of the diameter of a shilling.

Nor can the fact of diminished volume be determined from the inclosure of the carotid and vertebral arteries in bony canals, but let it be granted; the unobstructed carotid acts with in-

creased force, and the increase of but a few beats in frequency would amply compensate for the loss of volume.

But it is superfluous to look beyond the obvious visible effect. The disease appeared essentially to consist in a preternatural impulse of the blood conveyed to the part. By obstructing the direct channel this impulse was broken, the circulation became anastomotic, the blood which was before influent, was now refluent; the part was supplied at second-hand, instead of directly from the heart. Is not this the *modus operandi* of the ligature in the cure of all Aneurisms?





Drawn by H. Thomson.

Engraved by J. Spranger.

Fig. 1. Portrait of Frances Steffell previous to the operation.

Fig. 2. Portrait of the same two years after the operation.