

A NEW MECHANICAL DEVICE FOR INTESTINAL SURGERY

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Previous to the last quarter of the nineteenth century, operating for any purpose within the abdominal cavity was considered absolutely unjustifiable. Although earlier cases were reported as having recovered from such an operation, they were so rare as to have become historical. In the last quarter of the century the great Pasteur revealed to scientists the existence of germs and demonstrated their growth. Immediately after the publication of this epoch-making discovery, Sir Joseph Lister proclaimed to the world that now we had the secret of blood poisoning and infectious diseases. He began teaching the use of chemicals to destroy germs, such as carbolic acid, etc., for dressing wounds, cleaning instruments, sponges, dressing for wounds, hands of the operators and assistant nurses, etc., with astounding results. Listerism, or anti-septics, led up to the present ideal method of asepsis, one of the greatest scientific gifts to mankind. The laboratories came to the assistance of the surgeons. Antisepsis improved the condition of wounds, and surgeons began operating within the abdomen, but the mortality was great. The surgeons were not satisfied with their work. As a result the medical and surgical literature from 1880 to 1900 was enriched with original articles, especially dealing with intestinal survey. A new field of surgery was to be developed, new methods of sewing, new materials, new needles—nothing was satisfactory. Then a universal effort was made to develop new mechanical devices to take the place of sutures, and innumerable devices were tried and discarded in time. Meantime the method of suturing was constantly improving, and today a method rarely noticed in surgical literature has practically superseded all other methods and mechanical devices.

One of the greatest surgeons of the world, in a recent classical work on surgery, states that all mechanical devices for intestinal surgery are nuisances. But it is recorded that the same was said of the first steam engine. The facts are, that the mortality in

intestinal surgery is great, and that the present method of suturing is not satisfactory. Proof of this is evidenced by articles now appearing from noted research workers in the leading surgical journals, describing new methods of sewing and criticising former methods, exposing their defects and trying to achieve perfect asepsis, an almost impossible thing to accomplish on account of the unlimited number and variety of germs inhabiting the intestinal tract.

Each individual stitch must work perfectly or the result will be disaster. The greater their number, naturally, the greater the danger.

My new mechanical device requires no suturing. It involves the use of a rubber ring which obviates any possibility of leakage.

The intestinal clasp-ring is a mechanical device for safe and rapid end-to-end anastomosis. By means of this instrument the ends of the intestine are held in secure approximation, which prevents leakage and insures a complete union before the instrument becomes detached and is passed down the bowel.

The apparatus consists of a light metal tubular clasp, an inner cylinder and two thimble-like rings of the same material, and a rubber ring.

The procedure is as follows: A purse-string suture is placed in each end of the intestine to be approximated. The clasp part of the instrument is placed within one end and the ring part (previously tied with catgut to the rim of the cylinder) in the other end of the intestine, and both ends then tied firmly around the cylinder, which has been pushed part way into the tube of the clasp, the whole being held firmly by special forceps grasping the cylinder just between the two ends of gut. Grasping the clasp through the intestinal wall with the thumb and finger of one hand and the rings with those of the other, the two parts of the instrument are pushed together until they click into place. Then by pushing the outer metal ring forward, the rubber ring slides off the inner metal ring on the clasp, where it anchors all the layers of both ends of the gut, serosa to serosa.

The catgut holding the two parts of the instrument together temporarily is soon digested, permitting the two parts to pass along the intestine separately.

This instrument is an improvement upon, and the idea an outgrowth of, my former instrument, the intestinal dumb-bell, advocated for the same purpose and published in the American Medi-

cal Journal, January 6, 1906, together with the end-results of operations performed upon animals up to that time. The dumb-bell operation was justly criticized because an extra incision had to be made in the intestine, so the operation was not performed upon the human subject. Yet all the animals recovered and post-mortem inspections made after intervals of a few days to eight months showed perfect results, no contraction, and a minimum of scar tissue at the site of the operation.

The same principle that governed the previous operation governs the new procedure; that is, all the connective tissue of both ends of the gut is taken in one ligature. Any possible leakage or infection at the line of the union is thus prevented, and the connective tissue is held in place so that the serosa and muscularis, both of which quickly atrophy under pressure, can retract from the ring and unite end-to-end before the connective tissue is severed by tissue atrophy. This usually occurs in about six days.

The advantages of this method of intestinal anastomosis are: (1) the simplicity of the operation, (2) the absolute safeguard against leakage, (3) the short time required for operation, (4) the dispensing with the necessity of reinforcing sutures, (5) the short time which the instrument remains at the site of operation (due to the uniform necrosis of all connective tissue within 6 days), and (6) the minimum amount of scar tissue remaining.