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THE ANTISEPTIC METHOD.¹

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THE antiseptic method is designed to protect the wound from the action of septic ferments. The antiseptic agent preferred is carbolic acid properly diluted with water. Provide as follows: (1.) A vessel containing carbolic acid dissolved in water (1 to 40) for the immersion of the hands of the operator, the sponges and instruments used in the wound. (2.) A steam spray apparatus,² capable of giving a cloud of vapor; make the solution of carbolic acid to be atomized 1 to 30, which diluted by the steam will give a 1 to 40 spray. (3.) Antiseptic gauze, open cotton cloth impregnated with carbolic acid 1 part, common resin 5 parts, and paraffine 7 parts.³ (4.) Mackintosh (fine cotton cloth with a thin layer of caoutchouc on one side, known in the shops as hat-lining); gutta-percha tissue of good quality will also answer, but is liable to wear into holes. (5.) Drainage tubes (India-rubber, with a silk ligature attached.) (6.) Oiled-silk protective (oiled silk coated on both sides with copal varnish, and afterwards brushed over with dextrine); when the copal varnish has dried, a mixture of one part of dextrine, two parts of starch, and sixteen parts of carbolic acid is brushed over; the acid soon evaporates. Common oiled silk smeared with the oily solution will answer the purpose pretty well, especially if used in two layers. (7.) Carbolyzed cat-gut ligatures.

Proceed as follows: If the wound is accidental, first wash the cut

¹ From advanced sheets of *A Manual of Operative Surgery* in the press of Hurd and Houghton.

² High-pressure steam, issuing by a minute orifice from a boiler heated by spirit lamp or gas, sucks up a strong solution of carbolic acid by a tube that dips into a vessel containing it, and, blending with it in about equal quantity, forms a 1 to 40 spray; the tube for the solution should be at an angle of 45° with that for the steam, having its point ground off obliquely so as to be exactly in the axis of the steam tube. For smaller amputations, Richardson's apparatus for local anæsthesia, with the 1 to 40 watery solution of carbolic acid, may be employed.

³ Melt the paraffine and resin together in a water bath; add the acid by stirring; heat the cotton cloth to a higher temperature than the melting point of the mixture; use of the melted mixture an amount equal in weight to that of the cloth; to diffuse the heated liquid equally, sprinkle it over the gauze by means of a syringe with a number of minute perforations, place the gauze charged in a wooden box or hot chamber, and apply a heavy heated weight.

surface thoroughly with a saturated watery solution (1 to 20);¹ if the wound is made by the surgeon, (1) shave the part, if there is much hair, in order that the antiseptic may not be prevented from acting upon the skin; (2) wash the part with a watery solution (1 to 20) to purify the skin; (3) direct the spray upon the part and maintain its action and position during the entire operation and dressing without a moment's interval; (4) immerse the hands,² instruments,³ and sponges⁴ in the 1 to 40 solution before operating, and at every interval of the operation when they are not enveloped by the spray; (5) tie all vessels with antiseptic cat-gut and cut the ligatures at the knot; (6) place the drainage tube or tubes so deeply in the wounds as to drain all accumulating fluids;⁵ if the tube enters obliquely cut the outer extremity obliquely; lay the retaining threads on the surface; (7) if the wound is to be closed, as after amputation, use carbolyzed silk for sutures,⁶ as it is very superior to wire, not only on account of its perfect suppleness, but because its actively antiseptic character insures absence of putrefaction in the track of the wound;⁷ (8) if strapping is required, common adhesive plaster may be rendered antiseptic by dipping it for a second or two in a watery solution of the acid, and it is most convenient to have the lotion hot; the ends should be overlapped by the gauze; (9) apply to the cicatrizing part a layer of the oiled silk protective,⁸ dipped

¹ For cases of compound fracture, seen for the first time several hours after the accident, use a stronger antiseptic (1 part of carbolic acid in 5 parts of spirit of wine); introduce it into the recesses of the wound by means of a gum elastic catheter connected with a syringe by a piece of caoutchouc tube.

² If the finger is to be introduced into the wound take special care that it is an aseptic finger, and this is done by cleansing it with an antiseptic solution, making sure that it passes well into the folds about the nail.

³ Instruments must remain in the antiseptic lotion sufficiently long to penetrate any dirt or grease which may be concealed on them, as between the teeth of forceps.

⁴ Sponges, though used in suppurating wounds, but thoroughly treated with carbolic acid solution, are antiseptically clean.

⁵ The effusion of plasma which occurs during the first few hours after the infliction of a wound is greater, when the cut surface has been treated with a stimulating wash, than it is under ordinary management; and, unless provision be made for its escape, it will be pretty sure, in a wound of considerable depth, to accumulate in sufficient quantity to cause inflammatory disturbance from tension. When the antiseptic has left the wound the discharge will be trifling in amount, unless the irritation is continued by blood or serum pent up in sufficient quantity to cause disturbance, or by some other accidental circumstance exciting the nerves of the part. In major amputations, during the first twenty-four hours, a strip of lint soaked with an oily solution of carbolic acid (1 to 10) may be laid in the wound, one end being left out at the most dependent part, the sutures being inserted more closely than is customary at all other parts.

⁶ Silk thread with the interstices among the fibres filled up with wax containing about a tenth part of carbolic acid; mix the acid with melted beeswax; immerse the silk, and when thoroughly steeped, draw it out through a cloth to remove superfluous wax.

⁷ The spray is never more useful than in the introduction of the sutures; if it be not employed the wound must be injected with lotion after the insertion of the last stitch, to destroy any mischief that may have entered through regurgitation of blood that oozes into the cavity during the sewing.

⁸ Cicatrization is retarded when the acid is allowed to act immediately on the margins of

in the watery solution, and having a hole for the drainage-tube; (10) apply eight¹ layers of the gauze, of such size as to cover all the wound and the adjacent parts; dip the first layer in the solution;² between the last two layers place a piece of mackintosh of smaller size than the layers of gauze; apply the last layer so as to cover in completely the mackintosh;³ (11) retain the dressings by bandages of the antiseptic gauze, over which elastic webbing may be applied when the bandage is not sufficient, as in wounds or abscesses in the groin. Inspect the wound on the day after its infliction, whether it be accidental or the result of operation, and change the dressing only in case the discharge is liable to extend beyond the edge of the folded gauze; during the subsequent progress of the case leave the gauze undisturbed for periods varying from two days to a week, according to the diminution of the effusion. In re-dressing continue the spray uninterruptedly on the part; while the bandage is being cut or removed, the patient, or an assistant, keeps his hand over the site of the wound, to prevent the dressing from rising *en masse*, and pumping in septic air; in raising the folded gauze take care that the spray passes into the angle between it and the skin; remove the drainage-tubes, cleanse them in the carbolic-acid solution, and before re-introducing them cut off such portions as the granulations in the wound render necessary to bring the external extremity flush with the surface of the skin; lay aside the gauze which is soaked, but use the mackintosh again after cleaning it with carbolic-acid solution.

FRACTURE OF THE PATELLA AND TREATMENT BY A NEW METHOD.⁴

BY HENRY O. MARCY, M. D. HARY.

No rule in medicine or surgery has fewer exceptions than that the treatment of diseases or of injuries which have many remedies is unsatisfactory, and it is therefore necessary to protect the part by interposing between it and the gauze a layer of some impermeable material.

¹ In situations where there is not as much extent of skin for the gauze to overlap as is desirable, as in the vicinity of the pubes, the deficiency of surface may be compensated by using the gauze in a thicker mass, say in sixteen or thirty-two layers.

² If the gauze were applied dry, some active septic particle adhering to its surface might enter the blood or serum at the outlet of the wound, and propagate putrefaction to the interior.

³ This impermeable cloth is used to prevent the discharge from going directly through the dressing; because, if a considerable quantity went through, the acid might all be washed out within twenty-four hours, and then putrefaction would spread inwards to the wound. The mackintosh having no antiseptic property except mechanically by its impermeability, but, on the contrary, being like other indifferent materials covered more or less with septic matter, it is necessary when the dressing consists of more pieces than one that the mackintosh be well covered in at the place of junction of the two pieces, for if it were allowed to project uncovered in the vicinity of the wound it might communicate septic mischief.

⁴ Read before the Suffolk District Medical Society, October 28, 1876.