

1908 V-7

## ARE GLOVES AND MASKS ADVISABLE IN MODERN SURGERY?

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All surgeons desire to be efficient. All surgeons desire to let nothing escape them that may tend to their greater efficiency. It may with equal truth be said that all surgeons are anxious to be thoroughly abreast of the times, and there is nothing they dread so much as the least suspicion that their methods are obsolete, or their technique wanting in any of the latest improvements which help towards perfect asepsis, or the obtaining of the best possible results from their work.

But such anxiety may easily lead to the adoption of methods, which are for the moment fashionable, but which do not tend to any real increase in efficiency; which may indeed, though at first sight appearing to be founded upon accurate facts, decrease their efficiency in other ways which are not so immediately obvious.

There is something very attractive to most minds about special uniforms, special costumes and special surroundings; and there is a spectacular impressiveness in the figure of a surgeon entirely covered, except for his eyes, in aseptic clothing; he looks like a high priest of surgery, and priests have in all ages been regardful of the effect of vestments upon their followers.

There can, however, be no doubt that real progress has been made by the use of many of these precautions. The days are long since past when the operator was only solicitous about the care of his own apparel, and if he took off his coat in order to operate, did so mainly for the preservation of that coat from stains and not for the greater safety of his patient. The removal of all external clothing, the donning of clean white drill jackets or gowns, trousers, and caps which have been carefully sterilized, and the substitution of rubber-soled shoes for the boots which carry in the mud of the streets, are all steps in the right direction. These measures ensure the absence of preventible micro-organisms in the dress of the surgeon and, duplicated by assistants and nurses, of all those present in the operating theatre. Thorough washing and scrubbing of arms and hands, first with ethereal soap and water, to ensure what Moynihan calls "social" cleanliness, followed by one of the special methods of antiseptic treatment of the same parts, thoroughly carried out, ensures the absence of pathogenic bacteria from the integuments of the surgeon which come into actual contact with the wound.

The modern treatment by heat of dressings, instruments and sponges render these innocuous, and the present methods of protecting the tissues operated upon and their surroundings by sterile gauze, the avoidance of any handling of parts more than is absolutely necessary, and the holding of tissues by sterile forceps or clamps rather than by the fingers, all act in the same direction and tend to make and keep the raw surfaces and the exposed viscera aseptic.

All these have nothing but good effects; they do not hamper the work in any way; they rather help in safe, rapid, and efficient operating, but so much cannot be said of the latest developments of this otherwise admirable practice. Masks and gloves, however theoretically correct, do materially hamper the surgeon's movements, and therefore, may very easily do far more damage to the prospects of a safe recovery — which is after all the main end in view — than would result if they were omitted.

It is conceivable that men trained from the first to work in rubber gloves may in the end and after much practice be able to use their fingers as deftly as if they were bare, but this entails much increased risk to the patients upon whom they practice, since the dangers of an operation are not all removed when every single micro-organism is eliminated. There still remain the even greater dangers of excessive loss of blood from vessels not grasped with sufficient quickness by forceps held in muffled hands; the increased shock due to loss of time by less rapid stitching or delayed toilet; the less handy use of the knife or other instrument; the delay produced by the nipping of an assistant's or the surgeon's own glove; the loss of facility in tying ligatures or sutures; or any one of the multitudinous little impediments which every surgeon notices who operates in gloves.

And if this is so, even with men who have always been accustomed to them, these drawbacks are a hundred-fold increased when a surgeon, who has attained a high degree of facility with his bare hands, attempts the same work in the new and unaccustomed coverings. Needles, over which he has been used to have perfect control, slip and twist in wrong directions, the gloves hamper his ready action in the tying of ligatures; the threads of these same ligatures or sutures are not gripped with the old easy sense of security, and more and

more time of immense importance is wasted. It is time that someone had the courage to point out these things and regardless of the sneers of certain men, to show how the real aim of any operation — the recovery of the patient — may be endangered by the wish to appear academically complete.

And why should the surgeon handicap himself in this way? Is it so certain that, if he does, he will obtain even the end aimed at, the exclusion of micro-organisms from the operative field? By no means; such a result is at least very questionable. Gloves are made of various degrees of thickness; with any increase in their bulk, the sense of touch, and the facility in the use of the surgeon's hand, diminish; with any decrease, the chances of an unwary prick become greater. It has long since been shown that there is some difficulty in absolutely clearing the skin ducts in their entirety from micro-organisms. The wearing of gloves greatly increases any tendency of the hands to perspire; such perspiration carries any material present in these ducts, micro-organisms included, toward the surface, where it collects beneath the glove. In this fluid so confined, micro-organisms increase rapidly, so that any fluid retained there for half an hour becomes acutely poisonous. A chance prick of a needle through the thin barrier allows the discharge of this actively breeding fluid into the wound and the whole object of the glove is at once defeated. So far as the safety of the patient from sepsis is concerned, he or she would have been safer had the surgeon never worn any gloves at all, for now he has inoculated the wound with the very material most dreaded, in a concentrated form. It would be an instructive study, if only it were at all likely to be accurate, to determine in how many operations such pricking of the glove has occurred, and in how many it has not. It is probable that those of the former would immensely outnumber those of the latter class.

But this, it must be noted, applies only to the surgeon himself; the nurses' hands are not in danger of such pricks; nor are those of his assistant; not one of these auxiliaries requires to retain the keen sense of touch which is so essential to the operator himself; there is therefore no reason why they should not avail themselves of any additional precaution, rather every reason why they should; besides, as Lockwood points out, the thorough sterilization of the hands is largely a matter of practice and experience, so that it is most likely to be done satisfactorily by the surgeon himself; if it is not perfectly carried out the gloves are an additional safeguard.

Fortunately for us and for our patients, the normal resistance of the tissues to stray micro-organisms appears to have been greatly underestimated; for it would have been impossible for surgeons to point to hundreds of successful cases of serious operations as they now can, if success had depended upon "absolute" freedom from germs, or if it had been possible for two or three bacteria to induce septic poisoning. In saying this, however, it must not be imagined that any wish to disparage the utmost care in sterilization is suggested or intended; what is desired is, that a fair proportionate value should be given to all the factors which make for success.

For there appears to be a fatal facility in many minds unduly to exalt the importance of one factor in every surgical problem; to lose the sense of due proportion in things and, in their eagerness to attain to a theoretic perfection in one direction, to forget, if not altogether at least in great part, the equal if not larger importance of other things. Sterility is not everything; one may have a perfectly sterile operation and one's patient may lose so much blood that she cannot recover. Our persons, instruments, dressings and surroundings may be absolutely free from germs and our patient may die of shock from the unduly increased time under anæsthesia. An operative success is due to a combination of many things, not to the religious, I might say, the fanatical observance of any one factor.

And what is true of the use of gloves, may with almost equal force be urged against the use of masks. Theoretically, there is a great deal to be said for the practice; there is no doubt that the human mouth and nose contain many micro-organisms; no doubt that these are expelled to a slight extent even during quiet breathing; still more during sneezing, coughing, or loud speech. The observations of Flugge and Gordon have placed this beyond discussion. It would seem only reasonable that some barrier should be placed between these and an open wound; and there could be no objection were not the drawbacks produced — the drawbacks to the success of the operative work which it cannot be too often insisted upon is the one thing to be considered — equal or greater than the risks so encountered.

The surgeon's eye should be everywhere during operative work. There must be nothing to impede his vision in any direction. He himself should be comfortable and easy, so that there is nothing to distract his attention from the task he has set himself to do; no personal worry or annoyance to take his mind even for a moment away from the rapid and easy performance of his duties.

Will any one who has worn a mask venture dispassionately to affirm that this is the case when the lower part of the face is entirely covered? If the surgeon has to look down, his eyes are immediately caught by the white gauze and he has, for a time at least, to force himself to alter the focus of them. No doubt after prolonged use, he will cease to notice this, but meanwhile, he is handicapped to that extent. Then his breath is deflected back again against his face and escapes upwards towards his eyes with an unpleasantly warm sensation which tends at least to divert his mind from its proper object. Is this necessary? Because, if not absolutely necessary, it is very objectionable. Quiet breathing is not specially harmful; it is coughing, sneezing, loud talking that is dangerous. Are operators then in the habit of giving way to any of these during an operation? If a man feels that he is in danger of sneezing, can he not stoop below the table or for a moment leave it until the paroxysm, which is very rare, is over? As to talking, is not absolute silence during operative work now almost universally the rule in all well-regulated theaters? And clinical lectures and expositions of operative work can as easily be given before the patient's entry or after his departure as during the actual work; far better indeed, for, like every one else, no surgeon can talk and work equally well at the same time. In these cases, also, the primary object of operative work, not the instruction of students, but the recovery of the patient, should always be kept permanently in view.

But the necessity, which undoubtedly exists, for some barrier can be supplied in another way which does not involve all this discomfort. Small tufts of cotton wool placed in the nostrils will effectually prevent any escape of germs from those outlets; whilst a small respirator formed of two curved and perforated plates of celluloid between which a thin layer of cotton wool is laid, filters the breath of all objectionable particles. These do not hamper the surgeon in any way, they do not distract his attention; they do not make him personally uncomfortable, and whilst perfectly efficient, can be worn without annoyance.

If a surgeon is to wear a mask, it is but a logical sequence that the nurses should also be masked. But to this there is another and to my mind, and I feel sure to many others also, a still more serious objection. Many surgeons and all patients know the feeling of terror which frequently assails the latter just before anæsthetisation. I have known such terror to kill with the

first whiffs of chloroform. Do we realise this, and are we going to intensify it by surrounding our patients with faces and forms which are unfamiliar and unknown and which suggest the antechamber of torture in some Spanish Inquisition instead of the cheerful, hopeful, pleasant faces to which they have become accustomed and in whom they have learned to trust? I protest that I, who know my own nurses so well, have had to look more than once before I have recognized the covered up figure before me. To cover the dress and hair is one thing; that is necessary and safe, but let us not convert our theaters into the semblance of Mohammedan harems or Spanish torture chambers, nor terrify our patients out of what little courage they still possess, but let them see around them the kindly, friendly faces whose eyes — and mouths — impart confidence and hope.

And indeed, although the same expedients might be adopted by the nurses as those suggested for the surgeon, if it were necessary, the danger from them is far, — very far — less than from those who are actually bending over the wound. They are farther away, and there can be no doubt that they are more silent.

It may be said that patients are nowadays always anæsthetised in another room than the theatre, the interior of which they never see; and that is true, but if the covering referred to becomes, as it seems likely to be, the rule, nurses are not likely always to defer the putting on of their masks until after the anæsthetisation of the patient. One nurse at least should be by the side of the chloroformist, and she will be, sooner or later, masked like the rest. We fail, I think, sometimes, to put ourselves in the places of those we operate upon. Let us ask ourselves seriously, if we, fading into unconsciousness, and looking up into the faces of those around for the security and confidence we feel that we are losing, are likely to find them in the white gauze masks surrounding us at such a moment?

And what we would not wish for ourselves, let nothing persuade us to do to those who trust their lives to us. Masks are not necessary, and they are very objectionable. The only thing that can be urged in their favour is the fashion that at present prevails of carrying one factor in the success of our work — academic sterility — to its ultimate logical perfection.

And so we revert to our original proposition. The perfection of one single factor may entail, nay, almost certainly will entail the neglect of others of an equal or greater value in the ultimate success of our work.