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OPERATIONS FOR THE CURE OF VESICO-VAGINAL FISTULA.

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THE following cases are not reported on account of any unusual success of treatment. A single operation frequently gives a greater proportion of cures than was obtained in the six cases to be narrated. They only show, what is not generally enough appreciated, that the distressing condition entailed by a vesico-vaginal fistula may be recovered from by a very large proportion of its subjects.

I.—C. S., æt. 30; wife; born in Ireland; mother of two children. Entered Massachusetts General Hospital Aug. 25th, 1863. Her first labor was accomplished by the aid of forceps. Three months since she was again delivered, without instruments, after sixty hours of labor, the child dying almost immediately. One week after this confinement she noticed that her water dribbled away without control, and the incontinence finally reached such a degree that no urine passed by the urethra. On examination, there was found a fistulous opening of the vagina into the bladder, an inch and a half behind the meatus urinarius. It was about one eighth of an inch in diameter, and lay at the bottom of a dimple in the vaginal wall, half an inch to the left of the median line. Around the fistula the vesico-vaginal septum was extremely thin—so thin, that to refresh and approximate its edges would require enlargement of the opening to an aperture three-fourths of an inch in diameter. After unavailing efforts at obliteration by the use of caustics, an operation adapted to the peculiarity of the case was performed, Sept. 8th, 1863.

The bowels having been cleared by an enema, preceded the night before by a cathartic, the patient was placed upon her back in the position for lithotomy; the fistula was well exposed by broad and long spatulæ, two of which, the lateral ones, bent at right angles, were managed by the assistants supporting the patient's legs, while

VOL. LXXI.—No. 2

a third, bent to a pot-hook shape, depressed the posterior wall of the vagina and was controlled by the operator himself, through the medium of a loop of bandage fastened to the protruding curve of the spatula, and in the bight of which his foot was placed as in a stirrup.

Operation.—This consisted in denuding of its mucous membrane the entire vicinity of the fistula, without enlarging it, over an elliptical-shaped space extending three-fourths of an inch in front of and behind, and more than an inch laterally from, the orifice. A flap was then raised from the vagina behind the fistula, as thick as safety permitted, and dissected up enough to avoid tension, and permit its being slid forward so as to cover over the denuded surface previously prepared, its free edge being met by a lip turned up along the anterior border of the latter. A tubular needle, armed with silver wire, was entered in front, towards the urethra, half an inch anterior to the limits of the dissection, carried carefully backwards through the tissue intervening between the denuded surface and the mucous membrane of the interior of the bladder, and not allowed to come in sight until it emerged half an inch beyond the posterior flap. Four ligatures were passed. As each of these was introduced, the bladder was explored with a silver catheter to make sure that the needle had not gone entirely through the parietes. The ends of the wires, after all had been introduced, were twisted together as in an ordinary silver suture, no clamps, quills, buttons, or the like being used. Some of the stitches were found on their removal to have made a loop of an inch and a quarter in circumference.

The operation being completed, a flexible male catheter was introduced and retained in the bladder by adhesive straps attached to each thigh; it was directed to be removed daily and washed; the urine which escaped by it was received in a long urinal left lying between the thighs. A grain of opium was to be taken every night to constipate the bowels. The diet to be light and nourishing, of broth or chicken. Patient to lie only on her back.

Sept. 18th.—Sutures removed and the catheter dispensed with. Has been perfectly comfortable since the operation.

20th.—Bowels moved without any accident to the fistula, and for the first time since the operation.

22d.—Sits up for the first time.

24th.—Discharged cured, with the advice not to go, for a month to come, longer than two or three hours without evacuating the bladder.

II.—J. B., æt. 35; born in Ireland. Admitted to the Massachusetts General Hospital July 13th, 1864. Confined for the first time ten months since, after a labor of forty-eight hours, and an instrumental delivery, of a dead male child. Ever since her recovery, which was rapid, she has had imperfect control over her urine, al-

though at times able to retain it an hour and to keep herself dry during the day. Has menstruated twice since her confinement, and then but scantily, the last time about two weeks ago. On examination, the parts were found in a healthy and clean condition. The vagina was very much contracted, hardly admitting the forefinger. About an inch within the ostium a stout band, extending from the anterior to the posterior wall, divided the canal into two separate halves and arrested the further entrance of the finger. On dividing this, the fistulous opening was found behind it, small in size, and, as in the preceding case, surrounded by very thin walls. It was situated about midway between the os uteri and the meatus urinarius.

July 17th.—*Operation.*—The patient's bowels having been thoroughly cleared out, ether was given, and she was brought into proper position over the foot of the bed, and before a good light. In order to gain access to the fistula for the purpose of operative procedures, it was necessary to get rid of the constricted condition of the vagina; this was effected by long and pretty deep incisions on each side of the vagina, extending from the os uteri to the labia majora. Annoying, though not serious hæmorrhage followed. An operation similar to that in Case I. was then performed, eight silver sutures being used. The elastic catheter was introduced, and the usual directions given as to diet, opium, &c. A considerable amount of abdominal uneasiness was complained of for two or three days after the operation, and apparently due to the constipation. It disappeared after a few hot external applications.

July 20th.—Free from pain. Eats and sleeps as before operation.

31st.—Bowels opened by enema, the first time since July 17th.

August 1st.—Sits up two hours at a time, without the catheter.

2d.—Stitches removed under ether.

3d.—Catheter dispensed with.

6th.—Discharged cured; no leaking having occurred since the day of the operation.

III.—A. M., æt. 21; widow; born in Boston; mother of two children. Entered Massachusetts General Hospital April 24th, 1864. Four years since was delivered of a living child, by instruments, after sixty hours of labor. Subsequently, by a natural labor, at the seventh month of pregnancy, she was again delivered of a living child. An involuntary escape of urine immediately followed her first confinement and has continued ever since, no portion of the secretion being retained or passing by the urethra. On examination, there was found, three-quarters of an inch in front of the os uteri, a triangular-shaped fistula, large enough to permit the passage of the forefinger, lying at the bottom of a deep depression formed by the inversion of the mucous membrane of the vagina. The neighboring parts were in a healthy condition.

April 26th.—*Operation.*—The bowels having been thoroughly emptied, the vagina was exposed, as in the preceding cases. The

sides of the sulcus around the fistula were largely denuded, without increasing the size of the opening itself. This was accomplished by the use of both knife and scissors. Ten sutures of silver wire were then introduced by means of a tubular needle, and three of these were carried through the anterior lip of the os uteri. Although the long diameter of the fistula was antero-posterior, the extent to which the tissues surrounding it were removed permitted the refreshed surfaces to be brought together in a transverse linear wound two and a half inches long. The aperture was effectually closed and the leaking ceased. A gum-elastic male catheter was placed in the urethra, which from long disuse had become contracted; a urinal between the thighs received the urine from the catheter. A grain of opium was directed to be taken at night, and each succeeding night, until otherwise ordered. Bread, milk and broth for diet. Decubitus to be dorsal.

April 28th.—A very considerable hæmorrhage commenced, unattended by any pain or symptoms which the patient herself could ascribe to menstruation; its amount and watery character, though there were some coagula, made it presumable that the urine was escaping by the wound. This continued until May 1st, when it ceased spontaneously. During its occurrence, the flow of urine through the catheter was not interrupted or diminished in quantity, and at no time tinged with blood. As the catamenia had been absent for three months, it would seem, from its history and phenomena, that this hæmorrhage was probably a menstrual one.

April 30th.—Bowels moved in spite of the opium, as also on May 1st, 2d and 4th. The diet was therefore changed to solid food, with beef-steak. Eight grains of subnitrate of bismuth were directed to be given night and morning.

May 6th.—Catheter removed and patient permitted to sit up. Is waked every two hours at night to pass her water, which she does without difficulty. No constitutional disturbance has at any time followed the operation.

10th.—Over-confidence in her capacity to prolong the retention of her urine led her to go last night five hours without being waked. In consequence, after thirteen days of entire absence of leaking, four of which had been passed without any reliance upon the catheter, the escape of urine by the vagina recommenced.

16th.—Stitches removed. Fistulous opening which now remains admits only a female catheter.

June 16th.—Patient re-admitted to the Hospital. Fistula about the same size as at the last report. Its vicinity was again refreshed and the vaginal parietes dissected up into large flaps, which, owing to the tension of the cicatrices of the previous operation, it was found could now only be approximated laterally. Eight silver sutures were introduced. Directions as after the previous operation were given.

30th.—Bowels moved for the first time since the operation. No leaking.

July 5th.—Catheter left out for two hours.

7th.—Stitches removed under ether. Examination reveals a sound, smooth, and perfectly tight cicatrix.

9th.—Sits up all day without the catheter. Wears it only at night.

12th.—Omits catheter altogether. Passes her water three times in the night.

15th.—Discharged cured. At no period during the two operations to which this patient was subjected did she show any symptoms of febrile or inflammatory reaction.

IV.—E. D., æt. 41; wife; born in Ireland. Entered Massachusetts General Hospital Aug. 15th, 1863. In January of the present year was delivered of her first child, a girl, stillborn. The labor lasted three and a half days, and was accomplished without instruments. She kept her bed for three weeks afterwards, and during this period discovered that she could not control the escape of her urine. On examination, a fistula, one third of an inch in diameter, was found about midway between the os uteri and the neck of the bladder.

Aug. 16th.—*Operation.*—The bowels having been well evacuated, the patient being etherized, the vesico-vaginal parietes were punctured, about one-sixteenth of an inch from the margin of the fistula, with a narrow, pointed knife, which, without being withdrawn, was made to remove a ring of tissue, in the centre of which was the aperture constituting the fistula. Three ligatures of waxed silk brought the fresh cut surfaces into exact apposition, the resulting wound being one inch long and transversa in direction. It was ordered that the urine should be drawn every two hours, night and day; that the bowels should be kept constipated by opium, and that the diet should be of broth, vegetables and bread.

Aug. 22d.—Sutures removed. Edges of wound nearly united.

26th.—Patient left the Hospital against advice. In January, 1864, her physician wrote that in the middle of December, he was informed by her that no further inconvenience was experienced, and that she was entirely recovered.

V.—M. E. F.; aged 23; wife; American. Entered Massachusetts General Hospital Nov. 2d, 1863. Confined with her first child under the care of a homœopathic practitioner July 6th, 1863. The physician who recommended this patient to the Hospital, gave the following account of her case:—"The labor, as I understand, was very tedious. I was called in at the end, and found the head entirely free, the shoulders arresting further progress. The attendants told me this state of things had continued for five hours, and that attempts had been made to finish delivery by direct traction on the head and by application of the forceps. I inserted a finger into the axilla and delivered with very little difficulty." Two or three days

VOL. LXXI.—No. 2*

after the birth of the child, it was apparent that there existed a vesico-vaginal fistula, and on examination, Nov. 4th, an opening into the bladder was found close to the left side of the vagina, about two and a half inches from the meatus of the urethra. This did not exceed one quarter of an inch in diameter, but through it the entire urinary secretion leaked away.

Nov. 5th.—*Operation.*—The edges of the fistula were carefully pared at the greater expense of their vaginal aspect, and in such a manner as not to include in the removal of the margin any portion of vesical mucous membrane. They were then brought together by four silver sutures. These were introduced with difficulty, owing to the lateral position of the fistula, and the narrowness of the vagina. The bowels, which had been opened by a cathartic and an enema prior to the operation, were ordered to be kept constipated by opium. A flexible catheter was introduced and retained in position, and the patient was kept lying upon her back.

11th.—A little leaking.

12th.—Sutures removed. A day or two later the patient returned to her home.

Dec. 11th.—Re-entered Hospital. Reports herself able to hold her water sometimes as long as two hours, always one hour. On examination, the fistula was found reduced to such a size as only to admit the head of an ordinary probe.

13th.—An operation similar to that described in Case No. I., was performed. The flap which was slid over the fistula was so large that nine silver sutures were introduced. These were allowed to remain in place until Dec. 22d, and on the 28th the patient was discharged cured of her infirmity, not a drop of urine having escaped by the wound after the operation was completed. No febrile disturbance followed this or the previous operation. She was cautioned against retaining her water for too long a time, or too soon allowing the approaches of her husband. A letter from this patient in Feb., 1864, confirms the completeness of her recovery.

VI.—B. K., aged 35; wife; born in Ireland, mother of four children. Entered Mass. General Hospital Oct. 17th, 1863. Five weeks before was delivered by instruments of a dead child after twenty-four hours of labor. All her previous children were born without difficulty, so little, "that not even the women in the house would know she was sick." One week after the above-mentioned confinement, she found herself unable to control the escape of her urine, and this disability has gone on increasing for the worse up to the present time. Naturally a robust woman, her sickness and the irritation of the integuments produced by the constant escape of urine, which has excoriated the vulva and insides of the thighs, have greatly reduced her strength. On examination, the entire base of the bladder, from its neck to the os uteri, is found to be deficient, constituting a fistula which permits the admission of three fingers. The superior

wall of the bladder makes a hernial protrusion through this opening, and displays a bright-red mucous surface. The irregular borders of the fistula, composed of the contracted remains of the vesico-vaginal septum, are covered with phosphatic deposit. Rest in bed, cleanliness, vaginal injections with an acidulated wash, the free application of glycerine, a nourishing diet, with a bottle of ale daily, brought this unfortunate woman in the course of a week into fit condition for operation.

Oct. 25th.—*Operation.*—The puckered borders of the fistula were unrolled and dissected up from the mucous surface of the interior of the bladder so as to make loose and extensible flaps, and, without any new loss of substance, they were brought together by eight silver sutures. Three of these it was necessary to carry through the superior lip of the os uteri. A flexible catheter was introduced to be retained, and a course of treatment similar to that described in the preceding cases ordered to be observed.

29th.—A little leaking was perceived.

Nov. 3d.—Sutures removed. Three days later the patient returned to her home.

Dec. 22d.—Re-entered Hospital. On examination it was found that the fistula was reduced to a size which only admitted the tip of a female catheter, occupying a position so near the neck of the bladder as almost to encroach upon the urethra. Several days of rest and attention to cleanliness were necessary to bring the patient into a state suitable for a second operation. This was performed Dec. 27th, and in a manner similar to that pursued in Case I., and in the second operation of Case IV. Eight silver sutures were introduced.

Jan. 5th, 1864.—Sutures removed.

6th.—Sitting up. Says she can retain her water half an hour.

A few days later this patient left the Hospital and did not again apply for admission.

Remarks.—The cure of vesico-vaginal fistula by operation is an achievement, the principal honors of which belong to American surgery. It is comparatively but a few years since (1839), that in the Massachusetts General Hospital, one of the earliest, if not the earliest, successful operation for the cure of this infirmity was performed, and two of the principles now deemed essential in its execution were first put in practice by one of its surgeons, the late Dr. George Hayward. These were, passing the sutures so as not to wound the inner surface of the bladder, and, paring the edges of the fistula without involving the vesical mucous membrane. Dr. Hayward also insisted upon the importance of diminishing to a minimum the size of the thread used for sutures, and thus anticipated one of the conditions which subsequently led to the adoption of silver wire in place of silk. These innovations have unquestionably contributed more towards ensuring the success of an operation now so frequently prac-

tised with the best results, than any of the numberless ingenious devices which have been suggested at different times within the last few years. That such is the case is shown by the fact that the various modifications of buttons, clamps, bars, &c., heretofore relied upon to assist in holding together the edges of the wound, are now abandoned as unnecessary by those surgeons who have given special attention to details, and who have been most successful in their operations.

Although different points are insisted upon by different individuals as influencing essentially the success of operative treatment, all agree upon the importance of the following:—

1. In forming the flaps or refreshing the edges not to molest the mucous membrane of the bladder. To make the surfaces approximated as broad and extensive as possible.

2. To place the sutures at a long distance from the edges of the wound; not to penetrate the mucous membrane of the bladder; to have no fear of introducing too many; not to remove them until the lapse of ten days, or even a longer period, and to make no digital or instrumental exploration of the wound until the removal of the sutures becomes necessary.

3. To retain a flexible male catheter in position during the treatment. This should have large eyes and be of such a size as to fill the urethra and prevent the escape of urine along its sides. It may conduct to a urinal lying between the patient's thighs (the preferable method), or lead to a vessel outside the bed by means of an elastic tube connected with the end of the catheter. Dependence upon it should be continued for a fortnight.

4. To arrest the action of the bowels by opium until after a cure is effected, or the failure of the operation is decided. One grain every other night will usually accomplish this result.

Although, in the cases above related, these rules were not in each instance fully observed, there was cause for regret whenever their details were disregarded. Case IV., which, from the favorable condition of the parts for an operation, I was tempted to consider so easy of cure as to be amenable to the simple bringing together of its refreshed edges with silk sutures, would, I am convinced, have united by first intention, if, by dissection, broad surfaces had been brought in apposition and silver sutures used. Case III. failed at the first operation only from the too speedy removal of the catheter.

A small fistula is often as difficult to close as a large one; and any operation which requires that the edges should be refreshed tends to enlarge the opening, rather than diminish its size, if the result is unsuccessful. For the suggestion of sliding a flap over the fistula, its edges being left untouched, and which I believe is a valuable method, I am indebted to Dr. S. Cabot. Large fistulæ, as they can hardly be made worse, so far as the patient's condition is concerned, permit unhesitatingly of extensive dissection, while the bring-

ing together of broad and vascular surfaces, thickened by the deposition of lymph, is more likely to lead to union at a first or in a subsequent operation, than when smaller and thinner flaps can alone be made use of. Of the six operations of which a report has been given, five resulted successfully; the sixth only failing perhaps of a final favorable termination from the patient's want of perseverance, the fistula having been reduced from an opening of very large size to one not exceeding the diameter of a silver catheter. No fever or constitutional disturbance followed the operations in any instance; and the only complaint made was of the confinement to one position (on the back). Liberal diet was always allowed from the outset, and "House diet" after the first few days.

The preceding cases, so far as they go, confirm the opinion already supported by statistics, that it is prolonged labor, and not the use of forceps, which most frequently causes vesico-vaginal fistula. The early application of the latter finds, therefore, in this fact, an argument in its favor. Of sixty-two cases of fistula treated at the London Surgical Home, the lesions followed labor of upwards of twenty-four hours in no less than fifty-one instances. Instruments were used in thirty-one of the cases, and in four of these only had the labor been of less than twenty-four hours duration. With some exceptions, the patients had been thirty-six hours or more in labor before the instruments were used. (See *Lancet*, March 5th, 1864.)

Boston, August, 1864.

CASES OF GUN-SHOT WOUNDS.

By JOHN G. BLAKE, M.D.

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THE following cases, although presenting nothing very peculiar, yet contain one or two points of interest in connection with the subject of gun-shot wounds. To our professional brethren in the field such cases are of every-day occurrence, but to those who have not their opportunities of enlarged observation, even moderately difficult ones assume a certain importance in their every-day life. The difficulty frequently experienced in tracing the course and detecting the presence of musket or rifle balls is well known, and their extraction is by no means of easy accomplishment. Some writers even recommend that it should not be attempted if the operation necessary to allow extraction requires extensive injury to important structures, and we can readily conceive where such interference would be highly injudicious. These are, however, merely exceptional; the grand rule in military surgery is—when you find the ball, remove it.

CASE I.—Lieut. K., Mass. Vols., was struck in the neck, during one of the battles about the middle of May, fought in the vicinity of the Wilderness, in the movement towards Richmond under General