A CASE
OF
FRACTURE OF THE OCCIPITAL BONE,
EXTENDING TO THE GREAT FORAMEN;
IN WHICH THAT BONE WAS TREPHINED,
AND
THE DURA MATER OF THE CEREBELLUM PUNCTURED.

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COMMUNICATED

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Read Dec. 4, 1810.

AT four o'clock *P. M.* of the 30th November, 1808, Charles A. Cameron, aged 14, midshipman of his Majesty's ship *Leviathan*, fell from the booms into the hold among provision casks, a height of between 27 and 30 feet, without touching any thing in his descent by which his fall might have been broken. At first there was no mark of external injury to be found on any part of the body; but as the blood gushed from his nose and ears, accompanied with total insensibility, stertorous breathing, dilated pupils, &c. no doubt remained of the brain

being compressed somewhere. The head was accordingly shaved, when a puffy tumor upon the os occipitis became apparent ; through which the surgeon of the ship made an incision, upon its upper part, three inches in length, on a line with, and a quarter of an inch above the superior transverse ridge of that bone : by which means a fracture was discovered bisecting the incised wound at right angles, and a little to the right of the great tuberosity, or spinous process.

In this state the patient was admitted into the Hospital, only a few hours after the accident, with his extremities cold, and no other signs of life, than a deep laborious breathing, and a slow intermitting pulse, not exceeding fifty strokes in the minute.

In order to trace the fracture downwards, in which direction the bone seemed to be most shattered, I made an incision, commencing at the former, one nearly two inches in length through the fibres of the trapezius and complexus muscles to the bone, which I here found to be very much depressed, and the fracture maintaining a direct line towards the foramen magnum, the two incisions forming the figure T. There was one small and detached portion of bone, so depressed and jammed under the sound bone, that it was impossible to raise it without the application of the trephine—the fracture of the inner table of the skull being more extensive than that of the outer.

The angle of the integuments and muscles of the right side being therefore separated from the bone, and raised so as to give room for the working of the smallest crowned trephine I had ; a circular piece was cut out with that instrument between the superior and inferior transverse ridges of the bone. And here a very perplexing and unexpected embarrassment occurred, occasioned by the protrusion of the dura mater through the trephine-hole, filling completely the whole foramen, and extending considerably beyond the outer surface of the bone, which from its tenseness greatly retarded the subsequent parts of the operation, viz. that of elevating the depressions, and removing the bony spiculæ. The dura mater looked healthy, not at all injured by the saw or spiculæ ; and from its elasticity when pressed upon, evidently shewing that extravasated fluid underneath was the cause of the protrusion. The pressure upon the cerebellum was thus in a great measure removed ; and this the patient himself very clearly evinced, by repeatedly raising his hand to his head during the application of the dressings.

Satisfied with what had thus far been done, half an ounce of castor oil was exhibited ; four ounces of blood were taken from the arm, as there had been but little hemorrhage during the operation ; and the patient was put to bed. I intended, however, should symptoms authorize it, to puncture the dura mater of the cerebellum in order to libe-

rate the compressing fluid underneath ; but this part of the operation was delayed until I could consult with my friend and colleague Dr. Wright*. I wished also maturely to consider of the propriety of such a step ; and felt a thorough conviction that the delay of a few hours could add but little to the danger of the case, as the bony depressions were all either removed or elevated, and the protruded part of the dura mater contained the fluid which would otherwise have pressed with greater force upon the cerebellum.

Dec. 1.—During the night and this morning the patient remained pretty nearly in the same state as when admitted, with the exception of his extremities being warmer, and of his raising his hand two or three times to his head ; but the dressings were not disturbed. Although he vomited soon after the castor oil had been taken, and several times through the night, yet he had two tolerably copious stools, which with his urine were voided unconsciously.

The parts being now exposed in the presence of Dr. Wright, the hospital assistants, and Mr. Griffiths, surgeon of the Leviathan ; the dura mater had the same tense and elastic feel when touched as on the preceding evening. It was therefore determined unanimously that I should make a punc-

* At present senior physician to Haslar Hospital.

ture with a lancet or fine-edged scalpel through this membrane. This I preferred doing by gentle scratches with the latter instrument upon the most prominent part of the protrusion, until I had got through ; and when I had done so, nearly half an ounce of serum, slightly tinged with blood, was discharged, and the dura mater instantly collapsed. A probe-pointed bistoury was then introduced at the opening, and the incision of the dura mater carried downwards to the bottom, or lower edge of the trephine-hole, bringing its probe point out between the sides of the fracture, leading to the foramen magnum. The patient now seemed restless, and endeavoured to extricate his head from the assistant who held it, with a hand upon each ear. A little lateral pressure was therefore necessarily made, which caused the sides of the fracture, at the bottom of the wound, to come into such close contact, that in place of its allowing room for the bistoury to pass through, it had more the appearance of a fissure, and would not have admitted the finest hair ; but as soon as this pressure was relaxed, the sides of the fracture receded to their former limits ; which circumstance, taking into consideration the contiguity of my perforation to the foramen magnum, appears to me an incontrovertible proof that the fracture did extend to that foramen.

A piece of dry lint was now applied to the dura mater, the flap laid over the perforation, and the parts, as before, were superficially dressed.

Seven o'Clock, P. M.—Pulse 98 and more regular; the iris of both eyes contracts a little, and the breathing is uninterrupted.

Dec. 2.—Passed a tolerable night, swallowed a few spoonfuls of arrow-root early this morning, and called out, when I spoke to him, “drink!” being the first time he had spoken since his admission. His pulse, when counted at 9 A. M., was 110 and rather full; and as there was a slight flush over the countenance, I directed eight ounces of blood to be taken from the arm, the nitre julap for his medicine, and the dressings to be covered with a light emollient poultice. The extremities continue warm, the breathing free, and his eyes natural.

Dec. 3.—About four o'clock yesterday afternoon his face became more flushed, and the pulse full and hard. He was restless, tossed his arms about from one side of the bed to the other, and his head did not remain two minutes in one position upon the pillow. The bleeding was therefore ordered to be repeated, a blister to be applied to the crown of the head, and a purgative enema to be injected. At eight o'clock these unfavourable symptoms disappeared; he became composed, and slept three hours during the night. I was agreeably surprised to learn from the nurse in the morning, that, an hour previous to the time of my visitation, he called out to her “Pot!” in the same sharp and peremptory tone as yesterday when he wanted

drink; and, on being supplied with the utensil, he placed himself upon it, supporting himself in that posture by resting his hands upon the bed, and had a very copious stool.

Dec. 4.—The pulse this morning was soft and regular, his answers to questions put to him coherent, but uttered in a loud and quick tone of voice, which appear to imply, “Your inquiries are troublesome.” He now asks for the urinal when in want of it, and for every thing else that he stands in need of. The wound looks well and suppurates kindly. A slight serous oozing was observed from between the labia of the punctured dura mater, when the piece of lint was removed at dressing, but no discoloration of that membrane was observable. Continued the nitre julap and emollient poultice as before.

Dec. 7.—Not one disagreeable symptom remains. He now sits up in bed half the day, and the arrow-root, which has been his only sustenance ever since his admission, he eats with an appetite. The wound looks well and discharges freely, but the oozing from the punctured dura mater still continues, though daily lessening in quantity.

During the remainder of the time that this young gentleman was under my care, little worth noticing

occurred. A fungus arose from the dura mater, and three or four small portions of both tables of the cranium exfoliated, in consequence of the pericranium having been detached by the accident. To the fungus the Hydrarg. Nitrat. Ruber was applied every other day, which, with gentle pressure, in about two months had the effect of removing it completely.

On the 5th of April, 1809, the wound being cicatrised, he quitted the hospital for Sunderland, accompanied by his father, Lieutenant Cameron, of the Navy, in full possession of all his faculties. Three months after this period, his father wrote to inform me that he was enjoying perfect health, good spirits, and extremely anxious to rejoin his ship.

I have been induced to relate the particulars of this case to the Society, because a similar one has not come within the compass of my reading. It clearly proves, as much so at least as a single fact can prove any thing, that the great danger which hitherto has been ascribed to fractures of the occipital bone, attended with depression and effusion, evidently compressing the cerebellum, does not really exist; and that where an operation is admissible over any part of the cerebrum, it is in young subjects, at least, equally so here.

The celebrated Morgagni relates the case of a

cook *, in whom he found, on dissection, the greater part of the cerebellum in a state of schirrhosity, and yet that man had been ill a twelve-month with this very disease.

A case not very dissimilar to that of Morgagni's is related by Dr. Yelloly, in the first volume of the Transactions of this Society ; and one came under my own observation not long ago, in which, on dissection, there was found a considerable deposition of osseous matter, upon that part of the tentorium which is immediately under the origin of the left lateral sinus, and a schirrous tumour in the substance of the left lobe of the cerebellum. This last-mentioned person was gunner of the Fly sloop of war, and had been ill many months : he was sensible to the last, and always gave a coherent answer to every question ; but when not spoken to he lay nearly in a state of coma or low muttering delirium, which symptoms, however, only occurred four or five days previous to dissolution. He never had a fibre paralysed, his pupils were uncommonly contracted, and he could not bear the light. His stomach for the last month was extremely irritable, vomiting almost every thing he swallowed.

There is another circumstance very clearly elucidated by the relation of the above case, viz. the proneness of the vessels of the encephalon to pour out a serous effusion in disease, or after any exter-

* Alexander's Translation, Vol. III. page 490.

nal injury, and in how very short a time this effusion will take place; as from the period of Mr. Cameron's fall until a portion of bone was cut out with the trephine, when the dura mater protruded with its contained fluid, not more than four hours had elapsed.

Mr. John Bell says, when speaking of the division of the dura mater *, "I will not disguise from you that this operation of puncturing the dura mater is *sometimes* successful, that it is reported so by creditable authors, but it is my duty to warn you, that *I have always found it fatal.*"

An assertion like this, and from such high authority, will undoubtedly have its influence, as the experience of an able individual: the result, however, of another's experience, when candidly given, and fairly compared, may be beneficial; and it is with this view only that I offer the following remark: Out of three cases in which I have had occasion to puncture this membrane, two have recovered, without the occurrence of any untoward symptom, farther than a fungus from the dura mater, which in Cameron's case only proved in any degree troublesome; and I have seen the same success obtained by others.

For my own part, I should conceive that man highly culpable indeed, who could trust to time

* J. Bell's Surgery, Vol. II. Part II. page 839.

and chance for the absorption either of blood or serum extravasated under the dura mater, without giving it vent by puncture ; more especially when symptoms of compression were present, or beginning to manifest themselves. And again, although it be universally admitted, that absorbents do exist in the brain, as well as in other parts of the body, yet as they are so very minute as to have hitherto eluded the researches of the most accurate anatomists, we ought not to trust too confidently to their powers, when the effused fluid can be removed with so little risk, and by so simple an operation as that of puncturing the dura mater.