p. 259. ⁷ Partial resection has been successfully performed in gunshot injuries of kidney (MORRIS, BRITISH MEDICAL JOURNAL, March 26th, 1898, p. 812). ⁸ Abdominal Traumatism, Dr. T. S. K. Morton, Philadelphia. ⁹ The Surgery of the Abdominal Canal, p. 323. ¹⁰ West London Medico-Chirurgical Journal, January 1898, p. 17.

A NEW SUTURE FOR THE INTESTINE, MESENTERY, ETC.

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In operations upon the abdomen all surgeons of experience will agree that any saving of time compatible with accuracy of manipulation is a most important factor in success. The use of small needles within the abdomen, whether straight or curved, whether held like Hagedorn's in forceps, or in the fingers as in the case of ordinary sewing needles, has always required much time, whether for threading, handing, or fixing the needle in a holder, and many surgeons have tried to avoid this by the employment of buttons and other ingenious contrivances. But, being a believer in suture *versus* other mechanical contrivances, I have been experimenting for a year or two past on various forms of needles and holders which might save time by securing greater command over so small

an object as a fine needle in awkward situations, and in avoiding the threading of one of these frequently, or of many to be handed to the surgeon in the course of an operation.

In the end I have designed an instrument with which the finest needles may be held at any angle clear of the hand, and which only requires to be threaded once before the operation is begun. Moreover, the threads introduced with the needles so held can be used not only for the ordinary interrupted suture, and tied separately, but also (which in some cases is much better) for a row of suture identical with the stitching of many sewing machines, and requiring no knot until the final stitch.

I have used this little surgical "sewing machine" now for some months past, in various modifications, on several different kinds of case, including suture of the intestine and mesentery, and closing skin wounds, with much satisfaction. It has passed through various stages of evolution as its previous defects have been recognised, and is now, I venture to think, worthy of recommendation to others in its mature form.

The "sewing machine" consists of two thin steel blades, 1 inch broad at the handle end, and tapering to $\frac{1}{4}$ inch at the needle end.

Fig. 1. — (Half size.) The lower blade with the reels *in situ*.

Fig. 2.—Instrument threaded with needle ready for use.

These blades are fitted together parallel to one another, leaving an interval of $\frac{1}{4}$ inch between them in which two, or better still, three reels, 1 inch in diameter, are held, which

carry the thread. (Fig. 1.) The axles of the latter run in holes drilled in the blades, their ends being flush with the latter.

The circumference of the metal reels is almost flush with the edges of the blades, so that the pulp of the finger resting upon the latter can stop the play of the reel, or, on the other hand, roll it in either direction either to "pay out" thread or to "take in the slack," if any. The blades are held together by screws with T-shaped heads, which pass through longitudinal slits as the upper blade is laid upon the lower, and are then given one or two turns across the slits. When thus fixed the blades ought to just touch the shoulders of each reel round the axle. A turn of the T-screws one way or the other affects the adjustment either to hold the reel tightly or loosely.

The narrow ends of the blades are brought together by pressure, and when nearly touching the head of a third T-shaped screw held in the lower blade near its point, passes through a longitudinal slit in the upper blade, and when turned crosswise once or twice holds the points together. Between these points the needle is gripped firmly by an extra turn of the screw.

The "grip" for the needle is arranged thus. The end of the lower blade is drilled vertically $\frac{1}{8}$ inch from its point. The fine hole thus made carries a screw which is the axle of a hard steel disk $\frac{3}{8}$ inch thick and $\frac{1}{4}$ inch in diameter, drilled through its centre, which lies on the upper surface of the lower blade point, and can be swivelled on the screw passing through it into the point of the lower blade. The head of this screw, which is countersunk in the disk, holds the latter down on the blade point, while a shoulder on its axle portion prevents it gripping the disk too tightly when twisted home. The upper surface of the disk has a groove running across it just clear of the axle screw. The disk is also pierced eccentrically by a hole parallel to its plane surfaces, at about a right angle to the groove on its upper surface, and terminating under the left-hand end of the groove in the upper surface. The needle is laid in the latter, and the upper blade point is brought down upon it. The T-screw is then given one or two turns, and the needle is firmly fixed for use.

The thread previously wound wet on the reels, which are then boiled, is passed through guiding holes in the stops of the blade, and finally through the oblique hole in the swivelled "grip." It is then passed through the eye of the needle, which is near the point. The needle is, in fact, a sewing-machine needle, either straight or curved, either Singer's or Frister and Rossmann's pattern. It can be set at any angle to the blades by turning the swivelled disk, but the relation of the thread to the undermost groove running from the haft of the needle to its eye is not thereby changed. In this way it can be used for a right or left-handed thrust, and can be altered in a moment, without unlocking the blades, and simply with the fingers.

The needle so threaded can be used in several ways. It can be passed through the tissues to be united, and when the point emerges for about half an inch, it is slightly drawn back. This throws the loose portion of the thread on its upper surface into a loop, which can be caught by the fingers and drawn out to any desired length as it unrolls from the reel. When the needle is withdrawn this portion can be cut off, and used for one of the interrupted sutures.

But perhaps the best suture, as saving time, is the ordinary sewing-machine stitch—which, I think, is new in surgery. The needle having been passed as before and the loop caught from the eye, the first loose "tail end" is drawn out without unthreading the needle. The latter is then passed for the next stitch and slightly withdrawn until the loop appears, which is caught and enlarged. Then the loose tail end of the previous stitch is passed through the loop and the latter is drawn home by withdrawing the needle, the finger meanwhile resting on the reel so as to stop it paying out thread. Then the needle is used as before, the loose end being passed through its loop, just in each case as the shuttle of the sewing machine passes through the loop of the thread as the needle in rising slacks the latter and throws it into a loop. This saves all the time and trouble of tying individual sutures until, of course, the last, which is fastened in the usual way. But care should be taken not to draw the stitches too tight, as one is decidedly inclined to do. Straight and

curved needles can be used, from the finest to the coarsest made for the sewing machine.

The two blades come asunder in a moment by turning the T-screws, and can be cleaned easily (Fig. 2). They are, I think, best sterilised for use by lying in strong spirit. The two or three reels, too, can be stored, charged with silk, in bottles of spirit. But the silk should previously be boiled in 1 in 20 absolute phenol solution before being wound wet on the reels.

The needle is designed for the smaller sizes of silk; the larger size needle will carry a fairly strong thread, quite enough so for a radical cure of hernia. But the reels will not carry much of the thicker sizes of silk; and, indeed, the latter would not run easily through the needle eye. But the smaller sizes do so easily, and as the reels can be put in position in a moment, if one is used up a fresh one from the bottle can be inserted. Each handle carries three reels, either with different sizes of silk or with a reserve quantity on one in case the first is used up. One reel will carry eight yards of stout thread, and of course very much more of the finer sorts. But it is for the use of the latter that the instrument was designed.

The principle of self-feeding needles is, of course, not new, as we have Sir Thomas Smith's for fine silver wire, and the late Mr. Greig Smith's for thread, but the present instrument is designed to meet objections which most surgeons have felt to these contrivances. I have shown my working model to Messrs. Meyer and Meltzer, who have now copied it for the benefit of any surgeons who may feel disposed to give it a trial. It has three reels instead of two as in Fig. 1. It only weighs a fraction over 3 ozs.

Like all sewing machines it requires some slight practice to render its use rapid and easy. This I have had myself in many cases, and find it very satisfactory and very simple. It saves much time, and the accuracy with which needles so held can be placed in the tissues is much greater than when the fingers alone are used. But it is well to emphasise again the fact that we are apt to draw the threads too tightly unless we are careful.

A CONTRIBUTION TO THE SURGERY OF HEPATIC ABSCESS CAUSED BY THE BACILLUS TYPHOSUS.

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So rare is the occurrence of hepatic abscess in enteric fever that Lannois,¹ on the authority of Schultz, of Hamburg, tells

us that it occurs only once in 36,080 cases.² Although they may arise as metastatic abscesses originating from some external focus of suppuration, or from the formation of typhoid ulcers in the biliary passages, most of the few cases on record have resulted from an infective suppurative pylephlebitis by direct extension from the intestinal ulcers. Such cases are reported by Lannois,³ Romberg,⁴ Asch,⁵ Buckling,⁶ Osler,⁷ and others. Such, too, was the origin of the case to which I shall presently refer; and all, with the exception of this last, were fatal. That some of these abscesses may now with propriety be treated by surgical methods is apparent from the following.

C. B., a female child of 5 years, had a mild attack of enteric fever followed by symptoms of a relapse. On December 8th, in about the eighth week of the disease from its commencement, Mr. Dacre asked me to see the case in consequence of the occurrence of a rigor, but for which no cause could then be assigned. The patient was considerably emaciated, but the breathing was quiet and the pulse fairly strong. The temperature, which had been markedly fluctuating for some weeks previously, was 104.6° at the time of examination.

A second rigor occurred on December 11th, and about a week later the cartilages of the seventh, eighth, and ninth ribs on the left side were found slightly everted, but not thickened. This condition appeared to be due to a swelling in the left lobe of the liver, which could be felt in the epigastrium about one inch below the ensiform cartilage. The swelling, which was tender on pressure, was regarded as an incipient pyæmic abscess.

A succession of rigors occurred on December 22nd, 23rd, and 30th, and on January 1st, each rigor being followed by marked collapse, and the general condition became one of great gravity. The temperature is shown by the accompanying chart.

Towards the end of this period the swelling in the epigastrium increased very rapidly, and on January 1st the sharp edge of the enlarged liver could be felt about midway between the ensiform cartilage and the umbilicus. No pulsation was detected over the swelling, no fluctuation

could be felt, and no friction sound could be heard. There was no displacement of the heart, and the right lobe of the liver was not enlarged in the axillary line. The child complained of pain, but tenderness was not now a marked feature. The general emaciation was extreme, but as the lungs and other organs appeared to be free from pyæmic infarction an operation was urgently advised, and in this Dr. Shingleton Smith and