LECTURES ON CLINICAL PRECISION.

Delivered at St. Bartholomew's Hospital.

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III.

GENTLEMEN,—In those cases in which there is an opportunity before performing an operation for preparatory treatment, you should try to get your patient into the best attainable condition. You will do so by attention to his general health ; by allaying, as far as possible, irritation ; by correcting, if you can, vicious habits ; by training him to bear such restraint as it may be necessary later on to subject him to ; and by seeing that he learns to accommodate himself to such positions as may be obligatory after the operation. You will teach him, also, to have confidence in you by your gentle handling ; and afterwards, when you see to the dressing of his wound, you will show him, by the care with which you tend his hurts, that his trust is not misplaced.

I cannot now pretend to give you a full description of the constitutional and local treatment of patients suffering from wounds. The treatment may be conducted in a variety of ways ; and no one who has taken the trouble personally to inspect the methods adopted by different surgeons can venture to insist upon any plan of his own as being the one only or chiefly to be recommended. If I refer, quite briefly, to the manner in which operation and other wounds are treated in my wards, it is because one cannot but have a preference for a system which has stood the test of practice, and has insured, for some years, an entire immunity from the complications of blood-poisoning ; and with reference to which I wish to take this opportunity for saying a word or two respecting the details to which, since last I spoke upon the subject, I have come to the conclusion that the greatest importance is to be attached.

In the case of thigh-amputation, last Wednesday week, bleeding was staunch by tying such vessels as required a ligature with carbolised catgut. My preference is now, as formerly, for torsion ; but, as time presses on our operation-days, I use, as occupying less of it, the catgut-ligatures. After bleeding had ceased, the wound was washed with carbolised acid and water (1 in 20), and the skin of the thigh was cleansed with some of the same solution. Arrangements were then made for draining the wound ; two strips of gutta-percha tissue, half an inch wide, and tied together at one of their ends by a piece of carbolised catgut (an inch and a half of which separated the two), were laid across the thigh, the catgut crossing above the femur, and the pieces of gutta-percha which hung from it being brought out at each angle of the wound when closed. The catgut dissolved in two or three days ; and then, when it was thought fit, the gutta-percha strips could be removed from each side with the least possible discomfort to the patient. The edges of the wound were next brought together by silver sutures, which were passed, as is our custom, some distance from the margins of the wound, so as to interfere as little as possible with their adhesion, and, at the same time, to diffuse more equally the traction upon the soft parts. The stump was then covered with three layers of lint soaked in carbolised oil (1 in 16) ; and over this was placed a sheet of gutta-percha tissue, then some cotton-wool, and the whole was secured by a bandage. Under the upper part of the thigh was placed some picked oakum, to receive any discharge draining through the dressings. The stump was redressed on the third day, and again on the fifth, when it had united by the first intention, with the exception of a small portion of the flap at the centre of the wound, which required a few days longer to close up. There was no constitutional disturbance, and the temperature ranged during the week from 98.4 to 99.4 deg. Fahr. In a second case, in which a loose cartilage was removed by direct incision from the knee-joint, the wound, which failed to unite by first intention, so that the joint remained for ten days open, was treated in the same way, but with the omission of the gutta-percha tissue. In this instance, the wound was dressed daily, and the ordinary carbolised oil on lint was a sufficient application ; but when a wound is to be left for several days, the covering of the gutta-percha is necessary to conserve the efficacy of the carbolised acid. The temperature in the case just referred to ranged from 98 to 99.8 deg. Fahr. And, as showing the trifling overaction we usually

meet with, I may mention, in the case of a man who, besides other injuries, sustained a compound fracture of the patella, with laceration and bruising of the soft parts, the knee-joint being opened, that the temperature ranged from 98.8 to 102.4 deg. Fahr. (at which last named figure it stood for a few hours only the second night after the injury), the pulse from 76 to 88, whilst the respirations were natural. And, again, a man from whom I removed fifteen calculi by perineal section, the stones lying in pouches along the course of the urethra, and who was broken in health by long-standing disease of the urinary organs, passed through his overaction with a temperature varying from 98.2 to 98.6 deg. Fahr., and a pulse of from 80 to 92.

Although equally good results may doubtless be obtained by other methods, our mode of dressing wounds has the recommendation of being a very simple one—it is not necessary to exclude the air ; the materials required are but lint or linen, with carbolised acid, and oil or water with which to mix it ; and, in some cases, a piece of oiled silk, or its substitute, thin gutta-percha tissue. I prefer myself to renew the dressing every twenty-four hours ; but if you like to leave it for a longer time—say for several days—you can safely do so if you take the precaution, as before mentioned, of covering the carbolised lint with a sheet of gutta-percha tissue, so as to hinder the acid from volatilising ; and let me here add that, although we have tried boracic and salicylic acids, terebene and other agents, we have fallen back upon the carbolised acid as, on the whole, the most reliable agent ; and in only one instance (a case of excision of a knee-joint) has it been necessary to suspend the use of the acid, because of its apparently affecting injuriously the general health of the patient. Of the use of this dressing, as regards the avoidance of blood-poisoning, something may be said presently ; but it is a further point in its favour that we are able to get a large proportion of our wounds to heal by the first intention ; certainly all the deeper portions which can be kept in contact do so heal ; and it is only when the carbolised oil proves somewhat irritating to a tender skin, even when the surface is protected by gutta-percha tissue, that the superficial parts fail to do so ; so that the cases not only do well, but do well quickly ; the dressing making it sure that the wound shall be sweet and clean, and drained, without checking the natural process of repair.

I now pass on to refer to some details to which I attach much importance. One of these is the maintenance of rest—rest not merely local, but the quiet and repose of the system generally. To ensure this, you will find that opium is freely given to our patients. Except in the cases in which it is counterindicated (and of this you will have informed yourselves beforehand)—and such cases are surprisingly few in the practice of operative surgery—the sedative is given ; not, you will observe, when the patient becomes restless and fails to sleep, but for the purpose of anticipating such a condition, and of preventing its occurrence ; and such being our object, let me particularly impress upon you that you should not, as seems to be the common creed, wait until the eventime before you give your remedy, but that you should use it soon after the dressing of a wound has been completed, and, following many operations, the sooner it is given after the patient has been placed in bed the better. You will sometimes be told of a sick man that he has never been able to take opiates ; I often give opium to such persons ; and it has surprised me to find how well they usually progress under the quieting influence of the sedative, especially if they do not know that they are taking it. After an anæsthetic, morphia is preferably given by subcutaneous injection, so as to avoid any disturbance of the stomach ; and, chiefly in this way, I cannot too strongly recommend the use of this sedative, so long as we have reason to fear that our patient will suffer hurt from restlessness or loss of sleep. Locally, all arrangements for the dressing of a wound and for the position of a wound must be made with the object of strictly maintaining rest ; and with this goes the avoidance of pain ; for not only an operation-wound, but a diseased joint, or a compound fracture, carefully put up and rested, will, as an almost invariable rule, be free from all discomfort. Rest, too, is most important to allow union, and the uniform glazing of such portions of wounds as cannot unite by the first intention, and which are thus protected, to some extent, against irritating fluids. Movement, on the other hand, means the risk of separation and the cracking of the surface where union is recent and easily broken through, and, at the least, retards repair. It has been suggested that dressing our wounds from day to day, as we often do, must necessarily interfere with the repose which should be insured them, but no such suggestion would be made if the changing of the dressings was watched ; for, as I have repeatedly said, such changes can be, and ought to be, so arranged for, that they will not occasion the slightest disturbance of the parts.

The free drainage of a wound is also of great importance. I would almost go so far as to say that, given this, a wound may be trusted to do well, however other details of treatment are neglected. "The

bloody serum", wrote Benjamin Gooch, one hundred years ago, "called sanies or gleet, which wounds discharge at first, is sometimes immoderate, foetid, and of a blackish colour, and so acrimonious as to erode the skin.....and must be suppressed or removed, by some means, to lay the foundation for healing. The parts should be defended against excoriation.....and the putrid foetid scent corrected by sprinkling lavender-water and vinegar, or some such fragrant antiputrescent liquor* upon the bandage. All these circumstances demand particular notice and consideration." It is the discharge thus referred to as poured out from a recent wound, and truly described as most irritating, which requires to be effectually drained off; and to insure this, drains should invariably be provided for after an operation, or when an accidental wound is being dressed, so as to command a flux from the deepest parts; the nature of the tube, whether it be metal or elastic, or made with a strip of gutta-percha tissue, and the number inserted being, of course, determined by the requirements of individual cases. By the same standard, it must be decided how long any drainage-tube should be retained; in some cases, flexible tubes may be retained during the entire healing, of an abscess for example, portions of the tube being cut off from time to time as the abscess-wall contracts. The more you see of the progress of wounds, the more you will appreciate the importance of drainage, especially of draining off the discharge of the first day or two; and as you cannot be always at hand to remove the dressings soiled with this discharge, and as, indeed, such interference would necessitate undue meddling with a wound, it is now that you experience the use of your carbolic acid dressing, or of a pillow of picked oakum placed so as to absorb the discharge, by the use of either of which decomposition and the nauseous smell thence arising will be prevented.

By some such applications as these, a wound must be kept clean; if the discharge from it be allowed to become putrid, irritation will result, and the progress of its repair will be arrested; indeed, you will run the risk of local cellular inflammation and of erysipelas; but the object you have in view—the cleanliness of the wound—is attained without the absolute exclusion of air; and, during the changing of the dressings, the wound may be left exposed without incurring the slightest risk. It is sufficiently kept under the influence of the carbolic acid by the appliances which have been described to you.†

Passing to the question of blood-poisoning, it may seem strange to you to hear us attaching so much importance to it. Only the other day, my house-surgeon reminded me that we had had no complication of this nature under observation during his term of office. It is, indeed, only when an isolated case is admitted into the hospital that we have now an opportunity of seeing this disease; and yet I am sure that, with a little negligence in the management of our cases, we should again have to regret an outbreak of blood-poisoning in our wards.

Whilst watching the progress of this complication, and considering how best its occurrence might be prevented, one could not but arrive at a decided opinion as to its cause; and the clinical experience which has been gained since its suppression, goes far to justify the belief that we were right in the conclusion we came to as to the conditions under which the group of affections known as erysipelas diffused inflammation, pyæmia, and septicæmia (to mention the names usually given to them), were originated and fostered. There can be no doubt, I think, that the exposure of the discharge from a wound to the atmosphere causes the discharge so exposed to decompose; and, further, that such decomposed discharge is most irritating. If shut up in a wound, or in an abscess after its puncture, or if retained in contact with a wound surface, it will create inflammation either of the subcutaneous tissue or of the skin (erysipelas), or of both, with much constitutional disturbance, and occasionally with rapidly fatal results, if, as in the case of putrefaction of the contents of an ovarian cyst after puncture or incision, a large extent of surface is allowed to become exposed to the influence of the decomposing fluid. Still more irritating is the fluid which, having putrefied in the wound of one patient, is allowed to come into contact with the wound of some one else; a minute dose of such a poison (and I am not sure but that a foreign discharge, even if free from decomposition, will be equally irritating) often sufficing to light up serious mischief. By the use of carbolic acid dressing, and by the practical isolation of our patients so far as neighbouring sores are concerned, the risk of infection from decomposing discharge is avoided; and if we could keep our wards clear of patients who come in suffering from erysipelas or diffused cellular inflammation, we should not see anything of these affections.

* Gooch mentions as an efficacious antiputrescent, bark and elixir of vitriol.

† A poultice, which effectually prevents bad smells, keeping discharge from decomposing, is made by mixing equal parts of linseed-meal and ferralum (a preparation introduced by Dr. Bond of Gloucester). I should think it would prove very useful in out-patient practice.

But these affections are local, and the system suffers only in proportion as a widening area becomes involved, or in sympathy with the great extent of surface through which the local irritant acts. Thus, whilst unlike in that they are at first local, and only in the second place constitutional, when the constitutional follows close upon the local disturbance, and is severe, they become like to the cases of blood-poisoning (pyæmia and septicæmia—names of which I try to avoid the use), in which the entire system is poisoned in the first instance, and in which the local affections take a second and unimportant place. Blood-poisoning, as thus distinguished from erysipelas and diffused cellular inflammation, is not caused, so far as my experience teaches me, by local irritation from decomposing discharge. When blood-poisoning was rife in the wards, the trouble did not fall upon those suffering from open abscess, from fistulæ, and from fissured and bleeding ulcers, unless they had been in some way, and recently, operated on, although such diseases were often complicated with attacks of erysipelas and of diffused cellular inflammation; and if we think of the foul condition in which many of these cases were and are received into our wards, we must admit that, if decomposing discharge of the worst kind (fertilised it must occasionally be by most virulent germs) could occasion blood-poisoning, it must have done so in some, at least, of these patients, knowing, as we do, how readily absorption takes place through an ulcerated surface, to say nothing of filtration along tracks of tissue through the cracks and abrasions with which ill-treated ulcers commonly abound. Yet I cannot recall an instance of blood-poisoning having occurred under such conditions.* Sometimes the blood-poisoning fell upon patients suffering from mere bruises, or from peri- or endosteal affections without an external wound, or from changes in veins occurring in the course of chronic visceral disease. If you put aside this group of cases, in which the blood-affections occurring in connection with disease or with contusions is often traceable to the formation of clots in veins, to the softening of these clots, and to the scattering of their softened debris through the vessels, causing blockades and secondary abscesses (as they were termed), the cases to which the term pyæmia more particularly applies, although the name is ill chosen, seeing that it is not pus, although something like it in appearance, namely degenerating blood-constituents, which passes into the circulating blood—if you put aside these cases, it may be asserted, as a general rule, that patients with recent wounds are those liable to suffer from blood-poisoning.

In looking over the histories of a number of cases, it appears, unless a patient drifted, as occasionally happened, through a chronic form of the trouble, that the blood-poisoning showed signs of its existence from the fourth to the twelfth day after the infliction of the wound, and, as a rule, proved fatal before the twentieth, often much earlier. This, making allowance for the varying virulence of the irritant, corresponds with the period during which the wound was liable to be saturated with the acrid discharge—not necessarily a decomposing discharge—which follows soon after its infliction; and to the retention of this discharge, and consequent upon this to its filtrating the tissues, to its absorption, and to its direct action upon the system generally (in a manner parallel with that of other animal poisons, of many of which it is mere guess-work to suggest a special channel, such as the blood, through which their diffusion is effected), the occurrence of blood-poisoning was due. And with regard to the retention of this fluid, it is worth our while to remember that the period during which blood-poisoning was rife (not but that it may have existed, imperfectly recognised, before), from the first clear exposition of it by Sédillot and Arnott, corresponds with a period during which most surgeons sought to obtain the union of wounds by the first intention, but, in attempting this, made no provision for the escape of discharge except along such chance channels as ligatures afforded. When thus shut in, there was no track along which discharge more readily filtered than that provided by the cellular surroundings of the veins; various local changes hence resulted; amongst others, the veins thus affected became filled with clots which in time softened and disintegrated; and then, as their debris was let loose into the blood-stream, new symptoms were interpolated; but the poisoning of the system was a pre-distinct occurrence, and, indeed, the condition of the blood which allowed the clots when formed to degenerate was due to changes which the poisoning of the system had inaugurated.

Such are the broad outlines of the disease. Of course, as you will understand, its characters and the course it followed varied with the soil on which it acted; in some cases, a small strong man bore exposure to a large quantity; in others, a feeble man sank under a trifling amount of this irritant acting upon his system. How when it passed into the

* I refer to my personal experience. With the uncertain views held by many observers respecting the nature and cause of blood-poisoning, cases have been reported as of this nature which are at the least of doubtful character. I speak, therefore, only from personal observation.

system it produced its effect, it is, with our present knowledge, impossible to say, any more than it is possible for us to explain the remarkable action of strychnine or of prussic acid; and, perhaps, for practical purposes, the sort of suspicion we have that in some way it poisons the blood, is sufficiently near the truth. The consideration of the whole subject leads to the conclusions that, if wounds are effectively drained of the first acrid discharge, there will be no blood-poisoning; and if a wound be kept sweet and clean, there ought to be no local poisoning, such as erysipelas.

But if these affections can be prevented, may they not also be generated by the treatment of a wound? It is an experiment which we cannot try; and yet, with a wound extending no deeper than would be required for the removal of a small sebaceous cyst—say from some part of the trunk—you can, if you closely follow the treatment, sometimes see the beginning of these troubles, which, if unchecked, would rapidly develop their proportions. This wound is closed for the purpose of obtaining union by the first intention; as you watch its progress, if all go well, some fluid oozes from it, and repair goes on; but, in most cases, this fluid, held in by the closure of the edges of the wound, does not so escape (unless drainage is provided); and we are so accustomed to look for this in the few cases in which drainage has been omitted, that, five or six hours after the operation, we pass a fine probe between the edges at some part of the wound to give exit to this fluid, a drop or two of blood-stained serum as it appears; if this detail be not attended to, the patient becomes restless, his pulse and temperature rise, and he is ill out of all proportion to the apparently trifling nature of the trouble; then the parts around the wound become swollen and red, and in this condition, if the discharge decomposes, diffused inflammation supervenes. In fact, he has suffered blood-poisoning in, perhaps, the least degree, and he has been placed in a condition fostering the occurrence of local troubles.

In all cases of blood-poisoning, it seems to me that the poison which acts upon a man's system is usually the direct product of that system; but I have also no doubt that a foreign discharge is, at least, equally virulent; and, further, that decomposing discharge will cause local irritation; but as, in the case of changes after death, it is the fluid of the first few hours, not the decomposing fluid of a later period, which causes the most fatal poisoning, so, during life, the decomposing discharge from a wound is less dangerous than is that which should drain off during the first few hours, and before decomposition of it has occurred. Thus we come to regard the free drainage of wounds as of primary importance.

In conclusion, let me repeat that, by strict attention to the rules of surgery, every recognised operation, if its performance be thought desirable or justifiable, can with perfect safety be practised so far as the avoidance of blood-poisoning is concerned; and that injuries may be healed without risk to life which, without such strict attention, would be irremediable, or would have to be treated by amputation.

WARWICKSHIRE.—In his first report on the sanitary condition of the combined districts of Stratford-on-Avon, Alcester, and Evesham, Mr. G. H. Fosbrooke, the medical officer of health, gives a general description of the sanitary circumstances prevailing in the area under his control. As in so many country districts, the water-supply is derived from wells sunk in a soil liable to pollution, and enteric fever has been the consequence. The absence of proper means of drainage is but too common, and hence, as regards the more rural and isolated spots, the sanitary authorities are recommended to adopt the tank invented by Mr. Rogers Field, which receives the slop-water of each house where it is in use, and subsequently utilises it by passing it through the subsoil prior to its being allowed to enter common land drain-pipes. The midden-privy, with all its attendant sources of nuisance and injury to health, is, as in most country districts, the usual means of excrement disposal, and all the evils associated with its use are pointed out in the report. Some few subclosets have been provided, and it is stated that difficulties are scarcely ever experienced with regard to their periodical cleansing, because the manure they contain is so highly valued. There are as yet no means in this district for preventing the spread of infectious diseases by means of isolation, except such as have been provided by the guardians for paupers. The necessity for such provision is great; for there is so large a proportion of the population who, though quite removed above the pauper class, and whom it would clearly be wrong to pauperise, because they happen to be unfortunate to contract some zymotic infectious disease, are quite unable to find efficient means of isolation, unless it be provided by the sanitary authorities. This question gains importance year by year, and we hope that before long every such authority will by itself, or by combination with its neighbours, make this provision, which is so essential in any efforts made for preventing the spread of infectious disease.

SECTION OF THE CORNEA IN CERTAIN DISEASES OF THE EYE OF INFLAMMATORY ORIGIN:

ABSCESS OF THE CORNEA: OPTHALMITIS: IRIDO-CHOROIDITIS SYMPATHETIC (?): WITH A NOTE ON THE TREATMENT OF HYPOPION BY CILIARY INCISION.*

By J. VOSE SOLOMON, F.R.C.S.,

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SOME years since, the late Mr. Guthrie, senior, advised the treatment of large collections of pus in the anterior chamber by a vertical and central incision extending from one side of the cornea to the other, and that a Beer's cataract-knife should be used for the operation. Soon after reading his paper, which was, I believe, about twenty years ago, I tried the plan in a single instance, but was not satisfied with the result; the failure, I am now persuaded, was due to the greatly disorganised state of the eyeball—in fact, to the operation having been too long deferred.

For the last thirteen years it has been my practice to evacuate extensive collections of pus or puro-lymph occurring in persons of feeble constitutional power, and in whom some layers of the cornea had sloughed, or evinced a tendency thereto, by making a radiating incision through the corneo-scleral union and the ciliary sclerotic for a distance of about two lines. There is no method with which I am acquainted more safe or effective; and it has the additional advantage of depleting the engorged ciliary choroid. It was the observation in colliers and labourers who had passed their fortieth year, that a peripheral semilunar corneal incision was commonly followed by destruction of the membrane and staphyloma, that led me to confine my puncture almost exclusively to the sclerotic. My colleagues Mr. Bracey and Mr. Owen, who, from having been formerly house-surgeons of our hospital, have had peculiarly favourable opportunities of judging, and of comparing this method with others, follow the same practice, and are well satisfied with its results.

In the course of 1873 and 1874, I treated successfully by Guthrie's operation (vertical incision), with some limitation as to the length of the wound, several cases of extensive *hypopyon* complicated by abscess, or by diffuse infiltration of the cornea; conditions which were sometimes coexistent in the same eye. The tendency of the infiltration to extend into the adjacent healthy tissue was not always at once checked; consequently, superficial scarifications, punctures, and even a second deep and rather free incision, made at an angle the line of the first wound, were employed with advantage, by giving early and facile exit to the pent up purulent material. In all cases of hypopyon, it is superfluous to say that all preventable causes of debility, as, for instance, over-suckling, should as a matter of course be removed.

In the administration of quinine I generally prefer to give half or a whole grain every hour to a large dose at intervals of four hours; in this way, I believe, the occurrence of suppuration in an organ may be sometimes lessened in extent, if not averted.

Whatever operation is performed, the warm water pad proves for the first few days a valuable local application. Drops of atropine and nitrate of silver are also useful where the local reparative power is defective.

The good effects of treatment by vertical incision may be summarised as—relief from pain, which is *not* always immediate; the preservation of a more perfect curve of the cornea than where the membrane has suffered ulcerative perforation, and consequently a less degree of astigmatism; frequently the prevention of synechia anterior, and staphyloma; also a less extent of any leucoma which may follow the presence of an onyx.

I now come to the chief and almost sole object of making this communication to the Association, namely, the *application of free section of the cornea to cases of deep seated ophthalmia threatening destruction of the eye*. I am indebted to our intelligent house-surgeon Mr. Eales for many of the notes of the two following suggestive and instructive cases.

CASE I.—A little girl, aged 12 months, was admitted under my care at the Birmingham Eye Hospital, on August 20th, 1874, with acute photophobia and muco-purulent conjunctivitis of the right eye; the cornea was throughout densely opaque. The child, always delicate, had suffered from diarrhoea for three weeks immediately prior to the appearance of the ophthalmia. On the ninth day of admission, the conjunctival discharge had ceased, but protophobia, with severe pain, which had deprived the child of rest and sleep from the time of admis-

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