

## ELASTIC LIGATURE IN INTESTINAL ANASTOMOSIS.

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There are not many surgeons in this country who have not, at some time within the last three years, done some experimental intestinal surgery, and the number of dogs sacrificed for the "advancement of science" are counted by the thousands. In no other way could this rapid advance have been wrought in so short a period. To Dr. Senn is due the credit of this desire to improve in the technique of intestinal surgery, and the advent of his decalcified bone plates marked a new era in this branch of our healing art.

The many modifications of his plates by eminent surgeons suggest to the reader's mind that something better is desired. The catgut mats and plates of Davis, the segmented rubber rings of Brokaw, and the plates of vegetable tissue of Dawbarn, are a few of the many methods devised by various surgeons, all of which I have used in my experimental work in the last two years.

When we recall the old and tedious method of joining the divided gut end to end, occupying an hour and a half of valuable time, well we may with joy herald the introduction of any operation which will reduce to a minimum the time of performing it, and thus rob the operation of one of its greatest dangers.

At the last meeting of the American Medical Association, the address on surgery was delivered by Dr. T. A. McGraw, of Detroit, selecting as his subject, "Use of the Elastic Ligature in Surgery of the Intestines." On reading the article in *THE JOURNAL* of the Association (May 16, 1891), I resolved to begin a series of experiments on dogs by this method, as described by Dr. McGraw. I sent to Milburn and Williamson, of Detroit, where the elastic ligature may be obtained at a trifling expense. By the 25th of May I had begun my work. The ligature is about the size of the lead in an ordinary lead pencil, very elastic and stout. By shaving the end of the ligature, it can be threaded on a needle much smaller than itself.

I quote Dr. McGraw's language as it is published—that is, that part of his paper describing the application of the ligature. "This is a decided advantage, for the reason that it is important to make as small a hole as possible through the intestinal wall, and also to have the ligature not only completely fill, but distend the hole, so as to prevent any extravasation of feculent fluid. Now, by stretching the rubber during its passage, rendering it thin and small, it may be easily drawn after the needle, and its subsequent contraction will largely increase its size and cause it to more than fill the orifice. The ligature was in most cases passed through the gut in its long axis and

at points most distant from the mesenteric attachment. Before passing it the bowels were stitched together by from three to six Lembert sutures, and afterwards similar stitches above the ligature served not only to give additional protection, but also to bury the rubber in the intestinal folds. Usually an inch or more was included in the ligature. After the cord had been drawn through both coils of the intestines, it was tied as tightly as possible in a square knot. Although the knot will ordinarily hold without further fastening, yet, as I wished to cut the ends very short, to cause as little peritoneal inflammation as possible, I always secure the ends so as to make slipping impossible. In tying the ligature, a silk thread is laid under it, first over the first turn of the knot and afterwards over the completed knot—this fastens the rubber against a possible slipping. In making the knot, the ligature should be drawn as tightly as possible without breaking."

In my experiments on fifteen dogs, I did not lose a dog from any cause. Antisepsis was observed as thoroughly as possible. My dogs were killed at various periods after the operations, and the results noted. I found the same condition of the effects of the ligature as described by Dr. McGraw. My dogs, rapidly recovering from the immediate effects of the operation, were up and eating in a few days.

In this short period, and with the very limited experience in doing an intestinal anastomosis by the elastic ligature, I am very favorably impressed with the method, and have made the following deductions:

1. It is an emergency method.
2. The ligature does not swell and produce undue pressure on any other structures than those intended to be cut through.
3. It is not acted upon by the alimentary juices, consequently cannot disappear before its work is completed.
4. It can be used in establishing the lumina of the gut in closing an artificial anus.
5. You do not get needles and threads tangled, as is liable to occur in applying any of the ring or plate devices.
6. Requires less experience and fewer assistants.
7. Does not open the gut until after plastic exudate has sealed the approximated surfaces, thus avoiding one of the greatest dangers in other anastomotic operations.
8. It is quickly performed, saving from fifteen to thirty minutes of valuable time to the patient.
9. The elastic ligature is so pliable and soft that no harm can possibly come from its presence in the intestines.
10. By using the elastic ligature and surrounding it with Lembert sutures, you bring and hold in contact as large or larger surfaces of peritoneum than you can get by any other operation.
11. The opening made is lined by mucous

membrane throughout, thus insuring its patency.

12. You do not produce any hæmorrhage from dividing the vessels of the intestines, as is often the case in using the plates or mats. This bleeding, although easily controlled, takes up some time to check it in many cases.

13. Its use is limited, and may be applied where there is a partial stenosis of the gut, or destruction in part of the intestine which will lead to a stricture if repaired. In the latter condition, the rent may be closed with Lembert sutures or resected, the ends inverted and closed in the usual way, and approximated by this method, and a communication will be established in four or five days.

14. This method finds special indications when an operation for cancer is performed, or for sloughing intussusception or hernia, stricture of any part of the intestinal canal where the obstruction is not complete or of long duration. All cases demanding an immediate relief by establishing the continuity of the canal, or within a period of four or five days, must be operated on by some one of the other methods.

15. Where it is necessary or advisable to make a large or long opening, as in operating on the large intestines, to prevent too much puckering of the walls of the gut, a double ligature can be applied, upon the principle of the "Tait Staffordshire knot," or the chain ligature of Dr. Peaslee, taking care to tie the ligature so the knot will come in the middle of the constricted and approximated surfaces, and is well closed in by Lembert stitches.

I recall one case in the human being in which I applied the approximation mats of catgut for the relief of a traumatic stricture of the ileum, the patient dying from shock a short time after the completion of the operation, I believe in part due to the almost unnecessarily prolonged time occupied in making anastomotic openings, introducing mats, untangling threads, want of more experience and skilled or trained assistants, all combined, taking up much valuable time. With the elastic ligature operation I believe this case would have recovered.

Dr. McGraw, in his able address, has left so little unsaid of his method and its results, that I refer the reader to his article.

I desire to thank Dr. Salthouse and Mr. Tull, a medical student, for valuable assistance rendered while carrying on my experimental work.

IN EVERY case of hysteria, whatever be the condition of the locality giving rise to the special symptoms, there is a pathological condition of the central cortical cells, and to these you must address your attention if you hope for success in the treatment. You cannot afford to scout the idea of disease simply because the peripheral lesion does not correspond to the symptoms existing. Disease just as important and far more troublesome is present, and will require the skill of the most expert for its mastery.—*Lancet Critic.*

## SALPINGITIS; WITH A REPORT OF TWO CASES.

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It has been but a few years since we have known much regarding diseases of the Fallopian tubes. Thirty-three years ago Bernutz, in his writings, clearly described the pathology of pelvic inflammations. But little advance, however, was made until Mr. Lawson Tait, in 1872, made known his remarkable success in removing diseased tubes by laparotomy.

The writings of Battey, in America, and Hegar, in Germany, on the removal of ovaries for other diseases than that of ovarian tumors had much influence in developing the proper method in treating diseases of the uterine appendages.

It was not until 1882-3 in America that the operation of laparotomy was made for removal of diseased tubes, the first operator being W. Gill Wylie, of New York.

During the years 1883-4 numerous cases were operated upon for salpingitis by gynecologists and surgeons, since which time the operation has been very frequently performed.

Previous to the investigations of such men as Bernutz, Tait, W. Gill Wylie and others, characteristic cases of salpingitis were very common, and went under the name of pelvic cellulitis. W. Gill Wylie claims it was true in this country until before 1882-3, since which time we find pelvic cellulitis to be a rare disease, and very seldom existing except as a phlegmon in puerperal cases.

Many of the cases we formerly looked upon as fresh attacks of old pelvic cellulitis we now find to be local peritonitis due to salpingitis.

Salpingitis does not have its origin in the Fallopian tubes except in rare cases, but is usually the result of extension of disease from the endometrium.

W. Gill Wylie says: "It is difficult to conceive a salpingitis starting up as a primary disease independent of any disease of the uterus or ovaries. It is generally conceded that it is due in almost all cases to the extension of inflammations from the uterus to the Fallopian tubes, and that endometritis, whatever be the cause of it, is liable to result in salpingitis."

According to Wylie's ideas, which are doubtless correct, anything that will cause endometritis may, by extension of the inflammation, produce salpingitis, as gonorrhœa, sepsis after abortion and labor, syphilis, tuberculosis, pessaries (stem in particular), unclean sounds, intra-uterine injections, sponges and other kind of tents.

Salpingitis may also be caused from tubal pregnancy. Anything that obstructs drainage