

Medical Matters.

AN IMPROVED METHOD OF PREPARING CATGUT LIGATURES.*

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Good ligatures are an essential in surgery. The ideal ligature should be strong, sterile and soft. It should be capable of preservation for a long period of time without loss of strength or sterility. That numerous methods have been devised for the preservation of catgut is evidence of the lack of satisfaction which they give. There are certain requirements for a proper method of preparation: it should be simple, so that an inexperienced person can carry it out; there should be no handling of the gut after sterilisation has begun; the ligature should be placed in a single container at the beginning of the process and should not be removed therefrom until it is needed at the operation; the method should be inexpensive.

These conditions are best fulfilled by the Claudius iodine-alcohol method of catgut sterilisation, but this method has certain disadvantages: (1) the Claudius gut does not keep well, but becomes fragile and frangible; (2) the alcohol is not a fat solvent, and sterilisation cannot be complete unless a good fat solvent is used to wash the fat from the crevices of the gut; (3) the gut is a little hard for manipulation; (4) the alcohol, containing water, swells the gut a trifle in size. Catgut will readily extract water from alcohol.

For these reasons, after considerable experimentation in catgut sterilisation, I have adopted the following method of preparing catgut:—

I. Iodine, 4 per cent. in acetone, 8 days.

II. Wash in acetone, 4 days.

III. Preserving solution, acetone 85 per cent., Columbian spirits 10 per cent., glycerine 5 per cent. The glycerine should first be dissolved in the alcohol and then added to the acetone, as acetone itself is not a solvent of glycerine.

This method has the following advantages:—

The solutions are fat solvents and antiseptics; the iodine is used in greater strength than in Claudius' method, and it impregnates the gut so that the ligatures are black and well saturated with iodine when they are placed in the clear acetone solution. The pure acetone abstracts the excess of iodine from the gut, leaving the gut clear and white. The preserving solution of acetone, alcohol and glycerine completes the bleaching and at the same time

softens the gut, which is not much softened by the pure acetone. The latter, however, does not harden the gut, but abstracts the water from it, and leaves it of the same flexibility as gut that has been preserved in chloroform, as in the well-known commercial process. The addition of the glycerine and alcohol to the acetone in the preserving solution is sufficient in amount to soften the catgut; at the same time the dehydrating power of the acetone prevents the gut from swelling up, as it does when it is placed in alcohol solution.

The acetone bleaches, tans and softens the gut and increases its tensile strength.

Acetone is antiseptic and comparatively cheap; it abstracts water and absorbs fat from the gut. Water and fat have no place in perfect catgut—fat means imperfect sterilisation, for bacteria may exist in a mass of fat untouched by the antiseptics; water swells the gut and softens it.

The preserving solution of the mixture of acetone, alcohol and glycerine is one which softens the gut, and at the same time does not swell it in size. It is essential that catgut should be as small as possible for perfect surgery. The gut may be preserved in this solution indefinitely. The finally prepared catgut contains but little iodine, and if it is desired to have a catgut containing iodine, as does the Claudius gut, it would be well to transfer the gut from the preserving fluid to one of a similar composition with the addition of $\frac{1}{2}$ per cent. of iodine before it is required for use. Catgut cannot be preserved for more than a month in iodine solutions without lessening the strength, on account of the action of the iodine on the gut.

The catgut should be cut in the required lengths and wound in coils with three or four ligatures in a coil, and held by wrapping the ends four times around. In this way several ligatures can be taken out at once and less handling is required. The ligatures should be placed in wide-topped glass jars with ground glass tops, and should not be taken out of the jar until required at the operation. Jars 7 inches high and 3 inches across are used, and enough for one operation is placed in each jar. The solution may be poured off without disturbing the gut. The jars are previously boiled. No gut is wasted, as the excess not used in operation may be resterilised without loss in strength. If the jars are required outside the hospital the solution may be poured off before packing, in order to lighten the weight. The catgut may be readily picked out of the jar at the time of the operation by means of sterile forceps.

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