

(2) Previous to 1868, the date of Neumann's first paper on the origin of the blood, there was a general belief that red corpuscles were formed from the white by the loss of the nucleus and the acquisition of hæmoglobin during circulation. Even Neumann and Bizzozero, following Kölliker and other preceding investigators, said in their first papers that it was from leucocytes that red corpuscles developed. Later they both retracted their assertions since they could not find any transitional forms, and to-day the time-honored theory is completely abandoned.

(3) Arndt,²⁸ who wrote much more recently, thought that in cases of strong anæmia portions of red corpuscles broke off and developed into new ones. Such a method of origin and growth seems directly opposed to the first principles of biology, and consequently the theory has never been accepted.

(4) Hayem,²⁹ who may be called the rediscoverer of the blood-plates which he named "hæmatoblasts," regarded them as young red globules incompletely developed, originating from the protoplasmic portion of the white, colorless corpuscles of the blood. Since "hæmatoblasts" are always found in increased numbers after direct loss of blood as in hæmorrhages, or after indirect as in fevers, or in chronic anæmia, he thought he had a sufficient argument to show that they are young corpuscles in process of development. Hayem³⁰ also finds another origin of his hæmatoblasts in the interior of the vaso-formative cells of Ranvier and Schäfer. Neumann³¹ declares that Hayem has described under the name of hæmatoblasts two entirely distinct structures, (1) colored hæmatoblasts which are merely broken-down red corpuscles, and (2) uncolored hæmatoblasts or true blood-plates. Hence Neumann concludes that it is not at all strange to find increased numbers of hæmatoblasts in diseased and anæmic persons, for it is in those persons that the most active destruction of red corpuscles takes place. Pouchet,³² who has written a great deal of useless matter upon the subject, began by believing the hæmatoblasts of Hayem to be derived from leucocytes. His final view was that they arise in the plasma of the blood as the result of a process something like the formation of fibrin. It is needless to say that the theory never received any attention. Like Hayem, he thought that hæmatoblasts develop into corpuscles. This theory of Hayem's has received some support from Feuerstack,³³ for he regards Hayem's hæmatoblasts as young forms of the white blood-corpuscles, which latter become impregnated with hæmoglobin, thus forming red corpuscles. However, Hayem's theory may be said to-day to be almost completely abandoned.

(5) The theory which prevails at present is, without doubt, the true one. It is that red corpuscles develop from the so-called "erythroblasts" found normally in the marrow of the bones, in the foetal liver and rarely in the spleen and lymphatic ganglia of the adult. This theory is so extensive that it forms the third portion of the paper.

(To be continued.)

²⁸ R. Arndt: Untersuchungen an den rothen Blutkörperchen der Wirbelthiere. Archiv. f. Path. Anat. (Virchow), Bd. 83.

²⁹ G. Hayem's numerous papers are scattered widely through the Comptes Rendus d. l. Soc. de Biol. for the years 1877-1879, inclusive.

³⁰ G. Hayem: Compt. Rend. d. l. Soc. de Biol., vol. xxx, 1878, p. 102.

³¹ E. Neumann: Über Blutregeneration und Blutbildung. Zeitschr. f. Klin. Med., Bd. iii, p. 411.

³² Pouchet's articles can be found widely scattered through the Compt. Rend. d. l. Soc. de Biol. during the years 1877, 1878 and 1879.

³³ W. Feuerstack: Die Entwicklung der rothen Blutkörperchen. Zeitschr. f. wiss. Zool. (Siebold and Kölliker), Bd. 38, p. 136.

THE RELIEF OF SALPINGITIS BY DILATATION AND DRAINAGE OF THE UTERUS.¹

BY CHARLES F. STRONG, M.D.,

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THE treatment of salpingitis is divisible into two general classes: operative, that is, ablation of the tubes, and non-operative. Of the former I say nothing except that the larger the experience of the operator the less the percentage of cases will be found which demand this radical measure. Of the latter class we have still in daily practice the use of alternative applications and vaginal tamponades, as the common and routine measures. There will be found, however, many cases in which this antiphlogistic treatment is unsatisfactory, securing only temporary alleviation, or, from other necessities of circumstance being impracticable.

I wish to present for consideration an intermediate measure which does not embody the objectionable features of either of the two methods sketched above.

Considering for a moment the etiology of salpingitis, exclusive of malignant and tuberculous diseases, or direct violence, it is from the uterus the causative agent extends into the tubes, whether this be of a highly septic, or mildly irritant, nature. This is especially true of those cases where the marked characteristic is alternating periods of quiescence and activity of inflammatory symptoms. These cases are distinguished by the presence of more or less profuse uterine discharge, and examination will always reveal endometritis existing in some one of its several forms. Obviously, if this endometrial condition be restored to normal before the tubes become in themselves hopelessly diseased, and before the co-existing salpingitis has induced peritoneal adhesions, a return to healthful conditions may be expected.

The local treatment of endometritis by applications through the barely patent cervical canal, must always be both dangerous and unsatisfactory. This has been demonstrated too often, clinically, to require further comment. The treatment by drainage of the uterus following free dilatation, has much to commend it as a safe and conservative measure. That it is practised by but few is due, I think, not to non-success following its procedure, but rather to the glamour attendant upon a primarily successful laparotomy. I have selected four cases among the number in which I have performed it, to illustrate the various phases of cure, palliation and temporary improvement, and one case of acute endometritis and salpingitis, to show the freedom in which the measure may be employed in cases which we are prone to consider dangerous, if meddled with. The first three cases were operated upon sufficiently long ago to make the present report of value, the most recent one having been under observation considerably over a year. To avoid unnecessary confusion, I have selected only those cases with symptoms which would be materially affected by improvement in the salpingitis or endometritis; also, statements with regard to local conditions are based upon the results of examinations made with the patient anesthetized.

CASE I. Mrs. K. This patient was referred to me for operation upon the cervix and perineum, for relief of the symptoms of backache, constant pain in ovarian

¹ Read before the Boston Society for Medical Improvement, January 11, 1892.

region, and repeated attacks of slight pelvic peritonitis, subsiding coincidentally with the establishment of profuse purulent discharge from the vagina. The patient was a complete invalid, and had been bed-ridden most of the time.

October, 1889. I found, by examination, the left Fallopian tube enlarged quite uniformly to the size of an ordinary sausage; the right tube about one-half that size—numerous peritoneal adhesions which were not dense enough to prevent mobility of the tubes. Both ovaries apparently normal. The uterus the seat of a decidedly puriform endometritis, and in a hyperplastic condition.

I rapidly dilated the uterus, removing the thickened mucous membrane, which was very rich in its glandular elements: thoroughly disinfected the cavity, and packed with iodoform gauze. Drainage was continued one week.

November 22d. Examination showed that the right tube had diminished one-third in size. The left tube was practically normal. The uterine discharge was recommencing. The operation and treatment was repeated.

May 6th. There had been great improvement in the symptoms of six months previous, and it was only at my request that the patient had reported. Upon the right there was still a distinctly enlarged tube. Operation repeated.

August, 1891. Twenty-two months had elapsed since the first operation, during which period there had been no local treatment. I found the right tube still slightly enlarged; the left normal. No evidence of endometritis. The uterus involuted to its proper size, and the cervical laceration not requiring operation. During the two years there had been no attack of peritoneal inflammation, and the symptoms of pelvic disturbance had been so alleviated that the patient had resumed all her household duties, and considered herself well. I, however, have classed this case at present as one of complete relief rather than cure, as the slightly enlarged tube may possibly, but not probably, at some future time give trouble.

CASE II. Mrs. F., married eighteen months, and confined to bed during the past six months by pain in the left side. Had for sometime previous to marriage a slight discharge from vagina, which is steadily increasing.

Examination, under ether, shows decided enlargement of left tube, possibly also of right. Ovaries normal.

December 11, 1889. Treatment as in Case I.

January 9th. One month later, more comfortable than at any time for a year. Only two attacks of pain since the operation, each one less than thirty minutes' duration; can walk about fifteen minutes, and stand five minutes, without inducing more than a temporary feeling of pain in the side. Operation and treatment repeated. At this examination the enlargement of the tube could hardly be recognized as pathological.

January 5, 1892. One year from the last operation. Patient is perfectly well; is totally free from any pain or discomfort in the pelvis. Examination can detect no enlargement or tenderness of the tubes on either side. Walks several miles daily; no endometritis whatever. This case I consider a cure.

CASE III. Mrs. Mary K., nurse. Pain in both ovarian regions, steadily increasing for several years, despite replacement of a retroflexed and adherent ute-

rus. Chronic and profuse purulent endometrial discharge. Not able to work.

October 14, 1890. Examination shows a decided mass on left side—less upon right side; ovaries not felt. Implicated in the mass were the tubes, possibly the ovaries; certainly, there existed an abundance of strong peritoneal adhesions. Operation and treatment as in previous cases. Hypertrophied mucous membrane, and numerous mucous polypi removed. Immediately upon leaving the hospital this patient went to work in the violent ward of an insane hospital, needless to say, against advice. She re-entered the hospital three months' later. I could not see that the local condition had been improved, and operated, removing the tubes and ovaries on both sides, which were so firmly imbedded in adhesions that they were torn away piecemeal. This case I consider a failure. I have reported it as illustrative of those cases in which this palliative treatment does not afford reasonable prospect of success. At the time of the operation, I did not regard it at all as a hopeful case, and so stated; but as a possibly conservative measure, I decided to try what might be accomplished.

CASE IV. Mrs. F. F. This case was one of acute salpingitis accompanying acute gonorrhoeal endometritis. There was great dilatation of the tubes. I operated three times in two weeks. At the conclusion of the attack both tubes remained enlarged. There was a re-lighting of the salpingitis after the interval of a year, when I repeated the operation. Three years ago, that is, five years after the first operation, there could be detected only some slight thickening about the broad ligaments, which was not at all tender, and to-day the patient is, so far as symptoms are indicative, perfectly well. I am aware that my course in operating upon this case in the height of an attack of acute gonorrhoeal salpingitis, exposes me to criticism: but it was necessary to do something as the patient's condition was becoming decidedly worse hourly. Laparotomy could not be considered; other palliative measures had been tried in vain. The course I adopted seemed the only one possible.

As to the methods of procedure. The aim should be to render the operation thoroughly aseptic, operating with the patient upon the side in the Sim's position, avoiding any downward traction of the uterus, by which the tubes might be put upon the stretch, and possibly a portion of their contents forced out upon the peritoneum; the cardinal point in the whole operation being to avoid lighting up fresh salpingitis or peritonitis by mechanical violence. Dilate slowly and steadily with steel forceps until the canal will readily admit a No. 36 sound. Thoroughly scrape away by sharp curette and curette forceps the entire uterine mucous membrane, both cervical and fundal: especially endeavoring to free the opening at the uterine end of the tubes, it being at this point that they are frequently occluded by a slight hyperplastic enlargement. Disinfect the uterine cavity. Insert a twisted roll of iodoform gauze, about the size of a goose-quill, to the fundus. Along side of this roll insert others until the cervical canal is firmly filled. Leave the protruding ends within the vagina, and protect the vulva by an antiseptic pad. Change these rolls of gauze every two or three days for ten days, and keep the patient in bed a week.

The time of election for the operation is one week subsequent to the menstrual flow. Examine, under

ether, after a month has gone by, and if there is still evidence of salpingitis or endometritis, repeat the treatment. Should the tubes be enlarged when the uterine interior shows no evidence of disease either by mucopurulent discharge or hyperplasia, do not operate, but rely upon douches and alterative applications to the vaginal vault, to effect reduction in their size, which may, very possibly, be due to the results of the peritoneal inflammation, rather than to any increase in the contents of the tubes.

Selection of cases for operation. Success depends upon a proper appreciation of the pathological conditions which are to be relieved. Acute cases are best treated, for a time, at least, by palliative measures, or by radical operation. Chronic cases in which the tubes are tied down by many adhesions, and in which the symptoms are dependent upon immobility of the tubes, or of the uterus, do not afford a hopeful prospect of cure.

In all other forms I consider the operation not dangerous, and capable of accomplishing far more in the way of radical cure than any of the absolutely palliative measures, and, of course, free from the one great objection of a radical operation. The symptoms are indicative, in a measure, of what you may expect to find by examination. Pain, which is the constant and prominent symptom, is usually constantly present in those cases where peritoneal adhesions are thick and strong. These are not promising cases. The duration of the disease is also of importance. Those of more recent origin, other points being equal, yield more readily. Mobility of the tubes, and patency of the uterine end of the canal, are absolutely essential. It will be noticed that none of my cases have been cured by a single treatment. I think this is due to the practical difficulty of removing entirely the affected uterine mucous membrane. Whether a longer period of drainage would accomplish this, I am unable to say. I have made it a rule to limit my drainage to eight or ten days.

The suffering caused by the operation and the treatment is practically nil. An incidental point gained is that it tends very strongly to relieve menstrual pain, especially in those cases where the pain is due to mechanical obstruction to free menstrual discharge.

With regard to the dangers of the operation, there are none if properly planned, properly executed, and proper judgment employed in guiding the convalescence.

A REPORT OF THREE CASES OF CRANIOTOMY.¹

BY GEORGE HAVEN, M.D.

CÆSARIAN section, under the brilliant leadership of Sængner, is so rapidly taking the place of craniotomy, in Germany, that I have thought the following cases sufficiently interesting to present to the Society this evening; and hope that the discussion will give us the sense of the members upon these two operations. These cases all occurred at the Boston Lying-in Hospital during the month of September.

M. H., entered on the 9th and gave the following history: Two years ago, was pregnant for the first time. The labor was very difficult, and she was only

delivered after many hours by instruments. The child was stillborn. As a result of this labor, she had a recto-vaginal fistula and a vesico-vaginal one. She was operated upon three times for these injuries. The vesico-vaginal fistula was closed; not so the recto-vaginal. She was told by the doctor who operated upon her to present herself at the hospital if she should ever be pregnant again, at the seventh month. This she failed to do. Examined when she entered, there was found to be a complete tear of the perinæum through the sphincter. Just above the sphincter, there was a bridge of tissue across the anterior border of the anus. Above this was an opening which admitted two fingers into the rectum. There was, just below the cervico-vaginal junction, two dense bands of cicatricial tissue, running from the posterior to the anterior vaginal wall. These were supplemented by smaller bands running in various directions. The examining finger found some difficulty in passing this obstruction. Pelvic measurements were as follows: Crest, 10 $\frac{1}{4}$ inches; spines, 9 $\frac{1}{2}$ inches; external conjugate, 6 $\frac{1}{2}$ inches; internal diagonal conjugate, four inches.

I saw the patient for the first time at ten o'clock, A. M., and thinking that the bands of cicatricial tissue offered a very formidable barrier to delivery, asked Dr. Townsend to see the patient with me, which he kindly did, and agreed with me as regarded the serious aspect of the case. We thought that the rupture of the bands, which was inevitable, might open the peritoneal cavity. Dr. C. M. Green was asked to see the case, and at three o'clock we examined her under ether, and it was finally decided to try high forceps. The os was nearly dilated; the membranes were ruptured, and the cicatricial bands were dilated as much as possible with the hand. Forceps were applied with great difficulty, and with axis traction, the head was brought through the superior strait, and down to the bands, where it was firmly fixed. Firm and steady traction failed to advance it, and it was decided to do craniotomy. Even then, it was with great difficulty that the head and body were delivered. The patient made a good recovery.

Examined before discharge, there was a bi-lateral and deep tear of the cervix. The perinæum and sphincter were gone, and the tear extended for about two and one-half inches up the anterior rectal wall.

The next case is that of M. A., colored. She had rickets, and did not walk until she was four years old. Pelvic examination gave the following results: The symphysis was very thick and projective in a rostrum; the sacrum was apparently wedged downward and forward between the ossa-innominata; the promontory was about on a level with the symphysis. Measurements were: Crests, 9 $\frac{1}{2}$; spines, 9 $\frac{1}{2}$; external conjugate, 6 $\frac{1}{2}$; diagonal conjugate, 4. The true conjugate was probably less than three inches. The hand introduced, found itself much crowded in all directions, and the closed fist could with difficulty be passed through the pelvic inlet.

I did not see the patient until evening. The pains had been very strong during the afternoon; but there had been no advance of the head. Ether was given, and with great difficulty, forceps and traction-rods were applied; but steady, firm traction failed to engage the head. Dr. Townsend was kind enough to be present, and repeated attempts by both of us resulted only in failure. Version was thought of; but, owing to the very thin

¹ Read before the Boston Society for Medical Improvement, January 11, 1892.