STERILIZATION OF SURGICAL GLOVES

BY

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The care of surgical india-rubber gloves in these days is an anxious problem; therefore any method that will help their conservation is an important matter.

Hitherto I have never willingly used gloves sterilized by the dry method, a reason being that they were so often in a perished condition and unusable after one sterilization. I have had a conviction that gloves sterilized by boiling in an open sterilizer for thirty minutes (termed the "wet" method) far outlasted gloves sterilized in an autoclave under pressure (termed the "dry" method). Gloves sterilizable up to ten times by the wet method would be in good condition compared with gloves perished in one sterilization by the "dry" method. Therefore I started the experiment prejudiced against the latter.

"Wet" Sterilization

Six pairs of gloves were boiled in an open sterilizer for thirty minutes upon six separate occasions. At the conclusion of the experiment each glove was pulled on to my hand: further, each glove was tested by pulling and stretching. Except for some increase in their size the gloves were all normal.

"Dry" Sterilization

This was done in an autoclave. Tests during each experiment showed a registered temperature of 240° F.—that is, sufficient heat to ensure sterilization. The gloves were placed singly in a calico container. Every glove was well tested after sterilization: it was inflated, pulled, and stretched in different directions. They were sterilized at different pressures and periods, the following being the various results obtained:

No. 1: 40 lb. Pressure for 15 Minutes; No. 2: 25 lb. Pressure for 10 Minutes.—The gloves were found in both tests to be thin and to have lost their nature: they easily tore when manipulated.

No. 3: 20 lb. Pressure for 20 Minutes.—Under this pressure the gloves were found to stand up a little better, although they still tore when pulled and stretched.

No. 4: 15 lb. Pressure for 20 Minutes.—Six pairs of gloves were sterilized at this pressure. When put through the same test of pulling and stretching they appeared to be fairly normal, although there was a very strong smell of sulphur, which proves that even at this pressure some change takes place in the glove.

No. 5: 10 lb. Pressure for 30 Minutes.—Six pairs of gloves were done at this pressure. There was no smell, and the gloves stood up to any amount of stretching and pulling.

The first two tests were only tried twice; the third test was tried on six occasions, while the fourth and fifth tests were repeated six times. This experiment proves that when the gloves are sterilized at 10 lb. pressure for thirty minutes they retain their natural condition.

Commentary

The tests conclusively show, therefore, that if india-rubber gloves are sterilized in an autoclave at 10 lb. pressure for thirty minutes there is no reason whatever why the surgeon should not use this method in preference to the boiling method in an open sterilizer. If a pressure higher than 10 lb. is employed, then the wastage of the gloves is a serious matter. I now know the reason why gloves perished so easily, and my conscience in using dry gloves is assuaged.

In a large hospital it would be economical if gloves to be "dry"-sterilized were done at a central source rather

than in individual operating theatres. Without doubt, in the anxiety of a theatre nurse to get really effective sterilization, gloves may be subjected to pressures in the autoclave far in excess of 10 lb.; and then complaints are made that "a batch of gloves was rotten." An important detail in glove sterilization is the wrapping up of each glove separately: if a pair are placed in the same "container" they tend to perish. One of the most important points is the preparation and actual method of packing, which should be as follows:

The gloves should be carefully washed in luke-warm water, using a good soap, and then rinsed thoroughly and dried. Powder well inside, and also a certain amount on the outside, with talc to prevent the rubber from sticking together. To ensure free passage inside the gloves place a pack of lightly folded gauze in each of them. Wrap completely, without wrinkling, in gauze or a towel, and place in the top portion of the sterilizer, taking care to see that the gloves do not come in contact with either the metal sides of the sterilizer or the metal of the sterilizing drums, if they are placed in these.

Conclusions

Surgical india-rubber gloves can be efficiently sterilized in an autoclave at 10 lb. pressure for thirty minutes and retain their vitality. Pressures used higher than this cause the rubber to perish.

The tests show that gloves sterilized in this way by the "dry" method last as long as those sterilized by the "wet" method.

My thanks are due to Mr. D. Foggan, the superintendent pharmacist at the Royal Victoria Infirmary, Newcastle-upon-Tyne, for his valued collaboration and for his enthusiasm in carrying out the tests.

EFFECT OF WAR ON MIDWIFERY SERVICES

According to the latest report on the work of the Central Midwives Board the demand for practising midwives has increased as a result of the war because many medical men who have been conducting maternity work have been called up for war service. Reference is made in this report to the rapid building up of the system of improvised maternity homes in reception areas under the Government's evacuation scheme. During the early months of 1940 it was found necessary to close a number of these, although to others small parties of from ten to twenty cases continued to be sent. By the end of March almost all the midwives from the L.C.C. hospitals had returned to London, and some of the London voluntary hospitals which had moved their maternity units to the reception areas reopened them in the metropolis and resumed the training of pupil midwives on a restricted scale, while in addition a number of independent midwives returned to practise. The Board is now planning for the immediate re-staffing of the improvised maternity homes which are at present being run by skeleton staffs or are being kept on a care and maintenance basis.

The compulsory scheme for post-certificate courses of instruction which came into operation at the beginning of 1939 has been placed in abeyance, but the Board hopes that until such time as it can be reintroduced voluntary courses will be organized whenever and wherever possible. So far the war has not rendered necessary any permanent changes in the scheme for the training of pupil midwives, and it has been possible to hold the examinations at the usual three-monthly intervals. Arrangements have, however, been made for candidates to take the routine part of their examinations at their training schools instead of in certain specific centres, and additional centres for the oral and practical part have been formed.

A.R.P. Midwifery

Information was received that in certain parts of the country women in the A.R.P. service were being given a short and superficial training in midwifery, including a method of expressing the placenta. The Board felt bound to draw