

ART. IV.—*Cases of Injury of the Head.* By A. B. SHIPMAN, M.D.,
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CASE I. *Fracture—Lesion of Brain—Death.*—Fox, ætat. 17, while riding a horse at a race in Homer, in this county, on the 20th of August, 1833, was thrown, and the left side of his head struck upon the hard road. He was taken up insensible, a surgeon sent for, Dr. Lewis Riggs of Homer, who bled him on the spot. There was a small wound in the scalp at the left side of the head, and an abrasion of the cuticle on the forehead, with extensive ecchymosis of the eyelids and around the eyes. He remained insensible for some hours; but in the evening he was rather restless with delirium.

I saw him on Friday evening, the 22d, the third day from the receipt of the injury, in consultation with Dr. John Lynds of Homer, who had bled him and given him a cathartic the day before. He had been restless most of the time with stupor; at this time he was rather comatose, but could be roused to take drinks and medicines; restlessness; occasionally stertorous breathing; involuntary stools and urine; pulse regular in strength and frequency; no paralysis or fever; skin cool and natural. The pupil of the left eye (the side injured) greatly dilated, yet slightly contracting on holding a lighted candle near; right eye pupil natural; eyelids closed and greatly distended by ecchymosis.

23d. I again visited him, found him apparently better. Cold applications had been kept to his head, and blisters to his legs and between his shoulders. His senses had returned so as to enable him to converse with his friends, who had been sent for from a distance, calmly and rationally; he recollects how his injury was received; complains of no pain; in the afternoon relapsed into a drowsy state, with incoherent talking.

24th. Symptoms more favourable; pretty rational; stood upon his feet; no fever or pain; slight delirium in the evening.

25th. Remains in nearly the same condition as yesterday.

26th. Was bled, when he became worse almost immediately; he sank into a comatose state; the surface became cold and the face sunken; the ecchymosis in great part disappeared from the eyelids; the breathing laborious. He continued gradually to sink, and expired at 5 P. M., on the 28th, just one week from the injury.

Autopsy 12 hours after death, in the presence of Drs. Boies, Lynds and Bradford. Very little blood was found in the scalp; the left temporal muscle was filled with a coagula of effused blood, and under the pericranium, near the seat of the wound, there was also suffused blood. On removing the skull cap, a fissure was discovered extending from the upper part of the frontal bone, on the left side, through the superciliary ridge and through the orbital process, across the suture connecting the lesser wings of the sphenoid.

bone, into the foramen lacerum of the orbit; another fissure extended across the orbital process to the crista galli of the ethmoid bone, then downwards, terminating near the anterior clinoid process, in the foramen lacerum near the termination of the other fissure, leaving a triangular portion of bone entirely insulated and depressed about one-eighth of an inch. Corresponding to the perpendicular fissure, there was a laceration of the dura mater, two inches in length, and a wound of the brain of the same length and three-fourths of an inch in depth, in the anterior lobe of the left hemisphere, about an inch and a quarter from the falx, and parallel with it. On each side of the fracture the dura mater was separated from the bone with extravasation between it and the bone, to the amount, perhaps, of two ounces. There was also some extravasation in the middle fossa of the skull on the opposite side. The sockets of the eyes also were filled with extravasated blood. The wound in the brain was filled with coagula and disorganized brain broken down into a pulp. The laceration of the dura mater and lesion of the brain were produced by the fractured edge of the bone being driven inwards by the force of the fall, but springing back, by its elasticity, to near its natural state. There were no marks of inflammation to be discovered in any portion of the brain; the vessels of the pia mater slightly injected; no suppuration or coagulable lymph; the parts, on inspection, appeared like a wound of very recent occurrence.

The diagnosis in this case was not so perfectly clear as might have been supposed from the degree of injury discovered in the post mortem examination. The symptoms might have been the result of violent concussion, and when, on the fourth day, returning sense and consciousness took place and continued a portion of the time for three days, some hopes might have been reasonably indulged in that no fatal lesion had taken place. The extravasation most likely took place immediately after the injury, and it is rather surprising that so few symptoms of compression should have been present. The wound of the brain was enough, we should think, to have caused paralysis or some more disturbance of the functions of the optic nerve; but when he was rational, no such effect was discovered. The injury was of so grave a character as to prevent that degree of reaction necessary to the development of the inflammatory process. The last bleeding was unnecessary, and probably hastened the fatal termination of the case. No operation would have been of any service if the precise nature of the injury had been known.

CASE II. Fracture, with Depression—Recovery without an Operation.—October 15th, 1833.—M. W., a young gentleman of the medical profession, was thrown from his horse during a violent shower of rain. He was but little stunned with the fall, remounted his horse and rode to this village, a distance of more than a mile. I saw him within a short time after the accident; found a wound on the left side of the forehead; the scalp was torn up in a triangular flap, extending to the cranium; the pericranium was also lacerated,

exposing the bone; a fracture was discovered, with depression to a small extent, as though made by coming in contact with a sharp stone; this was in the upper and left side of the frontal bone. He was able to sit up; while the wound was dressed, the hair shaved off, and the wound cleansed from the dirt and gravel, the flap laid down and retained with adhesive straps. There were no symptoms of concussion or compression, or any disturbance of the mental faculties; he rested well during the night, and in the morning, as his pulse was somewhat strong and full, he was bled, took a cathartic, and in three days rode four miles to his home, and recovered without any bad symptoms. The force which fractured the skull in this case was confined to a small point of the bone, and whatever injury there was, it was circumscribed; the depression was not sufficient to cause compression, and it is probable that there was not any effusion beneath the bone.

CASE III. *Fracture, without Depression—Recovery without Operation.*
—*September 15th, 1836.* George Martin, hostler, *ætat.* 21, was kicked by a horse upon the upper portion of the right side of the frontal bone; the scalp and pericranium was torn up from the bone the size of a crown piece, and also a piece of the external table of the bone the size of a shilling; a fracture of the bone also traversed the skull in a perpendicular direction and both above and below in the sound skin. He was at first insensible from the blow, but partially recovered his senses; was carried into the hotel and placed in bed. I saw him within an hour. He was drowsy and torpid, but could be roused to answer questions, quickly however relapsing into stupor; his extremities were cold; pulse slow; pupils dilated. Ordered bottles of hot water to his extremities, and a glass of warm brandy and water. In the evening, six hours from the time of the injury he was nearly in the same situation, except that he was rather warmer and the pulse somewhat more frequent. In the course of the night reaction took place with stertor and heat of the skin.

16th, 8 o'clock A. M. Bled him twenty ounces, which seemed to rouse him in some measure. Twelve o'clock, noon, as there was some stupor, with much reaction, he was bled again sixteen ounces; took a cathartic of jalap and calomel, which operated well by nine in the evening. He then became perfectly sensible, and the heat of skin and activity of the pulse subsided. The scalp which was torn had been placed back in its natural position, and the loose piece of bone removed, and the wound was now dressed with adhesive straps, with light dressings to the head; cold applications were also made use of, with sinapisms of mustard to the feet and arms.

17th. Got out of bed, dressed himself and walked down stairs. From this time he went on doing well, and resumed his labor without any unpleasant symptoms; the wound healed in a few days, and he never had any farther inconvenience while he remained under my observation for six months afterwards.

This was a strongly marked case of concussion, and from the length of time which it remained after reaction came on, must have led to the conclusion that extravasation had also taken place, demanding the operation of trephining. The promptly salutary effect of venesection was striking; had the trephine been resorted to the next morning after the hurt, and there were some symptoms indicating its employment, no cause of compression would have been discovered, and the danger would have been increased. The injury was probably done with the cork, and struck the bone in a glancing manner; which chipped off a piece of the outer table of the bone and caused the fracture. The force of the blow was confined to a small surface, or the result would probably have been more serious.

CASE IV. Fracture, without Depression—Recovery without Operation.
 —November 28th, 1836. Mrs. Stafford, of Virgil, ætat. 50, was thrown from a wagon upon the frozen ground. She was taken up insensible, and carried home, the distance of a mile. I saw her in the evening four hours after the accident. She had partially regained her senses, and complained of violent pain in her head and jaws. Her friends stated that she was very cold when they first got home, and they had but partially succeeded in getting her warm when I arrived. The eyes were both closed by the ecchymosis, and on examining the head a small wound was found in the scalp on the left side of the frontal bone, which would admit the point of the finger; at the bottom of this wound a fracture was distinctly felt, which separated so as readily to admit the finger-nail; the scalp was much bruised, and infiltrated with blood over the left side of the head; pupils much dilated; pulse slow and feeble; complains of difficulty of swallowing; she can be easily roused, and answers questions rationally. Ordered her warm sling, with bottles of hot water to the extremities. In about two hours she became warm, with a stronger pulse. Venesection to eight ounces, when she fainted; gave a cathartic of calomel and jalap; cold applications to the head. During the night she was restless with slight delirium.

29th. Cathartic operated well; is stupid most of the time, but answers questions rationally when roused; no fever; complains of severe headache, and is very restless a portion of the time; starts frequently in her sleep; moans and grinds her teeth; face and scalp much swollen, and dark colored; pulse slow and full; skin and extremities warm; venesection, twelve ounces, after which she became faint.

30th. Considerable febrile action; had chills in the morning; pulse quick; skin hot; restlessness, and delirium; complains of no pain, but starts at noises, and moans; pupils of the eyes much contracted. Venesection twelve ounces; calomel to be followed by senna and salts; blister to each arm; ordered the head to be kept elevated, with cold iced water to be applied.

December 2d. Febrile action less than on the 30th, but still considerable; pulse more full and less frequent; bowels have kept acting for the last

thirty hours; is rational, but her friends say she was delirious most of the night; complains of pain in the head, neck, and jaws; pupils still contracted. Blister to the back of the neck and calves of the legs; cold applications to the head continued.

4th. Found she had been feverish and delirious through the night with starting and picking at the bed-clothes; but is more calm in the day time; blisters drew well; less fever; pulse more natural; swelling of the face and eyes subsiding; pupils more dilated; but not more so than would be natural; has had strangury in a slight degree. Ordered the blisters to be dressed with epispastic ointment and lard. Continue the cold applications, and the general antiphlogistic regimen.

6th. Symptoms improved; less fever; no delirium since the 4th; some pain in the head; begins to call for more substantial food; has had strangury most of the time since the 4th, which she complains of more than any thing else; blisters discharge freely. From this time she gradually improved without any alarming symptoms, and without any other treatment than a mild antiphlogistic course; the blisters were kept running for ten days longer; a low diet with an occasional laxative to obviate costiveness was all she required.

She has enjoyed her usual health since that time, with the exception of occasional attacks of headache—for which it has been necessary to resort to venesection and active cathartics. The dilated pupils at first, and the stupor and general torpor of the system, might have led to the fear that extravasation had taken place; and the early development of fever and inflammation which followed was of an alarming character; but the happy termination of the case renders it probable that no effusion of blood, at least of any consequence took place; but cerebral inflammation was unquestionably present to a certain degree. The strangury I hailed as a favorable omen, as I always do in cases of cerebral disease, having frequently seen most striking benefits immediately follow its appearance.

CASE V. *Fracture—Trephining.—Death.*—David Robinson, of Virgil, in this county, ætat. 73, while in the woods felling timber, February 25th, 1835, received a blow from the fall of a tree upon the left side of the head. When picked up he was totally insensible; nor did he exhibit any signs of returning sense until he had been conveyed to his house, which occupied perhaps half an hour. Dr. Bronson was called, and on his arrival opened a vein, but obtained little blood. Soon after the patient regained his senses, was able to converse three quarters of an hour, when he relapsed into insensibility. I saw him 11 A. M. four hours after the accident; he was then comatose; could not be roused; breathing stertorous; pupils dilated and insensible to light; writhing of the body from side to side; slow feeble pulse; cold extremities; oozing of blood from mouth, ears, and nostrils. He had swallowed some warm sling before I arrived; on examining the head the scalp

was found detached from the left parietal protuberance, and the bone completely denuded to the size of the palm of the hand; on cleaning the wound with a sponge and warm water, and closely inspecting the bone, a small capillary fissure was found running across the bone in a perpendicular direction, and a little posterior to the middle of the bone. The ends of hairs which had been caught in the fissure, made it evident that the bones had been separated by the force which produced the fissure; there was a slight oozing of blood from this, but it could not be opened with the point of a knife. From the symptoms it was evident that extravasation had taken place, and that the operation of trephining was indicated, but from the size of the body which produced the injury, and the force with which it struck—the age of the patient, the probability that the fracture extended into the base of the cranium, and the injury, consequently, most extensive, all led me to give an unfavorable prognosis.

It was finally decided to use the trephine which was applied to the upper point of the fracture and a piece of bone removed, when a coagula of blood was found beneath; as the opening was so small it was applied three times, and a large quantity of coagula removed. The dura mater was found widely separated and all the space filled with coagulated blood. I removed as much as possible, but it was found to extend down as low as the petrous portion of the temporal bone; and how much farther, I did not think it expedient to explore. After removing the coagula, the brain was observed to be collapsed; it did not fill the cranium by more than an inch upon the upper surface of the dura mater. The pulsations of the brain were very feeble and slow; the hemorrhage was profuse, probably from the rupture of the meningeal artery; and the cavity soon filled with blood of an arterial colour; the bone was very thick, nearly one-fourth of an inch. After the operation, the patient appeared more sensible, opened his eyes when spoken to, and answered some questions. He was placed in bed; bottles of hot water were applied to his extremities; a dose of croton oil was administered. The scalp was laid down over the opening, and loose dressings applied; the hemorrhage continued through the night pretty profuse; he never became perfectly conscious, but remained insensible most of the time until he died which took place the next day towards evening. As it was some distance from my residence, I was not able to make an autopsic examination. I think the hemorrhage in this case would have proved fatal independent of the extravasation; by appropriate dressing the blood could have been confined in the cavity of the cranium, and there suffered to form coagula, when compression would have been the result, either of which would have been fatal. The stages of concussion and compression were distinctly marked in this case: the first went off within three quarters of an hour, and was succeeded by an interval of consciousness, which lasted three quarters of an hour, then the extravasation took place as soon as sufficient reaction was present to throw out blood from the ruptured vessels.

CASE VI. *Compound Fracture with Depression—Operation.—Recovery.*—On the 5th of December, 1837, I was requested to visit George Ochs, of Virgil, in this county. The messenger informed me that in a quarrel with his brother the day before, he had been struck a blow on his head, but for certain reasons best known to his friends, the accident had been kept secret from the neighbours up to that time. On arriving there at 3 P. M., twenty-five hours after the injury, I found the patient a strong, athletic man, ætat. 29, in bed, with a handkerchief over his head. He was labouring under headache, confusion of ideas, restlessness, writhing of the body, and scowling of the countenance; he was able to converse a little, but has no distinct recollection of being injured. On questioning the family, it was ascertained that the blow was given with a heavy mallet. The first blow was on the forehead which knocked him down, when another was given on the side of the head which rendered him insensible for a few minutes, when he recovered so as to be able to walk from the barn to the house with some assistance; he had been restless during the night; had slept but little, and was delirious a portion of the time. On examining the head, two wounds were found, one on the forehead which penetrated to the bone, and one on the left side, over the superior and posterior angle of the parietal bone. This wound was two inches long, and was widely open, and on passing the finger into the bottom of it a fracture with great depression was discovered. After shaving the scalp, the wound was enlarged to ascertain the extent and situation of the fracture. I found the depression corresponding with the sharp corner of the mallet, depressing the bone to the depth of three-fourths of an inch at least. It being decided best to raise the depressed portions of bone, with the assistance of my brother, Dr. J. A. Shipman, the crown of a small trephine was applied, and a portion of bone removed from the edge of the depression; then with the help of the elevator and forceps, ten pieces of bone were removed from their wedging position, and one sharp spicula from the inner table of the skull was driven through the dura mater into the substance of the brain to the depth of half an inch; this was also carefully removed with the forceps. There was much hemorrhage from an artery within the cranium to the extent of at least three pints. The patient made no complaint during the operation, except when the incision was made in the scalp, when he struggled and cried out. The wound was next sponged, and the flaps of the scalp laid down and dressed with adhesive plaster, a night cap put on, the head elevated, and a cathartic of calomel and jalap administered with directions to apply cold to the head if heat followed.

6th. Found that he had rested but little through the night; complained of pain in the head and frequent startings; pulse regular and full; considerable heat of skin; intellect clear; bowels not yet moved; gave ol. ricini; ordered cold to the head; room darkened, and head elevated.

7th. Cathartic operated freely last night; fever, headache, thirst, and foul

tongue; pulse strong and full. Bled him twenty ounces, and ordered antimonials with cream of tartar; low diet of gruel; blister to nape of the neck; sinapisms to feet and ankles; cold applications of ice water and spirits to head.

8th. Better; headache less; fever gone; tongue clean; wound suppurating profusely. Directed cathartic pills; continue the cold applications and antimonials.

10th. Still improving; wound suppurating copiously; still kept him on low diet; is very clamorous for food; wants meat. From this time he improved daily; and in four weeks from the time of the injury, he rode eight miles to visit me. The wound was nearly healed; he had nearly recovered his flesh and strength, and his health was good as before the injury. He has continued to enjoy his usual robust health ever since.

From the extent of the depression and the actual presence of a foreign body in the substance of the brain, compression in this case might have been expected to a much greater degree than was actually present. There was no stertor; no coma; no paralysis; the patient was able to converse most of the time before the operation. To the mildness of the symptoms from the time of the injury may be attributed the neglect of the friends in calling medical aid sooner, hoping that no public exposure of a disgraceful family quarrel would be necessary.

The use of the trephine here might fall under the ban of censure, perhaps, from that class of surgeons who are great sticklers for restricting its use to such cases only as present strongly marked symptoms of compression, without regard to the strict situation of the parts injured; severe inflammation of the brain and its coverings in all probability would have supervened, and the fragment of bone in the substance of the brain entirely detached from its connections, acting as a foreign body, would have produced great irritation, if not suppuration or ramollissement, ending in certain death. Inflammation to a certain extent, I think, came on, but it was local, and confined to a small extent of surface, and promptly subdued by the early measures adopted to arrest its progress.

CORTLANDVILLE, *February 10, 1841.*