

VAN LENNEP (W. B.)

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REPRINT FROM MEDICAL CENTURY, January 1, 1894.

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BY

WM. B. VAN LENNEP, A.M., M.D.,

SURGEON TO HAHNEMANN HOSPITAL, PHILADELPHIA.

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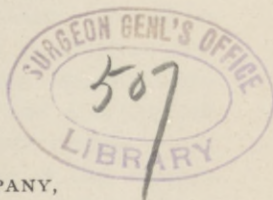
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## EARLY OPERATIONS IN HEAD INJURIES.

The early recognition and operative treatment of head injuries is of such importance for the future welfare of the patient, as well as so imperative to save life, that I feel justified in again writing on the lines followed in a paper read before the Pennsylvania State Society a year ago (*Hahnemannian Monthly*, November, 1892).

Surgeons are now pretty well agreed to discard the so-called conservatism of the past, and to follow a more aggressive course. In this way many lives are saved which would be lost not only by no operation, but even by a delay. In this way, too, are prevented those secondary changes, producing phenomena the cure of which when once well established is a very doubtful question. I am satisfied that these conclusions cannot be too frequently or too forcibly brought to the attention of the general profession.

Furthermore, success, both immediate and remote, in the treatment of these cases depends on a thorough, primary, antiseptic purification and occlusion, and, in operating, on an aseptic condition induced by a conscientious and ever-vigilant attention to the minutest antiseptic details.

During my last term of service at the Hahnemann Hospital, eight cases of recent traumatism

of the skull were treated by operation. This of course excludes those trephinations for the more remote effects of injuries which are only too common, and those for other causes. There were seven recoveries and one death, and the cause of death in this case is so significant when contrasted with the result of the other seven that it may not be amiss to report them as one more plea for early and more general surgical interference in cranial injuries.

(1) E. C., age sixteen, admitted March 3d, 1893. He had fallen down a flight of steps, striking his head against a furnace. There was a superficial, lacerated wound of the left temporal region, with extensive contusion of the surrounding tissues, and of those about the left orbit. He was stupid, and could only be aroused with difficulty; he vomited several times. No other symptoms, beyond occasional excitement and restlessness.

The wound was cleansed and occluded antiseptically until the next day, when he was operated on. An incision was carried along the line of the eyebrow, then upward into the temporal fossa to the hair-line, whence it was, later, brought down in front of the ear. In this way a flap was turned up on the forehead and down in the temporal fossa. Under the lacerated wound a large hematoma was turned out, and following this, a depressed, comminuted fracture of the wing of the sphenoid was found, which involved the adjoining

portions of the parietal and frontal bones. The bone was trephined, the depression elevated, and a number of fragments removed, one of which had perforated the dura and entered the brain.

The wound was sutured, drained with a strip of iodoform gauze, and iodoform and bichloride dressings applied. The gauze drain was removed on the third day, and the wound healed throughout without reaction or pus, the highest temperature being  $99.6^{\circ}$  once. The mental condition improved gradually until the first dressing, when it became normal, after the removal of the gauze drain had given vent to quite an accumulation of bloody serum. He was discharged well two weeks after the operation.

(II) M. O'D., age fifty-two, admitted March 25, 1893, in an unconscious condition. He had fallen from a building striking the left side of the head. There was an extensive lacerated wound of the scalp, behind and below the parietal eminence, through which a fissured fracture, with some comminution, could be plainly seen.

After scrupulous disinfection the outer plate of the skull was chiselled off on both sides of the fracture. The inner table being found intact the wound was closed and dressed in the usual manner. By the next morning he was thoroughly conscious, and he was transferred to the outpatient department on the fourth day. The temperature reached  $100^{\circ}$  on the second day, but

union took place without reaction or pus.

(III) W. C., age fifteen, admitted April 14, 1893, in an unconscious condition. He had been kicked in the face by a horse; the upper jaw was fractured, all the upper front teeth being knocked out; the cheek was torn for a couple of inches outward from the angle of the mouth, and there was a lacerated wound over the left eye. The wounds were disinfected, closed, and dressed at once, the one in the forehead being superficial. There was profuse and persistent epistaxis.

He recovered consciousness, but acute delirium supervened, and the next day the frontal bone was laid bare, revealing a depressed, comminuted fracture. The trephine was applied and the fragments removed, including a part of the inner wall of the frontal sinus, which was comminuted. The fracture was followed with the *rongeur* forceps into the squamous plate of the temporal. The dura appearing very dark at one spot, it was incised with the expectation of finding a clot, but with a negative result. This was closely sutured, and the scalp wound partly closed, a considerable portion being left open and packed on account of the crushed condition of the tissues.

The mental excitement was slow in improving, considerable irritability persisting up to the time of his discharge, at the end of fifteen days. There were no wound complications, however.

(IV) H. McK., age sixty-seven, was struck on

the head with a bottle and walked to the hospital, July 9, 1893, conscious and perfectly rational. There was a contused and lacerated wound of the scalp, close to the right parietal eminence. On enlarging this to examine the bone a compound depression, about the size of a half dollar, was found, the fragment being not only driven downward, but under the surrounding bone. The trephine was applied, the depressed bone removed, the opening trimmed smooth, and the scalp closely sutured.

He was kept in the hospital twelve days, because he made himself invaluable as a ward assistant, but he showed no brain symptoms, and the wound healed without pus and without causing the slightest temperature variation.

(V) J. K., age twenty-two, admitted July 15, 1893. He was struck on the head by a passing train while working on the railroad, and sustained a contused wound of the scalp about two inches long, anterior to the left parietal eminence. The wound was immediately cleansed and dressed. He was operated on the next day, the indications being a slowly intensifying, mental hebetude, and a rapidly rising temperature to above  $101^{\circ}$ , for which no other cause could be found, and which naturally led us to suspect extra-dural hemorrhage.

On enlarging the wound a compound, fissured fracture was exposed, which was found to extend through both tables. After removing the treph-

ine button a good sized extra-dural clot was turned out. The dura was intact. Suture, drainage, and dressings as usual. The mental condition at once cleared up, and the temperature fell to normal. The wound healed *per primam*, and he was discharged cured in twelve days.

(VI) P. J. B., age forty-seven, admitted July 25, 1893. He had been struck by a passing carriage when getting off a cable car. The whole left side of the face and head were badly contused and enormously swollen; there were three dirty lacerated wounds of the forehead, the temporal region and behind the ear. The contents of the left orbit were much swollen, there was marked subconjunctival ecchymosis and profuse persistent epistaxis. The man had been a great sufferer from asthma, and so serious was this condition that we hesitated to use an anesthetic. To this was added a bad heart.

The wounds, head and nose, were appropriately dressed and the patient carefully watched. No symptoms developed beyond a mental dulness, which might have been the patient's natural condition. The temperature, however, rose to 102°, and on the third day it was decided to explore the skull. No fracture could be felt, as is usually the case, on account of the great swelling. The whole left side of the frontal bone was crushed, including the outer wall of the orbit and the frontal sinus. The comminuted fragments were removed

and the bone edges trimmed smooth. The wound was closed and dressed as usual, and healed by first intention. The highest subsequent temperature record was  $100.4^{\circ}$ . Some weeks later a strand of silk (buried suture) worked its way out. He was discharged two weeks after the operation.

(VII) J. S., age twenty-nine, admitted August 1, 1893. He had been struck on the right side of the head with a brick in a drunken brawl. The whole temporal fossa was swollen, there was a superficial lacerated wound below and anterior to the parietal eminence, and bleeding from the ear. The wound and ear were cleansed and occluded, and the patient slept well through the night, awaking sober and perfectly rational. The temperature, however, was up to  $101^{\circ}$ , and the skull was accordingly explored.

A comminuted, depressed fracture of the squamous and parietal was found, trephined and removed, leaving a gap about  $3\frac{1}{2}$  inches square. The dura was lacerated and required suture. The wound was closed, dressed, and drained as usual. He recovered without head symptoms or suppuration, and was discharged in three weeks.

(VIII) E. B., age sixty-seven, admitted August 12, 1893. The day before he had been thrown from his wagon, and was taken to another hospital, whence he was sent to the station-house as a "drunk." Here he became stupid, and then violently delirious.

Examination showed a fracture of the right clavicle, and persistent bleeding from the right ear, behind which was a small, dirty, contused wound. He was comatose, could not be aroused, and did not recognize his family. He was very restless, muttering or crying not all the time, and made frequent attempts to get out of bed, and break away from restraint. He vomited, and passed his urine involuntarily.

On drawing apart the edges of the wound, a fissured fracture was found. This began in the squamous portion, about two inches above and behind the ear, and ran into the mastoid cells and bony meatus. It was comminuted at one point, one fragment being depressed and perforating the dura. The membranes were intensely congested. The parts were thoroughly disinfected, the wound lightly drawn together, with abundant gauze drainage, and the usual dressings applied.

His condition did not improve, the symptoms intensifying until his death, a little over twenty-four hours later. The autopsy showed a diffuse, suppurative meningitis.

In several instances I have stated that the operation was undertaken the next day. This was usually due to the fact that the patients were brought in during the night, the house surgeon carried out rigorous disinfection and occlusion, the attending surgeon seeing them for the first time the next day.

I have also referred in describing these cases to the "usual" dressings, suture, etc. A word of explanation may not be out of place, although our methods of treating wounds have been described at length by my colleague, Dr. Northrup, junior attending surgeon to the Hahnemann Hospital. (*Hahnemannian Monthly*, December, 1893).

The seat of operation and the hands are prepared by mechanical and chemical purification; scrubbing with soft soap and a stiff brush, and disinfection in sublimate solution. Greasy surfaces are also scrubbed with carbolic solution.

The dressings are sterilized by steam in the Arnold cooker; the instruments, by boiling in carbonate of soda solution.

Silk is boiled and kept in sublimate alcohol; catgut is boiled in alcohol and kept in the same.

Sutures in the scalp are either buried and continuous, catgut, or, preferably, fine silk being used, or silk wormgut interrupted, including the whole thickness of the scalp.

If a wound is absolutely sterile and not likely to ooze it is dusted with iodoform (1), boric acid (3), and corrosive sublimate (1.500), and covered with gauze fresh from the sterilizer. If there is any doubt as to the sterility of the wound, or if oozing is expected, it is covered with iodoform gauze wrung out of bichloride solution, then sterilized gauze similarly treated, and finally sterilized sheet cotton.

The dressings are changed rather frequently; at least twice a week in the absence of indications, *i. e.*, suppuration, rise of temperature, or pain, for comfort and for observation. Occasionally a localized infection can thus be found and arrested before it has given rise to constitutional disturbance. In this way rapid wound healing is promoted, and both the patient and the over-crowded hospital are benefitted.

If localized infection has taken place, it is vigorously combated with mechanical and chemical measures; frequently changed, wet bichloride dressings; or evacuation, cleansing with peroxide of hydrogen, disinfection with bichloride of mercury, curetting, and secondary suture. It is but simple justice to say, however, that in wounds treated on these lines suppuration is the notable exception, primary union the rule. When infection does occur, laxity in discipline in the antiseptic "team work" of the clinical corps is the cause.

It seems to me that there is too much laxity in the treatment of head injuries in every-day routine practice, both in private and in hospitals. I have in consequence reached what may seem rather radical conclusions, and it has become an inflexible rule with my house surgeons that no head bruise or wound can be let go without the sanction of the attending surgeon. I am free to confess that many are the patients who have been

housed for forty-eight hours or more without cause, as it afterwards appeared, and many are the scalp wounds that have been enlarged and deepened to find only an intact skull. But what are such detentions, or such antiseptic incisions, when compared with even one life saved by such a course.

The principal trouble, to my mind, seems to be in the attempt to perpetuate the delusive classification which divides head symptoms into "concussion" and "compression;" unfortunately, all cases which are not practically moribund are apt to be placed in the first class and let alone.

Not long since I saw a case of so-called "concussion." The patient had fallen, striking the right side of the head, which was swollen and boggy; she lay in a quiet stupor, occasionally moaning, and had been in this condition for three days. She could be aroused, but immediately relapsed. There were no other symptoms; normal pupils and sphincters, normal reflexes, no stertor, etc. On incising the scalp a fissured fracture was found, running obliquely downward and forward across the temporal fossa, and probably continuing to the base of the skull. At one point it was comminuted and depressed. She is making a good recovery.

This is the text-book picture of concussion, rather than of compression, and yet no one could doubt the life and mind saving effect of trephin-

ing after noting the progress following the operation.

It seems to me we should discard these terms entirely, and go to the extreme, if you choose so to call it, that every case of disturbed mental equilibrium following an injury, no matter how slight, demands the closest investigation, and, unless very transient, surgical interference. The latter would be guided by wounds, bruises, or localizing symptoms.

It may not be amiss to say just here that I have avoided as much as possible, in this paper, symptomatic and technical details, my object being to bring out the every-day, practical "working points."

The slightest head injury, then, should be closely observed, symptoms or no symptoms.

Mental disturbances, and those of motion, sensation or special sense, call for surgical investigation; that is, exploration of the skull, unless very transient. If of a localizing character, they call for trephining, even in the absence of skull lesions, and for incisions of the dura, the dangers, with an antiseptic technique, being hardly worthy of consideration until this membrane is opened.

Wounds of the head, whether of the scalp or shown by persistent epistaxis or bleeding from the ear, demand immediate and most scrupulous purification, mechanical and chemical, and antiseptic occlusion. In this way alone can the ter-

rible mortality of compound fractures be avoided. As a rule it is safer to enlarge wounds of the scalp and examine the skull before closing them.

Whenever a fracture is found it should be trephined, the only exception being, perhaps, a fissure without symptoms. This calls, at least, for a chiselling off of the outer plate for the purpose of purification and to discover the condition of the inner table.

By following these lines we will save many lives, prevent subsequent complications, and have fewer chances to fail in attempting to relieve the latter.





