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The Disadvantages of Non-absorbable Sutures in Operations for the Radical Cure of Hernia.

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THE DISADVANTAGES OF NON-ABSORBABLE SUTURES IN OPERATIONS FOR THE RADICAL CURE OF HERNIA.*

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In a paper entitled Observations upon the Mechanical and Operative Treatment of Hernia at the Hospital for Ruptured and Crippled, written by Dr. Bull and myself, and published in the *Annals of Surgery* in May, 1893, the statement was made that we should discard all methods in which foreign bodies, even though aseptic, silk and silver wire, for instance, were buried in the wound of a hernia operation. Since that time there has been gradually accumulating such a mass of clinical evidence in support of this view that, if properly presented and clearly understood, I believe to be sufficient to convince every fair minded surgeon. In a recent paper on the operative treatment of hernia, read before the New York Surgical Society, I endeavored to bring out the objections to non absorbable sutures in hernia operations. These objections were not

* Read before the Section in General Surgery of the New York Academy of Medicine, November 11, 1895.

theoretical, but based upon cases actually observed at the Hospital for the Ruptured and Crippled during the past five years. Four cases were then cited in support of the objections.

To these I have added ten others observed at the Hospital for Ruptured and Crippled during the past year, and the histories of which have been verified from the records of the hospitals at which the original operations had been performed.

Case I.—A man, aged fifty years. Operation, December 20, 1893. Silk was used for buried sutures. There remained an unhealed sinus the following March. Three silk sutures had come out at different times, and on opening up the sinus two more were removed by the surgeon. Relapse occurred four months after operation.

Case II.—A man, aged thirty-nine years. Operation, May 15, 1891. Silkworm gut was used for buried sutures. A sinus followed and was two months in healing, several sutures having come out in the mean time. Relapse in this case occurred in a few months.

Case III.—A man, aged twenty-seven years; reducible inguinal hernia. Modified Macewen operation, silver wire being used for the buried sutures. The patient was seven weeks in the hospital, and two months later there remained an unhealed sinus discharging pus. The sinus had to be opened up and the offending sutures removed before healing took place. Relapse occurred a few months later.

Case IV.—A man, aged forty-four years. Operation, April 20, 1888. Under treatment for sinus until October, 1888. Hernia recurred shortly after. Silk had been used for the buried sutures.

Case V.—J. B., a man, aged thirty-four years; double inguinal hernia. The left side had been operated upon in June, 1894, and again in August, 1894, for recurrence. The right side was operated upon December 3, 1894. On February 19, 1895, examination showed the centre of the right cicatrix still unhealed (two months and a half after operation), and a distinct recurrence on both sides. Silk had been used at all the operations, as proved by the hospital records.

Case VI.—A. K., a man, aged fifty years; right inguinal hernia. Operation, December 20, 1893. Silk was used for the buried sutures. A sinus followed the operation and persisted till March, 1894, when three or four silk sutures were extracted. The sinus was later scraped out and two more sutures removed. The rupture recurred shortly after. A second operation was performed for the recurrence March 8, 1894, at the same hospital by another surgeon. This time silkworm gut was used for the buried sutures.

In June of the same year a second recurrence followed.

Case VII.—A man, aged forty-six years, with left inguinal hernia of two years' duration and had never worn a truss. Operation was performed in October, 1894, and silver wire was used for the buried sutures. He remained seven weeks in bed. Some sutures had to be removed before he was discharged from the hospital. The patient was first seen by myself on May 7, 1895, seven months after the operation. Examination showed a cicatrix in the left inguinal region three inches long and half an inch wide. At the centre of this cicatrix was a sinus half an inch deep, discharging pus, and evidently leading to a buried wire suture. The hernia had recurred. He was sent to the New York Hospital for operation.

Cases VIII and IX.—I. G., a man, aged fifty-six years; double inguinal hernia of two years' duration. The hernia was of the size of a goose egg on the right side and only a bubonocele on the left. Operation, December 8, 1894. He was three months in the hospital, and there was a sinus on both sides when he left the hospital. These failed to close for six months, and during the entire time he was in much pain and unable to work. When seen on May 17, 1895, five months and a half after the operation, there was a recurrence on the right side the size of a fist. The sinus had healed.

Cases X and XI.—I. R., a man, aged forty years; double inguinal hernia. Bassini's operation on both sides. Buried silk sutures. Persistent sinus on both sides. Double relapse two months later. The patient was operated upon on May 17, 1895, by the Bassini method. He remained in bed seven weeks after the operation.

When first seen, July 13, 1895, examination showed a cicatrix three inches long in each inguinal region. Considerable induration was present on both sides, and in about the centre of both cicatrices there was a deep sinus discharging pus. No impulse was present on coughing. I saw the patient again September 20th, and a recurrent swelling of the size of an egg had taken place on the left side and slightly larger on the right, both undoubtedly due to the weakening of the walls by the constant discharge.

Case XII.—A man, aged forty-five years. The patient had had a hernia one year previous to operation. The operation was performed on January 26, 1895, by Bassini's method, and silkworm gut was used for the buried sutures. The wound healed primarily, but before his leaving the hospital a small sinus appeared from which a slight discharge issued. Shortly afterward another sinus appeared in the line of incision, and these never closed until August 20, 1895, eight months after the operation, when a small incision was made and two silkworm-gut sutures were removed, the larger of which I show you to-night. When I first examined the patient, September 5, 1895, the sinus had healed and there was no hernia. On October 3, 1895, there was a well-marked relapse in the form of a swelling of the size of a small egg in the upper part of the cicatrix.

Case XIII.—A man, aged fifty-two years, with right inguinal hernia. Operation, February 20, 1888. The hernia recurred a few days after his leaving the hospital. A second operation was performed on April 6, 1888. The patient was unable to work on account of a sinus from May 27 to October 24, 1888. The hernia recurred shortly afterward. A third operation was performed February 9, 1892, by Bassini's method. Silkworm-gut sutures were used. Perfect primary union followed. No truss has been worn since operation. On June 4, 1892, irritation about wound became evident and one silkworm-gut suture was removed at the New York Hospital. The patient had no further trouble until July, 1894, two years and a half after operation, when signs of irritation at the site of incision again became manifest.

Under ether an incision was made and a silkworm-gut suture an inch and a half in length was removed. The wound healed well and remained in good condition until October, 1895, three years and eight months after operation. On October 24, 1895, I examined him and found at the site of last incision marked induration, with some redness and considerable tenderness. A third suture was removed two days later by Dr. Weir at the New York Hospital.

Case XIV.—A man, aged twenty-three years, with right inguinal hernia of thirteen years' duration and of the size of an egg. Operation was performed in May, 1890. Primary union followed. Two months later a small abscess appeared in line of the cicatrix. A discharging sinus remained until December, 1890, when a silkworm-gut suture was removed at the New York Hospital. The sinus healed, but the hernia recurred shortly after. Examination, January 8, 1896, showed a hernia of the size of an egg.

Case XV.—A man, aged sixty years, with right inguinal hernia of twenty years' duration and of the size of a cocoanut. Operation was performed in December, 1894, by Phelps's method of the "wire-mattress" suture (twelve feet of wire was used). Examination, November 20, 1895, showed a cicatrix three inches and a half long, with a sinus the size of a lead pencil at its centre and three quarters of an inch deep. A mass of unhealthy granulation tissue was at the site of the sinus, and the discharge was considerable. A wire suture could be felt at the bottom of the sinus, but it was too firmly fixed to be withdrawn. The patient was sent to the New York Hospital, and five inches of silver wire were removed by Dr. Weir. No relapse had as yet occurred in this case, but the patient had been more or less incapacitated for work for nearly a year.

Case XVI.—A man, aged twenty-four years. The hernia had existed but twelve days before operation, and was very small. A double Bassini operation was performed on August 12, 1895. Silk was used for the deep sutures. He remained in the hospital from August 12th to September 15th. The wound had nearly healed when he left the hospital. Examination, December 27, 1895, showed in the middle of the left cicatrix a deep sinus discharging a considerable amount of thick pus. There was no protrusion.*

My personal experience with non-absorbable sutures in hernia operations is confined to three cases in which silk was employed. In one of them, operated by Czerny's method, the wound healed by primary union, but soon after leaving the hospital a sinus formed in the cicatrix and refused to heal until the offending sutures had been extracted. The canal had been so weakened by the slow suppuration that relapse occurred three months after the operation, although a truss was worn the entire time. A second operation was then performed, this time by Bassini's method, with kangaroo tendons for the buried sutures, and the patient is now perfectly sound, three years after operation, without ever having worn a support.

In two cases operated upon by the Bassini method silk was used. In both the wound failed to heal by primary union. In one the sutures all sloughed out, and relapse occurred shortly after leaving the hospital. In the third case moderate suppuration occurred, necessitating keeping the patient in bed after five weeks. The sutures did not come out, and the patient had no recurrence three years after operation.

In two hundred and fifty cases of hernia operations in which I have used kangaroo tendon for buried sutures I have not had a single instance of sinus formation, and the percentage of primary unions has been ninety-six per cent.

* Cases XV and XVI were observed after the paper was read.

These cases, I believe, require little comment further than the statement that they were operated upon by the leading surgeons of this city, men whose reputation for careful aseptic work is a sufficient guarantee that the results were not due to faulty technique. The non-absorbable sutures, acting as foreign bodies, must alone be held responsible for these results. Schimmelbusch, in his recent book upon *The Aseptic Treatment of Wounds*, page 121, states: "It has more than once been observed that in primary closure of wounds by silk or silver wire the ligature, at the beginning well imbedded in the tissues, after a long period of time becomes repelled and suppurates out. The primary union is satisfactory, but after weeks or months an abscess forms in the line of suture, whereupon a fistula develops, and from the latter the disturbing ligature escapes. Lister introduced six deep hemp sutures into the wound of an extirpated goître, and after union observed the extrusion of all six in succession in the course of eight or nine months. The imbedded silk or silver wire simply remains as a foreign body in the tissues, of which the organism endeavors to free itself as soon as a favorable opportunity presents." The slowly healing sinus, with all the attending annoyance and discomfort, is the least of the evils. It will be noted that in nearly all the cases reported the constant suppuration so weakened the tissues that relapse soon followed.

Every abdominal surgeon of large experience knows that silk sutures, even when buried within the abdominal cavity, not infrequently find their way out in various ways. The presence of a suture in a hernia canal after firm union has taken place results rather in harm than benefit. Even the tendinous structures that go largely to make up the walls of the hernia canal require no more than eight to ten weeks for firm union.

The ideal suture, then, would be one that would hold the parts in apposition for this length of time and then disappear by absorption. In kangaroo tendon we have these conditions perfectly fulfilled. There has never been observed at the Hospital for Ruptured and Crippled a single case of delayed healing sinus when tendon or absorbable suture was used.

Unless those who use and advocate silk, silkworm gut, or silver wire in hernia operations are able to present some advantages to offset the serious disadvantages that have been demonstrated, I believe these non-absorbable sutures should be entirely abandoned.