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LACERATED AND CONTUSED WOUNDS.

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## THE TREATMENT OF LACERATED AND CONTUSED WOUNDS.\*

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Every solution of continuity of the soft parts, unless an unbroken skin intervenes, should be given the benefit of the doubt as to its infection, and treated as an infected wound. If it requires genius of details to secure uniformly aseptic wounds in the surgical amphitheatre, what can we expect in accidental wounds received out of the amphitheater in the presence of filth and infection? In emergency surgery there is as much reason to employ antisepticism, as there is reason to believe that certain agents are capable of destroying certain micro-organisms.

Nearly every wound under four or six hours old may be rendered aseptic by the proper application of antiseptics. To the patient there is no danger in the most powerful antiseptics or germicides judiciously employed, while the strongest safeguards against septic complications are thereby given.

In the majority of cases the victim is a laboring man, and the injury is of the hand or the foot, always unclean, often filthy. With soap and brush, gross dirt is removed. It is unnecessary and often too painful to remove the last vestige of the persistent oil, grease, etc. This material may be rendered harmless by the germicidal solution.

If the injury is of the foot or hand, the member should be immersed in toto in a 1-3,000th solution of bichloride of mercury for full five minutes. If granite ware is not at hand, a wooden or a tin pail—anything that will hold water—may be used as a receptacle for the solution in which the immersion may be made.

\* Read before the Cuyahoga County Medical Society.



If the wound is extensive, the crushed parts should be manipulated so that the solution will reach and fill every recess of it. During this time the hands may be prepared, instruments and dressings arranged and details perfected.

If operative procedure is necessary, the member should again be immersed just before the wound is dressed.

The next question is, How much can be saved? So far as soft parts are concerned, if there is not a pulpification and the blood supply is not entirely cut off, they will probably live. As to bone, enough should be removed so that there may be a covering of soft tissue—not necessarily integument. As to tendons and nerves, if severed, they should be snipped off high up. As to integument, if it is not pulpified, and is not cut off from nutrition over wide areas, give it an opportunity to survive. With scissors or scalpel the wound should be revived by snipping of shreds of mangled tissue, tendons, nerves, etc., and the integumental margins neatly trimmed—thus soliciting a primary union. It is well to bear in mind that wounds caused by machinery in rapid revolution, or by a wheel of a railway carriage at a high rate of speed, are more extensive and more destructive than a superficial examination indicates. Frequently a limb sustains an injury demanding amputation, yet the skin is unbroken, and the contour not much disturbed.

In lacerated and contused wounds sutures, if any, should be interrupted, only as many as are needed to hold the parts in ordinary apposition. Where approximation by means of bandages is possible, sutures are useless. A gauze bandage well applied will answer for nearly all scalp wounds. As to suture material, the question is not so much as to kind as to quality. Silk where tension is great, in other instances whichever is most convenient. It is safer to purchase the raw catgut and prepare it yourself, as much that is on the market is not well prepared. The beautiful, round, smooth gut is defective in strength, since this finish is obtained by sand-papering, leaving weak points.

As a rule, when sutures are used the wound should be drained. When no sutures are used, drainage is scarcely necessary. Per-

forated, pure rubber elastic tubing is most convenient and reliable. If at the end of the third day there is no tension nor inflammation, the tube may be removed.

Wound dressing should receive attention. After dusting on iodoform or boracic acid, a bichloride gauze-cotton dressing, extending far beyond the field of injury, enveloping the entire limb at a safe distance above the injury. Strips of gauze should be placed between the toes or fingers to absorb moisture, thus preventing the formation of a culture soil for development of micro-organisms.

If asepticism be attained in the first dressing, the after-treatment is simple. There will be some darting pain and unrest the first night. In such wounds there will be no pus, no pain, no inflammation, no swelling.

The first dressing will usually be partially saturated with oozing of blood and serum. This dressing should be changed on the second or third day and the drain-tube removed; the wound requires no further attention until it is well. This applies to cases in which flap adjustment is perfect.

In the case of open contused wounds that do not unite by first intention, the dressings should be changed every second or third day. These wounds do not necessarily suppurate; they usually do not. The contused tissue will be absorbed or will reorganize. In changing the dressings it is not usually necessary to moisten the wound; simply absorb the serum with a piece of gauze, dust on the powder and apply the dressing.

A good proportion of lacerated and contused wounds will unite by first intention if properly solicited. Compound fractures unite almost as readily as simple. Compound dislocations rarely demand resection or amputation.

If from any cause the wound inflames and becomes painful, apply a bichloride, 1-7000th moist dressing. If there is redness and swelling make multiple small incisions over such surface and apply the moist dressing. If the wound becomes covered by an undesirable scab apply moist dressing—the following day the surface is easily cleared.

If the progress of repair is arrested, and the wound does not look healthy, bichlor-fountains may set it right. Pressure by means of a gauze bandage facilitates repair. If the granulating surface is large it should be protected by oiled paper or gutta percha; skin grafting is frequently resorted to with advantage.

In treatment of these cases we must not be unmindful of surgical therapeutics. There is a sudden transition from active physical exercise to an enforced repose.

Unless specially contraindicated it is a good routine practice to administer a brisk saline cathartic, howsoever insignificant the wound may be.

Sometimes the wound will be tardy in repair, with its surface glazed over with an unhealthy coating, the wound may be said to be bilious—a cholagogue may set matters to rights. In anæmic subjects there may be present a condition of low vitality that is difficult to manage but by constitutional treatment. Chalybeate tonics, and cod liver oil often have a happy effect.

The temperament of a patient may cut an important figure in the repair of wounds. If very nervous, and inclined to insomnia, rest must be secured by bromides, or opium, or both.

Again, a case may be progressing admirably, when suddenly the prognosis is clouded by the advent of traumatic delirium. Opium, chloral, bromides in physiological doses are indicated. This delirium is usually consequent upon an antecedent alcoholic habit. Some times the return to stimulants causes a decided improvement.

There is a practice in vogue that seems to me to be productive of much mischief—I refer to the closing of wounds with adhesive plaster. Since no safeguards are thrown around the wound, sepsis as a rule follows. Since the adhesive plaster shuts off the avenues of escape of the ptomaines, they are consequently forced into the circulation, causing septic inflammation, diffuse suppuration, septicaemia—one or all.

To illustrate, I will briefly give the clinical history of several cases.

A railway brakeman received a lacerated and contused wound of

his middle finger three-fourths of an inch in length, implicating the soft parts only. Within half an hour after the injury was received the wound was dressed by a local surgeon, who applied an adhesive plaster, extending beyond the limits of the wound. Eighteen hours later he reached Cleveland and reported to my office. The finger was swollen, exceedingly tender and painful. He had had rigors and elevation of temperature. Pain extended up the arm. I dressed the wound anti-septically with moist bichloride gauze dressing. Free incisions were made, yet it resulted in burrowing of pus along the tendons into the palm, leaving ankylosis of two joints of the finger—a trifling matter to the surgeon, but a serious loss to a manual laborer.

In another case a druggist treated a wound of even less significance in a similar manner. I saw him after palmar abscess had developed. With free incision, and bichloride fomentations, the process was controlled. The result was the loss of ten weeks' employment, and ankylosis of the entire finger.

In another case of a lacerated and contused wound of the wrist, implicating slightly the *os magnum*, treated by the plaster, salve, and poultice method, the suppuration of the palm, wrist, and lower third of the forearm, with necrosis of the entire bony structure of the corresponding area followed. Pyæmia supervened—there being infractions in the lungs, in the tarsus of the left foot, and the corresponding ankle joint. The temperature was 105, pulse 150. Amputation at upper third of arm was made, the ankle joint was laid open, washed out and drained, free incisions were made over various parts of the foot, and antiseptic fomentations applied. He made a good recovery with ankylosis of the ankle and the loss of the forearm.

Such examples might be multiplied. There is another practice that seems to me ought to be discouraged—the application of poultices to open wounds. If wounds are carefully revived and antiseptically treated, there is scarcely any occasion for sloughing and suppuration. It would seem too expensive to the economy to invoke the aid of suppuration. If there should arise an indication

for moist heat, antiseptic fomentation answers every purpose of a poultice with the advantage of conserving the tissue by avoiding suppuration, if not already instituted, and, if it is present, it will modify if not entirely check its course. Certainly a sour, filthy poultice must offend the sensibility of any patient, howsoever uncultivated his senses may be.

The material for this paper is drawn from five hundred cases treated in two years past, in wounds varying in importance from a simple lacerated and contused wound of a finger to compound fractures of the extremities.

There is a sharp contrast between the behavior of aseptic and the behavior of septic wounds. The greatest safety and best results are found in antisepticism. Every wound, in the absence of positive knowledge to the contrary, should be treated as an infected wound. Cleanliness is essential, but not self-sufficient.

The details of treatment are necessarily abbreviated and imperfectly set forth to keep within the limits of the time allotted me on this program.

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