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Congenital Absence and
Accidental Atresia of
the Vagina

BY ✓

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CONGENITAL ABSENCE, AND ACCIDENTAL ATRESIA OF THE VAGINA.

MODE OF OPERATING TO ESTABLISH THE CANAL AND
EVACUATE RETAINED MENSTRUAL BLOOD.

BY THOMAS ADDIS EMMET, M. D.,
New York.

THE retention of menstrual blood within the uterine cavity results from congenital or accidental causes.

Causes of retention.	}	Congenital	{	absence of the vagina.
		Accidental	{	imperforate hymen.
			{	closure of the os uteri.
			{	closure of the vagina.

A young girl may reach and pass the average age of puberty apparently in full physical development, yet without any appearance of the menstrual flow. The history given will be to the effect that a year or two previous to seeking advice, all the rational signs of approaching menstruation had been recognized. Month after month these symptoms will have presented themselves with marked periodicity, but without a show, until at length the back-ache and sense of pressure on the bladder and rectum will have become constant. Recently, however, these symptoms may not have presented themselves with so much regularity, but with a marked increase of nervous disturbance, her general health will have already begun to suffer, and, in all probability, some symptom of blood-poisoning may be detected at the first examination.

On the other hand, with many of these symptoms presenting, there may be less inconvenience from pressure on

the bladder or rectum, but a marked increase in the nervous disturbance.

It is of the greatest importance to investigate the condition of a young girl who presents these symptoms, without delaying until her general health has begun to suffer.

The chief point to be established by an examination is, whether or no there exists retention of the menstrual blood, for without this knowledge we cannot direct the proper course of treatment.

The retention should be recognized at as early a day as possible, since the result from any operative procedure will be favorable in inverse proportion to the extent of dilatation to which the uterus may have been subjected.

When the retention has resulted from an imperforate hymen, delay is unnecessary, although occasionally nature relieves herself by rupture of the membrane. With congenital absence of the vagina a resort to some surgical interference is absolutely necessary for relief, if an accumulation has taken place. Nature guards against rupture of the uterine wall by an increased thickness, as during pregnancy, since the original parietes of the organ are not made thinner by over-distention.

As a result of delay, the patient becomes exposed to two dangers : first, dilatation of the Fallopian tubes, which, it is said, may occur, through their becoming filled with the contents of the uterine canal, and result in rupture, or the escape of the fluid into the abdominal cavity. The second and chief danger is from blood-poisoning. There is also a risk of inflammation in consequence of the fluid being forced through the tissues of the uterus without actual rupture. Dr. Barnes,¹ after referring to some experiments by Dr. Mathews Duncan, showing that under hydraulic pressure air and liquids penetrate the uterine walls, writes : " But it appears to me that there is good reason to believe that the force which the living uterus exerts in its efforts to

¹ *A Clinical History of the Medical and Surgical Diseases of Women*, by Robert Barnes, M. D., p. 181.

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expel what may be in it, whether it be a fetus or imprisoned fluids, is enough to drive fluid through its walls, in the form of a fine oozing or dew, which hangs on the peritoneum. It seems to me probable that it is in this way that some cases of puerperal pelvic peritonitis are produced; and I have seen cases of septicemia and peritonitis occurring from retention of menstrual fluid, greatly resembling puerperal fever, in which there was no rupture and no escape of fluid by the open ends of the Fallopian tubes."

In the absence of the vagina it is proper to open the canal at an early age, even if no retention exists, provided a vestige of the uterus can be detected. A case will be cited showing that nature had evidently delayed the development of puberty in consequence of there being no outlet, although this is not the rule. Another instance will be given where the uterus became developed subsequent to an operation, at which no trace of the organ was detected. In two other instances the health became established after the operation, although no development of the uterus took place subsequently; this remarkable circumstance has also been noticed by Dr. Barnes.

For the examination, the patient must be placed on the back with her limbs flexed, and the body within easy reach of the operator. By passing the index finger into the rectum, it will be easy to satisfy one's self, from the size of the uterus, if developed, as to the probability of retention within its cavity. This, however, we must not assume without further examination, if the vagina be developed, since pregnancy has sometimes occurred before the appearance of menstruation.

Should the uterus be felt in position and nearly of normal size, it will not be necessary to extend the examination beyond the separation of the labia for the passage of a probe to a sufficient depth to ascertain that the vagina is pervious. Under these circumstances we may assume that the delay is due to some fault in the general system, and we must first resort to means for improving this condition.

We shall be able, as a rule, to distinguish readily the absence or a defect of the organ from a want of development, only in size. At a point somewhat lower than that usually occupied by the cervix and vaginal junction, the finger will come in contact with a well-defined crescentic edge, or band, extending across the pelvis from the site of one ovary to that of the other. The sensation conveyed to the finger will be that of a sagging of the broad ligament or of the space which would have been occupied by the uterus if it had been present. After the introduction of a steel sound into the bladder, the extremity of the instrument can be easily brought into contact, along this crescentic band, with the finger in the rectum, which could not have been done were the uterus in position.

According to Küssmaul, and others, it rarely, if ever, happens that the uterus is entirely wanting, so that at a post-mortem examination no vestige or rudimentary portion will be found. The correctness of this statement I cannot verify or disprove by personal observations upon the cadaver, but I have seen six cases, or more, of congenital absence of the vagina, in which it was impossible to detect, by the most careful investigation, the slightest trace of the uterus.

When the accumulation is confined to the uterine cavity, the elastic body, as felt from the rectum, will be nearly globular in shape. But the most common form met with is the one shown in the diagram, Fig. 1, where a portion of the recto-vesical septum becomes also distended. No portion of the vaginal canal is opened, but the tissue which presents at the os, when it becomes dilated, is crowded off and put on the stretch as the fluid continues to accumulate. It is sometimes stated by writers that the uterine cavity does not become dilated when the accumulation has been caused by an imperforate hymen. The correctness of this statement would depend upon the extent of accumulation, since the uterus must become dilated by the backing up of the fluid, as soon as the vagina becomes over-distended, should there be no other outlet.

With young girls who have never had a menstrual flow, the obstruction is usually a congenital one, due to a want of development of the whole vaginal canal, but sometimes only of a portion of it; in other cases, the retention is caused by an imperforate hymen.

There are exceptions, however, to this rule; for instances are not uncommon where the closure of the vagina has resulted, in childhood, from some injury, or from inflammation of the mucous membrane. The first condition is a consequence of the introduction of some foreign body into

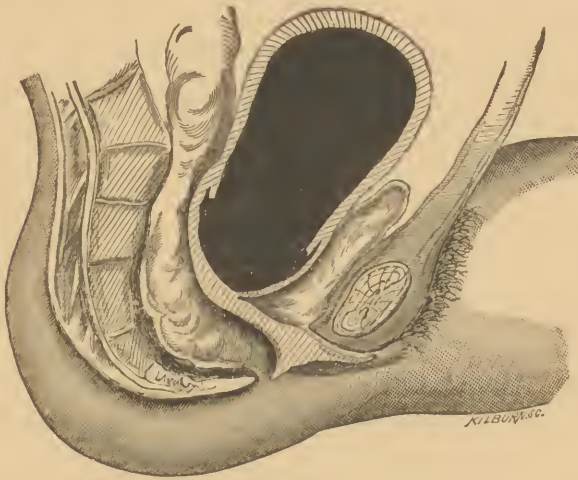


FIG. 1.

the canal, which gives rise to sloughing and subsequent contraction. Of this form of injury an instance of a young child will be given, in whom the passage was destroyed by a fall upon the dead branch of a tree, which, entering the vagina, penetrated the abdominal cavity through the posterior cul-de-sac.

Closure, as a consequence of inflammation of the mucous membrane, may be produced by exposure to cold or a neglect of cleanliness. But this form of adhesive inflammation seldom extends to the whole canal, and unless sloughing has occurred, does not offer so persistent an obstacle to the

final escape of the fluid retained by it, although it frequently leaves the passage constricted.

The external organs of generation are generally well formed, but the mouth of the urethra will be found rather lower than natural, and at the bottom of a shallow sulcus, there being no appearance of a vaginal outlet.

In absence of the vagina, the urethra is always unnaturally relaxed, but the power of retention of urine remains unimpaired. I have placed on record¹ the case of a young woman, who, after having been married several years without a menstrual show, consulted me for the latter difficulty. I found no evidence of the existence of a uterus, nor any trace of the vagina; yet connection had been carried on through the urethra into the bladder, without either party having suspected the true condition.

Accidental occlusion of the vagina is a frequent consequence of child-bearing, owing to the sloughing, caused by long-continued pressure at some one point or throughout the canal. Strong injections of nitrate of silver and other agents, as used formerly for the treatment of leucorrhœa, have frequently caused closure of the passage from adhesive inflammation. By the application of various caustics to the upper portion of the vagina, and particularly by the use of the galvanic cautery, for amputating the cervix, the os has become closed, with subsequent retention of menstrual blood.

Unless an injury be received at an early age, it seldom happens that the passage is destroyed throughout its course from that cause, or that the vaginal outlet then ever becomes so entirely changed as to present only a shallow sulcus between the labia, as in congenital absence of the vagina. Some aid in diagnosis may be gained from the thickness of the septum between the bladder and rectum; this is to be determined by a finger in the rectum and a sound in the bladder. In the congenital form, the septum

¹ *Vesico-Vaginal Fistula from Parturition and other Causes*, p. 229. New York, 1868.

will be found as thin as the recto-vesical one in the male, since there will have been no development of the muscular and other tissues forming the vaginal wall. But after the vagina has been once formed, and the uterus has for a while performed its function, the vaginal wall will remain, after accidental occlusion, even thicker than before; thus there will be but little difficulty in forming an opinion, even if the presence of the uterus cannot be detected. In the absence of a vagina, with accumulation of fluid, the condition may be complicated by the occurrence of an hemocele or a collection of pus in the pelvis, yet a careful investigation will remove all doubt.

It may sometimes be almost impossible, except after frequent examinations, to determine the exact condition,—whether a double uterus exists, with a single vagina, or a double uterus and double vagina as seen in the diagram.



FIG. 2.

Some years ago I was consulted by a very nervous woman, about nineteen years of age, who had never menstruated regularly, and wished relief from a sense of pressure and bearing down which had existed for several years. I had great difficulty in making a thorough examination, and was not a little

puzzled to give a diagnosis. To the left of the vagina could be felt an accumulation of fluid, extending as high as the finger would reach, and from the rectum an elastic and nearly globular body could be felt closely attached to the uterus. After satisfying myself as to the position of the fluid and its relations to the uterus as given in the diagram, I unfortunately proposed to introduce an exploring trocar to ascertain the character of the accumulation. It seemed that I had already lost my patient's confidence from the length of time I had taken to arrive at an opinion, so that my proposition was refused on the ground that she would not be experimented with any longer. I never saw the case again, and know nothing of her subsequent history.

Owing to my connection with the Roosevelt Hospital, I was recently called to see a case in consultation under the charge of Dr. Watts, one of the visiting physicians. There were two vaginæ, as represented in the diagram, but the uterus, or uteri, only opened into the passage, in which the accumulation is shown. The other canal, in the median line, terminated alongside of the uterus as a cul-de-sac, and was the one by which sexual intercourse had taken place, as was evident from the fact that the mouth of the vagina proper, leading to the uterus, was exceedingly small, lay on one side, and was only detected by accident. The patient was not aware of her condition, but had consulted Dr. Watts for the cure of sterility. Dr. Watts afterwards operated by dividing this septum, thus converting the two passages into a single one.

There existed sufficient similarity between these two cases for me to assume that the condition represented in the diagram was a correct one. There existed a double uterus and vagina, with one canal closed, as if from an imperforate hymen. The woman was not regular, as regards an external flow of blood, since she never had a show at less than two months' interval; for this reason it is likely that she menstruated from the two uteri alternately.

Unless the retention be due to an imperforate hymen or

to some slight barrier, resulting from adhesive inflammation, nature is powerless to relieve herself. All writers agree as to the danger attending a long retention of the menstrual fluid, and are equally in accord as to the risk of life for the woman from any procedure instituted with the purpose of evacuating the contents of the dilated uterus.

• In consequence of the many fatal results which followed the early operations for making a vaginal tract, more recent operators have resorted to tapping the uterine cavity with a trocar from the rectum, various devices having been applied to the instrument for the purpose of excluding the air. But experience has demonstrated that the danger to the patient is equally great after tapping from the rectum, and as the procedure cannot give permanent relief, the operation for opening a vagina is now received with more favor. It is now generally considered advisable that the canal should not be completely established at once, but that the opening should be a very small one, so that the contents of the uterus may be drawn off slowly; in this way it is possible to guard against the fluid being forced, by uterine contraction, through the Fallopian tubes into the abdominal cavity.

My experience has taught me to follow a course entirely at variance with that recommended by the best authorities, which is essentially the same as that adopted by the early operators.

In the "London Lancet," August 13, 1831, a review is given of a recent work,¹ by Mr. R. Fletcher. Among other operations, one is cited for opening a passage to the uterus in a married woman, 22 years of age, who had never menstruated, and in whom sexual intercourse had taken place through the urethra. It is stated that after making the first cut with a scalpel to the depth of some two inches, Mr. Fletcher, fearing to continue by that method, introduced into the wound a large rectal bougie which he pushed forward, from time to time, by taps from a mallet. "After pursuing this practice of tapping for about a week, he succeeded

¹ *Medico-Chirurgical Notes and Illustrations.* Part 1.

in discovering the uterus, which was perfectly formed and in a healthy condition." This woman soon afterwards menstruated, and at the time of recording the case she had already become the mother of two children.

This novel method of opening a passage does not seem to have been repeated; yet from the loose character of the tissue, between the walls of the bladder and rectum, the method would seem to be one which might be resorted to with advantage. Where the septum was thin, if the parts were steadied by two fingers in the rectum, the bougie would encounter less resistance from the cellular tissue than from the walls of either cavity. Yet the operation could have been completed, with less risk to the patient, in as many minutes as he occupied days.

Amussat,¹ in 1832, operated on a young girl, between fifteen and sixteen years of age, who had suffered two years from retention. He abandoned the use of the knife after getting through the skin, for fear of entering the bladder or rectum, and separated the tissues by the aid of the nail and finger. After a little advance the wound was packed with sponge, for three days, when the tearing process was again resorted to and the wound refilled with sponge. After three attempts the tumor was reached *on the tenth day* and emptied by a trocar and bistouri. She suffered from inflammation of one Fallopian tube, and after being relieved of retention four times, the canal finally remained sufficiently open.

Previous to the date of my first operation, a few isolated cases are reported, in which the efforts for relief had consisted in tapping from the rectum, or in following the plan adopted by Amussat for opening a passage to the uterus. These cases were chiefly for accidental closure, and in every instance the operation was extended over several days, and the evacuation made through a small opening.

The following cases of imperforate hymen, congenital absence of the uterus, and accidental occlusion with retention, have passed under my observation:—

¹ *Gazette Médicale de Paris*, 1835.

Cause of Retention.	Remarks.	Result.	Private Hospital.	Woman's Hospital.	Total Number.
Imperforate Hymen.	Retention from one to two and a half years.	No difficulty after operation.	4		4
Congenital Absence of the Vagina ; Canal opened with the following results.	With retained menstruation.	All recovered. Case in Woman's Hospital had cellulitis.	2	1	7
	Menstruated after the operation.	No uterus found at the time of the operation. Recovered.	—	1	
	No uterus found.	One single woman and two married.	2	1	
Accidental Atresia from Childbirth.	With retained menstruation.	All recovered. One case had cellulitis.	3	6	9
Atresia from traumatic Injury.	Menstruated after the operation.	Recovery complete.	1	—	1
Atresia from amputating the Cervix Uteri with the galvanic Cautery.	Menstruation retained several times after the operation.	Had several attacks of cellulitis, but not in connection with operations for relieving retention of the menstrual flow.	1	—	1
Total Number of Cases			13	9	22

I have only met with four cases of retention due to imperforate hymen. In these it was impossible to determine, with any accuracy, the time at which the accumulation began ; for in the case which had suffered, as it was supposed, for the longest period, the amount of fluid was less in quantity than in another in which the retention was for less than a year. There can be no doubt of the fact that the pouring out of the first menstrual flow is delayed as long as possible, when an obstacle exists to its free escape : as if nature recognized the necessity. After menstruation has been established, the quantity is never so great, in case of congenital obstruction, as in one formed, by accident, later

in life. My impression is, that the average accumulation, in these girls, would have amounted to about six ounces. I incised the hymen, in each instance, with a sharp-pointed bistouri, and then enlarged the opening with the index finger. As soon as the collection had escaped, I washed out the vagina and the partially dilated uterus thoroughly with warm water, by means of a Davidson's syringe; a small glass vaginal plug was then introduced which was only removed at night and morning for the purpose of having the vagina syringed out. These cases received no other treatment, were kept quiet in bed seven or eight days, and recovered without the slightest disturbance. But for the fact that cases have been placed on record in which death had resulted from this simple operation, I should have regarded the lesion as being worthy of little more than a passing recognition.

By reference to the table, it will be seen that there were seven cases of congenital defect of the vagina; six with entire absence of the canal, and one with a transverse septum as if it were a second hymen within an inch of the outlet.

The menstrual flow had been retained in two cases in which the vagina was wanting, and in a third in which the transverse septum acted as the barrier. The fourth case of absence of the vagina was sent to the Woman's Hospital, after an unsuccessful attempt had been made to open the passage. The operator had cut through a portion of the urethra into the bladder so that she had no longer retentive power. The record of this case will be given hereafter, and is one of particular interest, on account of the uterus having developed after the vagina had been opened up, and the existence of the organ, even in a rudimentary state, had failed to be detected. Not the slightest vestige of the uterus could be discovered in the remaining three cases of congenital absence of the vagina; nor was there afterwards any effort of nature to develop the organs, even if they existed in a partially formed state.

Nine cases of accidental atresia, with subsequent retention of the menstrual flow, following difficult labors, have passed under my observation. The history of the only case belonging to this class of injuries which presented any unusual difficulty will be given, to illustrate the mode of treatment, and to establish the date of its introduction.

The history of the remaining case of accidental atresia resulting from a traumatic injury received in childhood, by which the whole canal was destroyed, and puberty delayed in consequence, will also be given.

CASE I. — Early in 1863, I received in my private hospital a patient sixteen years of age, who had been suffering, for the previous year, with all the symptoms of retained menstruation. At the first examination I ruptured the hymen without difficulty, and, just beyond, reached a thin septum, through which I could detect the evidence of fluid, by making pressure with the finger of the other hand in the rectum. This was my first case of the kind, although I had seen in the Woman's Hospital one not unlike it, evacuated by Dr. Sims,¹ through a small opening, and the vagina enlarged a few weeks after by a subsequent operation. I placed the patient on the side and introduced the speculum until the septum was brought into view; then while the surface was steadied, by means of a tenaculum, I cut through it with a pair of scissors. The patient was next turned on the back, and, as the blood escaped, I forced my finger through the opening until the septum was broken up. As soon as the flow of blood lessened, I had a bedpan placed under her, and washed out the vagina and the dilated uterus, with warm water, until this ceased to be discolored. A glass plug, or dilator, of proper size, was introduced; she was not allowed to get up for ten days after which she had no further treatment beyond the vaginal injection of warm water, morning and evening.

This was not only my first case of retention, but the first in which I made a free opening, and employed warm water

¹ Reported in *Clinical Notes on Uterine Surgery*, p. 337.

injections to wash away the blood from the interior of the uterus and vagina. I followed the course which seemed to me based on sound principles, without the knowledge at the time that the mode of treatment was not the accepted one. Amussat was about the only authority who had written from any experience, and if I had then been familiar with his views, they would, in all probability, have had but little weight, since his course was manifestly best fitted for exciting inflammation and blood-poisoning.

Shortly after treating the above case, another, from retention with imperforate hymen, came under my charge, who also was relieved in the manner described. I unfortunately did not appreciate the importance of the operation, and failed to place the mode of treatment on record; but at a subsequent date I reported¹ the three following cases, on which may be based the claim for a mode of treatment which subsequent experience has shown to be most successful:—

CASE II.—Mrs. B., of Newark, N. J., was admitted to the Woman's Hospital, April 27, 1863, with a vesico-vaginal fistula following her first labor of five days' duration and delivery by forceps. Although three years had elapsed since her confinement, there had been no return of menstruation, and with extreme prostration of the nervous system her general health had become much impaired. On introduction of the finger between the labia, it passed at the depth of less than an inch, directly into the bladder, through a transverse fissure, about two inches in length, situated at its neck. From the posterior margin of the fistula the vagina was entirely occluded. Nothing definite was gained by a rectal examination beyond the fact that pelvic cellulitis had previously existed, and the position of the uterus could not be detected.

May 10. With the patient etherized and lying on the

¹ In a paper on "Accidental and Congenital Atresia of the Vagina," etc., read before the *N. Y. Obstet. Society*, June 19, 1866, and published in the Richmond, Va., *Medical Journal*, August, 1866.

back, two deep incisions outwards and downwards were made on each side of the *fourchette*, through a dense cicatricial band, involving this portion of the vaginal outlet. By an assistant, the posterior edge of the fistula was seized by means of a tenaculum, and put on the stretch, by being drawn upwards in the direction of the pubes. The vaginal tissue was then carefully divided laterally with a scalpel, in the supposed direction of the uterus. As the canal was opened up, the thumb of the left hand of the operator was advanced to put the posterior wall of the vagina on the stretch by pressure backwards, and with two fingers of the same hand in the rectum as a guide, the relative thickness of the rectal septum was preserved. A depth of nearly five inches was gained, when the hemorrhage became so excessive that a farther attempt to reach the uterus was abandoned. A hollow glass plug, five inches in length by two in diameter, was introduced and retained *in situ* by a perineal bandage. The patient was placed in bed, and opium administered, after the effects of the ether had passed off. For several days she suffered much from constitutional disturbance, irritability of the bladder, and a feeling of soreness over the lower portion of the abdomen. Retention of urine resulted in consequence of the pressure exerted, but the bladder was emptied by means of a gum-elastic catheter without removal of the plug. As the plug had controlled the hemorrhage, it was not taken out for several days, until loosened by suppuration; large vaginal injections of tepid water were afterwards used daily until her discharge. At the end of ten days it was found that absorption of the tissue had gradually taken place from pressure of the vagina plug, until the cervix could be felt through a thin septum a little to the left, and about four inches from, the mouth of the vagina.

June 3. The septum was caught up on a tenaculum, and divided by scissors; the vagina was thus opened, which had been closed throughout by adhesions, with the exception of a small cavity immediately around the cervix uteri, into which the latter protruded uninjured.

June 26. The artificial vagina being now properly healed, the edges of the fistula were pared by scissors, and approximated with eight interrupted silver sutures. The edges of the fistula were sloping, as is usually the case when it is situated at this point, and, although two inches long on the vaginal surface, it receded until the actual length of the opening was not more than half so much at the entrance to the bladder. On the ninth day the sutures were removed, and with the union perfect, she was discharged cured July 15.

October 8. She was readmitted to the hospital, in consequence of a gradual closure of the vagina. It was found that the original condition of atresia existed to the posterior edge of the closed fistula, which, however, had remained intact, with perfect control of the urine. On the next day, the previous operation was repeated, until the os was again reached, and a glass plug of the same size introduced. During the night she had a violent chill, followed by an attack of pelvic cellulitis. The plug was removed, and at the end of two weeks she recovered, with closure again of the vagina nearly to the original condition.

November 8. She was examined, and it was found that about an inch had been gained. At the bottom of this canal, nearer to the base of the bladder, a small opening was detected, only large enough to admit an ordinary probe. After passing some two inches, its point could be felt from the rectum, in the neighborhood of the cervix uteri. A straight, blunt-pointed bistouri was passed along the probe as a guide, and on withdrawing it, an incision was made in the median line, to the depth of half an inch, directly through this septum, on the support given by the index finger in the rectum. A similar incision was made laterally to the right and left, thus again opening the canal to the cervix uteri, so as to admit a plug nearly two inches in diameter. The hemorrhage was so great, that it became necessary to remove the plug and introduce a larger one into the rectum; this kept the cut surfaces in contact, and

controlled the hemorrhage. The opening, however, gradually contracted, although vaginal plugs were used as soon as it was safe to introduce them.

December 5. The small sinus which still existed was dilated by a sponge tent, so as to admit the index finger, and free incisions were again made through the septum, for three inches in length.

January 9, 1864. She returned home to recover her health, having just menstruated for the first time since her pregnancy, after an interval of nearly four years. The vaginal surface had become well healed over the plug which had been in use since the operation, and which was only removed at the time of receiving the daily injections of tepid water.

May 25. She was again admitted, suffering from constant pain and a feeling of fullness in the pelvis. There had been no menstrual show since she had left the hospital, although the menses had been regular. The use of the plug had been continued, until gradually it became impossible to introduce it without great pain. The canal was again closed; through the rectum a mass, slightly fluctuating, was detected filling the pelvis; with the other hand on the abdomen, the uterus was felt enlarged nearly to the umbilicus. As it was near the regular time for menstruation, she was kept in bed under the influence of opium.

June 6. In the presence of some members of the American Medical Association, a trocar was passed from the vagina through the septum, which was now, in consequence of the accumulation behind, only an inch in thickness. More than a quart of retained menstrual fluid was evacuated with great relief, the opening was enlarged, and the cavity of the dilated uterus washed out by injections of tepid water.¹ After

¹ By the Hospital Register it is shown that Drs. James P. White, W. H. Byford, H. R. Storer, T. F. Rochester, E. M. Moore, S. H. Tewksbury, and others, were present at the operation. I have been unable to find it recorded that any operator, previous to this date, had washed out the uterus after evacuating retained menstrual blood through a free opening.

ten days the discharge all ceased. With so thin a septum and so freely divided, every hope of success was anticipated in keeping it open permanently. In July she was discharged, and with her general condition much improved, after she had menstruated freely.

She returned to the hospital, December 2, having menstruated each month with increasing pain and difficulty. Through the septum, a little over an inch thick, a small sinus still remained, but only large enough to admit a probe. Its tract was somewhat enlarged by a bistouri, and four ounces of retained menstruation evacuated. She was placed under ether, and after two fingers of the left hand had been introduced into the rectum as a fixed point, well behind the mass, the index finger of the other hand was forced with much difficulty through the small opening. The canal was opened by laceration, one finger being inserted after another, until almost as much was thus gained as had been previously done by means of the knife. The hemorrhage was slight; she was kept in bed for a week, partially under the influence of opium, without any bad symptoms following the operation. Early in January, 1865, she was discharged.

February 23. She reported herself for examination, after menstruating twice without pain. The vagina was now four and a half inches deep, the surface well healed, and discharging but little. She was directed to continue the use of the glass plug for some time.

I lost sight of the case until May 23, 1866, when she visited the hospital. She was in perfect health, regular, and living happily with her husband. On examination, the vagina was found well opened, its parietes soft and perfectly healed, although of a much deeper color than natural. The plug had not been worn for several months, and was only passed occasionally as a precaution.

This case is one of great interest. Between May 10, 1863, and December 2, 1864, she had been operated on by means of the knife five times, and, in spite of the greatest

care, occlusion gradually occurred by contraction after each operation. From December 2, 1864, when the canal was opened by laceration, to the present time (nineteen months), there has been no perceptible change in the size of the vagina.¹ It can scarcely be supposed that the canal would have remained as open had she entirely discontinued the use of the plug, or were she not married; but the point not to be lost sight of is, that under the same circumstances after each of the previous operations, the atresia had become complete in a few weeks.

CASE III. — *October 27, 1864.* Miss N., aged eighteen, came under my charge as a private patient. She was slight, delicate, and apparently an undeveloped child of not more than twelve years of age. There had been no attempt at puberty, and in consequence of the absence of menstruation at so advanced a period, I was consulted. The external development of the organs of generation was found in keeping with her apparent age. On attempting to make an examination, I discovered that the vagina was absent, but a slight sulcus existing between the labia. A sound was passed into the bladder, and the index finger of the left hand into the rectum; on approximation of these, the intervening tissue appeared to be no thicker than the vesico-vaginal tissue usually is. After a careful exploration per rectum, I detected a small mass just within reach, which I supposed to be either a cornu of the uterus or the undeveloped organ.

After questioning her mother carefully, I learned that her daughter had received an injury, when about seven years of age, which proved to have had a bearing on her case. She stated that while running in a wood, her daughter had tripped over the dead limb of a tree. In falling, she ran a portion of a bough into either the rectum or vagina, and in consequence was ill a long time from "inflammation of the bowels." Again separating the labia, I detected a slight depression, and at the bottom a faint cic-

¹ On August 1, 1867, she reported herself in good health and able to live with her husband without difficulty.

atricial line. I determined to operate, thinking it possible, although this is not always the rule, that puberty had been retarded in consequence of the obstruction.

October 30. After a free action of the bowels, she was brought under the influence of ether by Dr. G. S. Winston, who assisted me. She was placed on the back, the lower extremities well flexed on the abdomen, and a sound held in the bladder by an assistant. With a pair of scissors, I carefully cut through the cicatricial line, and with the index finger broke down the tissue to the depth of an inch. The advance was now made, in the direction of the mass felt through the rectum by sweeping the finger to the right and left, until firmer tissue was reached; when it was apparent, by the sense of touch, with a sound in the bladder and two fingers in the rectum as guides, that the relative distance was not preserved in either direction, pressure was made in the opposite direction, until a median course was regained. The tissue was readily broken down, with but little bleeding; in some ten minutes the uterus was reached at the depth of three inches. The separation was continued less than an inch beyond the cervix, when the tissue became so dense that it was evident that at this point the peritoneal cavity had been entered at the time of receiving the injury. The neck of the uterus was uninjured, although the vagina had been destroyed up to and around the cervix, without involving it. The sound passed into the uterine cavity an inch and three quarters.

A large glass plug was introduced, and retained by a bandage. During the night she was so comfortable that an opiate was not required; not a bad symptom occurred, and at the end of a week the improvement in the condition of her nervous system was remarkable. The vagina was daily syringed with tepid water, all discharge ceasing at the end of three weeks. A month after the operation she returned home, with an injunction to persist in the use of the plug and injections for several months, gradually discontinuing them if there was no contraction of the canal.

Three months afterwards she menstruated for the first time, and so rapid had been the development of puberty, that several members of the family, I was informed, who had not seen her since the operation, did not recognize her. After missing a month, she became regular, and has continued so in perfect health. I had not heard of the case again until the 25th of last April, when her mother came to visit me from a neighboring State, and gave me the above-mentioned facts of her case since her return home.

I will now present the history of a case in which a congenital absence of the vagina and uterus existed.

CASE IV. — Miss K., aged twenty-one, a private patient, consulted me, July 24, 1865, having never menstruated. In appearance she was tall, well formed, and apparently in good health. Since the age of sixteen she had been subject to sick headaches, and occasionally to a wearing pain low down in the back, but with no evidence of periodicity, as indicative of a menstrual nisis. There had been no change in her general health, but during the previous year she had become nervous and irritable in disposition.

On examination, I discovered an entire absence of the vagina, and by the rectum no indication whatever of the uterus. The external organs of generation were well developed, the nymphæ unusually large, and of dark color. The meatus urinarius was quite patulous, but not so much so as is usually the case, when the vagina is congenitally absent.

The young lady, unfortunately, had been engaged to be married for several years, and her parents were exceedingly anxious that an attempt should be made to reach the uterus or to settle the fact of its absence. In consequence of the warm weather, I delayed the operation until autumn.

October 5, 1865. In consultation with Drs. Thos. Cock, T. G. Thomas, and Burroughs, she was etherized and placed on her back, with the lower extremities flexed on the abdomen. After snipping the tissue with a pair of scissors, for nearly an inch in a vertical line from the bottom of

the sulcus between the labia, the cellular tissue was lacerated by means of the nail and index finger, as in the previous case.

High up in the pelvis, a thick, transverse band could be felt from the rectum, as if it were a portion of the broad ligament occupying the position of the uterus, and stretching from one ovary to the other; at this point it sagged within reach of the finger. The advance in this direction was made with great care, in consequence of the extreme thinness of the septum, between the bladder and rectum. The existence of any portion of the uterus was the main point to be settled; the false passage was therefore not enlarged laterally more than enough to admit the finger readily. On reaching the depth of some three inches, an absence of the uterus became so evident, that it was decided, on consultation, to discontinue the operation. A glass plug was, however, introduced. The bleeding had been slight. She was confined to bed for a week.

The disappointment was very great, and on being questioned whether I could be positive as to the non-existence of the uterus, from the fact that it was not found in the median line, I determined to make a thorough effort to settle the point. A few days afterwards, with the assistance of Dr. John G. Perry, ether was administered, and I proceeded with the operation. The false passage was still over two inches deep; this I enlarged laterally with the finger, until I reached firmer tissue, and could feel the sides of the pelvis, as in an ordinary vaginal examination. After an advance of some three inches, I began to realize the danger of continuing the lateral dilatation to the same extent, as it was evident, from the sense of touch, that the uterus was wanting, and that the tissue was not so dense beyond. An advance was continued, however, in the median line for an inch farther, until I was satisfied that scarcely three quarters of an inch intervened between the extremity of the finger in the vagina and the edge of the band felt through the rectum.

With two fingers in the rectum, and a hand on the abdomen, nothing could be ascertained as to the existence of the ovaries. High up on the right side a mass was indistinctly felt, but it seemed too distant for the ovary, and there was nothing to correspond to it on the opposite side. My impression was, that the ovaries were either entirely wanting, or in an undeveloped state.

It was remarkable, for such an operation, that the bleeding should have been so slight, and confined chiefly to the breaking down of the surfaces already well healed. A plug, a little over four inches long by two in diameter, was inserted.

During the night the stomach continued irritable from the effects of the ether, and she was restless, with a pulse of 108. Before daylight, an opiate enema was administered, and repeated in three hours afterwards. She became quiet, and twenty-four hours after the operation she was very comfortable. Beyond the use of vaginal injections and anodynes, when needed, she received no further treatment. At the end of ten days she sat up, but her convalescence was tedious, so that she was not strong enough to return home until November 24th.

I saw her occasionally in the interval, until June 15, 1866. I then made a careful examination, both by the rectum and vagina, but there was no further indication of the existence of either uterus or ovaries. The vagina was as capacious as at the time of returning home after the operation; its parietes were soft and of a natural color, except on the rectal septum, about an inch from the fourchette, where I found several indolent-looking excrescences, to which nitrate of silver was applied. The plug had not been used with regularity for several months, having been passed only occasionally at night. She was in her usual good health, free from all vaginal discharge, but still nervous and easily excited. During the past eight months there had been nothing in her condition which would indicate any menstrual nisis.

This case, apart from the interest bearing upon the subject under consideration, is an anomalous one. With this single exception, she is a well-developed female, without any vicarious discharge; her general health is excellent, and there is no indication, at present, of chlorosis, phthisis, or any organic disease; the condition of her nervous system may be hereditary to a certain extent, for her mother is of the same temperament. The subsequent history of this case is of interest. In September, 1866, she married, as the vagina had become healed, with a surface closely resembling mucous membrane. The dilator had been introduced with sufficient regularity to keep open the passage, and I could detect but little, if any, change. The marriage was contracted with the full understanding of both parties that there was scarcely a possibility that even a rudimentary uterus existed, and that the probabilities were, that the canal would gradually close. I heard nothing of her after her marriage until May, 1874, when I met her accidentally on a visit to a relative under my charge. I had not an opportunity to make an examination, but she stated to me that her marriage had been a happy one, and that she was not conscious of any material change in the size of the passage. I could see no alteration in her appearance, except that she had aged somewhat beyond her years and had become less nervous.

CASE V. — Miss L. O., aged seventeen, consulted me on November 27, 1870, at the recommendation of Dr. Zakryewska, of Boston. She had never menstruated, although for two years there had been every month an increase of back-ache, nervous disturbance, and feeling of pressure in the pelvis. Her condition closely resembled the one shown by diagram in Fig. I., with congenital absence of the vagina. The uterus was dilated, as was a small portion of the vagina, or rather posterior cul-de-sac, inasmuch as from the rectum a marked transverse depression could be felt at the junction of the vagina and uterus. Fluctuation was detected through the rectum by pressure

with the other hand on the fundus, through the abdominal wall.

November 1. With the patient under the influence of ether, I opened a passage, about three inches deep, to the uterus, and evacuated between eight and nine ounces of menstrual blood, which presented the usual characteristics, in being of a tar-like consistency, and free from odor. The uterine cavity was washed out thoroughly with warm water, a glass dilator introduced, and the case treated in other respects by the method described. After menstruating twice without difficulty, she returned home about the middle of February, 1871, with the vagina opened and healed. With the exception of a slight febrile action on the third day, there had not been the slightest disturbance during the progress of the case. On April 13, 1873, she presented herself for examination, having been in excellent health and having menstruated regularly. On examination, about half an inch in front of the cervix I found an hour-glass shaped contraction of the vagina, through which the index finger could with difficulty be passed. The seat of constriction (A, B, Fig. 3) corresponded with the point at which the opening had been made, connecting the new passage with the upper portion of the vagina, then distended with blood. On April 15, I freely divided this encircling band with a bistouri, and allowed the surface to heal over a glass dilator before she returned home. I have not since had the opportunity of making an examination, but have recently ascertained that the vagina still remains somewhat constricted at this point, but without causing any inconvenience.

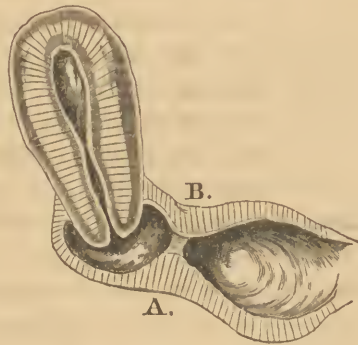


FIG. 3

CASE VI. — Miss D. R. was admitted to the Woman's Hospital, December 13, 1870. The previous history of this case, as recorded, is obscure, owing to the statement made by the patient that, after the performance of some operation by her physician, she menstruated several times between the ages of fifteen and sixteen. A long interval then elapsed without a show, until after a fit of illness and a profuse discharge of pus with hemorrhage, she had at regular intervals several menstrual periods, as they were thought to be.

About four years previous to admission, an attempt had been made to open a vagina, but apparently without the precaution of introducing a sound into the bladder and the finger of the operator into the rectum to serve as guides, so that an opening had been made into the bladder, from which she subsequently had incontinence. About one third of the urethra and the bladder for nearly an inch beyond its neck had been laid open; the raw surfaces had been constantly coated with a phosphatic deposit from the urine, so that the parts remained as patulous as after the accident, and the index finger could be introduced into the bladder without difficulty. With one index finger in the bladder and the other in the rectum, I was unable to detect any trace of the uterus. There had evidently been extensive cellulitis on the left side and in the region which should have been occupied by the uterus. From the thickness of the recto-vesical septum, the case was regarded as one of congenital absence of the vagina, and probably, also, of the uterus. The time until March 10, was occupied in getting the parts healed and in a proper condition for an operation, during which interval, on five different occasions, most careful examinations with and without ether had been made without gaining any additional information. It was deemed advisable to close first the opening into the bladder, before attempting the operation for forming a new vagina. After great difficulty, from its being at the bottom and to one side of a deep cone, the fistula was closed by ten inter-

rupted sutures. Two days afterwards, the patient had an attack of peritonitis, and on the 16th instant her life was considered in jeopardy. Recovery, however, took place, and on the 24th instant she was considered well enough to have the sutures removed; shortly afterwards the surfaces separated, leaving the parts in their former condition. Her convalescence was retarded until May 20, when she was discharged with instructions to return in the following autumn. The patient was readmitted on December 10, 1871, with her general health much improved, and with the statement that, for several months past she had suffered at regular intervals with symptoms of a menstrual nismus. As her condition was not yet one to warrant surgical interference, she was kept under observation. On March 19, 1871, she had a show of blood in the urine, but it had disappeared before I could examine her condition. On May 3, a recurrence of the blood in the urine took place, but no further information could be elicited beyond the fact that the escape of blood was from some point within the bladder. On June 7, while she was under ether, a thorough exploration was made by Dr. Sims and myself. A small body was then, for the first time, detected, but we were unable to determine that it was the undeveloped uterus. With the scalpel, I made some advance in that direction, when I opened into a small sinus through which the sound was passed to so great a depth as to suggest that I had opened one of the ureters just beyond the entrance into the bladder. No further attempt was made, and on June 12 she was sent home.

On February 10, 1873, on her return, ether was administered, and, by the rectum, the finger, without difficulty, detected the uterus, now nearly of a normal size. A small sinus was found in the vagina, as the result of the previous operation. Along this a probe was introduced and its course enlarged with the scissors, and by lacerating the tissues. A passage was thus opened, in the direction of the uterus, until the os was reached, into which the probe was passed to the fundus. A glass dilator was used for a few

days, when it had to be abandoned, in consequence of the irritation produced and symptoms of an attack of cellulitis. The index finger was carefully passed several times a day to the cervix, to prevent the canal from contracting, and the parts were kept free from the irritating effects of the urine, by frequent injections of hot water. When the wound had healed she returned home.

April.15, 1873. The fistula into the bladder was closed by twelve sutures ; but cellulitis seemed so imminent, and the irritability of the bladder so great, that she had to be kept constantly under the influence of opium, and the bladder to be carefully washed out twice a day by the use of a double catheter. On May 1, the sutures were removed and the union was found to be perfect. On June 10, a slight escape of urine took place while she was walking, but on careful examination it was found to be due to the condition of the urethra, which had been drawn backward by contraction of the cicatricial surface in the vagina. The canal had been shortened very much by this contraction, but the calibre was yet sufficient to admit the finger to the uterus, and the result, under the circumstances, was considered an excellent one. She was discharged, but was readmitted on March 12, 1874. Her general health had become established. The retention of urine was perfect, and she had menstruated regularly, the flow lasting four days and being quite abundant. On May 26, the vagina was enlarged as much as was deemed prudent in view of the danger of a fresh cellulitis, as the remains of the previous attacks were still to be detected. She was afterwards discharged to return at some future time for the purpose of having the vagina thoroughly opened, in case she contemplated marriage, or contraction, sufficient to obstruct the escape of menstrual flow, should any take place.

Three years have now elapsed since her discharge, and I am ignorant of her present condition.

CASE VII. — Miss A. L., aged 15½ years, was admitted to the Woman's Hospital, March 4, 1876. She had never

menstruated, but eight months previous to admission she had begun to suffer from time to time pain at the hypogastrium, lasting from two to three days. Since the first time, the pain had returned regularly every month with increasing severity and duration. Only a few days previous to admission she had passed through one of these periods of suffering, which had lasted ten days. Her general health was poor, and she had a marked strumous appearance. The external organs of generation were well developed, but on separating the labia, the sulcus was seen to terminate in the urethra. By placing the hand over the abdomen and an index finger in the rectum, an elastic mass was felt like the uterus at the fifth month of gestation. The case was evidently one of retained menstruation, due to congenital absence of the vagina, the upper portion being distended as in Case IV. On March 14, while she was under ether, the skin was snipped with a pair of scissors in a vertical line below the urethra. The patient had been previously placed on the back with her lower limbs flexed on the abdomen. A steel sound was then passed into the bladder and held by the assistant on the left side. I introduced two fingers of the left hand into the rectum, as a guide, and, between them and the sound, separated rapidly the cellular tissue by means of the finger-nail, until I had made an opening about an inch in depth. The opening was then freely enlarged by working the finger to the right and left. After this, the advance was made by sweeping my finger from one side of the pelvis to the other. This was readily done, as there had been no cellulitis, and if I felt that I was getting too near either the bladder or rectum, I would make pressure downward or in an upward direction, until I got, as it were, into another stratum. After advancing about two inches and a quarter in the median line, the septum between my finger and the fluid had been reduced to a few lines in thickness. Through this, I introduced a small trocar and drew off some twenty-four ounces of fluid. The puncture was then enlarged by introducing a pair of scissors and the parts lacerated by

opening the blades. The finger was then passed and a free opening made. The uterus was thoroughly washed out with hot water, by passing the long nozzle of a Davidson syringe up into the cavity. To the last quart or two of the water, a little carbolic acid had been added; a large glass dilator was then introduced. The patient did well for twenty-four hours, when the pulse rose to 116, with a temperature of 102° and headache, this being her only complaint. On March 16, it was directed that she should have the injections of a solution of carbolic acid every three hours, as the discharge had become free and rather offensive. Five grains of quinine were ordered every four hours. She still complained of headache and felt chilly, but there was no marked rigor. At 2 P. M., her pulse rose to 136 and the temperature 103.7° . At 8 P. M., the pulse was 140 per minute, while the temperature had lowered to 100.2° . On March 17, the discharge had become quite abundant, of a brownish color, and still slightly fetid. Her stomach was disturbed, and she vomited several times during the night. At 8 A. M., the pulse was 120 and the temperature 101° . At 3.30 P. M., the pulse was 130 and the temperature 101.5° . On March 18, her condition was decidedly better and she began to convalesce. On March 19, there was a slight relapse, with the temperature at 102.6° during the night, and a return of the headache. On March 20, I detected marked tenderness over the lower portion of the abdomen and especially to the left side, with tympanites. This was discovered after a movement of the bowels procured by means of an enema. On March 23, I made an examination by the rectum and found cellulitis on the left side with the effusion extending behind the uterus. I directed that a shorter vaginal plug be used, for I then ascertained that from the second day the nurse had had difficulty in passing the upper portion of the vagina. I found the canal constricted at this point, as shown in Figure 3, Case V., and I had no doubt that if the cellulitis was not actually produced by her efforts to force the dilator through, its extent was, at any rate, increased by the

irritation. March 24, I directed that the use of the dilator should be abandoned, but the vaginal injections be continued several times a day. March 25. During the night she had several loose and fetid evacuations from the bowels, which an examination by the microscope showed to consist almost entirely of pus. She was placed on milk punch, cod-liver oil, quinine, and iron. On March 28, the abdominal tenderness and tympanites were decreasing rapidly and by the microscope but little pus was detected in the feces. She gradually convalesced, but was not strong enough to be discharged until May 10. She had not menstruated since the operation, but this was scarcely to be expected in her reduced condition. On June 20, 1876, she reported herself at the hospital for examination. Her general health had been improving slowly but menstruation had not returned. In February, 1877, she again visited the hospital. She had regained her health and was then menstruating regularly. I found the upper portion of the vagina, in front of the uterus, so contracted, that I was scarcely able to pass the index finger. The canal below had changed but little. She will return at some future time, when the canal will be enlarged.

It should be noted that at the time this operation was performed, the atmosphere of the hospital had become so bad from a defect in the sewerage, which was not discovered until afterwards, that no serious operation had been performed for several weeks and the defect was at that time reported to have been remedied.

CASE VIII. — February 13, 1874, I saw Mrs. H., in consultation with Dr. James L. Little. She was 32 years of age, the mother of six children, the youngest being three years old. Seventeen months after the birth of her last child, the cervix had been removed by the use of the galvanic cautery for supposed malignant disease. She suffered afterwards from cellulitis and in all probability from peritonitis, so that she was confined to her bed for five months after the operation and had never regained her health. If the diagnosis was a correct one, the disease was most thor-

oughly eradicated, for I found the vagina only about an inch and a half in depth, from the loss of the posterior *cul-de-sac*, and from contraction of the canal. A number of folds radiating from one point gave the only indication of the probable locality of the uterus, although by the touch nothing could be identified but the presence of a dense mass of cicatricial tissue, which was exquisitely sensitive. On passing the finger into the rectum the uterus could not be recognized, and the tissues of the pelvis seemed solidified. A mass was felt above the pubes which was supposed to be the uterus enlarged from retained menstrual blood.

From long suffering and the presence of this mass of cicatricial tissue in the vagina, her nervous system had been so overtaxed that she had at length reached a condition of mind rendering her almost a fit subject for a lunatic asylum.

It would be out of place to discuss this mode of amputating the cervix, but I will simply state that for some fifteen years I have not employed this method, in consequence of seeing just such results follow my own handiwork. It was a favorite mode of treatment both with Dr. Sims and myself in the Woman's Hospital previous to that time. I then possessed the advantage, which few have at the present day, of being able to correct my errors by observing the cases long afterwards, since the patients were then obliged to return for relief to the only institution of the kind in the country.

When the crown of the cervix is removed, above the vaginal junction, by this method, stenosis is a very frequent occurrence within two years after the operation.

When a surface is left to heal by granulation, cicatricial tissue must necessarily be formed and it cannot be denied that this tissue always contracts, therefore stenosis must be a common result. But whenever the vaginal tissue is included we have a more serious condition to deal with. In healing it contracts over the stump, as if drawn with a running-string, so that the uterus becomes at length covered

by two thicknesses of the vaginal wall. This digression from our subject is necessary to appreciate the condition of this woman.

The occurrence of cellulitis is not an uncommon complication, and is due to inflammation extending into the pelvis from the connective tissue about the cervix, which becomes involved at the time of the operation.

I lost sight of this case until April 8, when she was brought into my office with the most violent contractions of the uterus, as if she were in the last stage of labor. The uterus could be felt through the abdominal wall contracting with such force that I feared rupture would take place and its contents escape into the abdominal cavity. The case was so urgent that I was obliged to dismiss my office patients and, with only the aid of a nurse, place her under the effect of ether, hoping to find some means of getting into the uterus. Failing to detect any point to guide me, I attempted to force a trocar through this dense tissue, in the supposed direction of the uterus, but was unable to do so. I then plunged a sharp-pointed bistoury in the same direction and entered the uterine cavity after passing through nearly an inch of tissue. I was unable to judge at what point I had entered the uterus, but if through the cervix, the canal must have been closed throughout. Six ounces of fluid escaped and it continued to flow until the following day. Through fear of exciting inflammation I did not dare enlarge the opening or to introduce any substance to keep it from closing. It was impossible to wash out the cavity, and the after-treatment consisted in keeping her quiet in bed, under the effects of opium. After ten days I allowed her to return home.

June 6. I found the opening had entirely closed. I then gave her ether, and, following the same course, made quite a free opening, with no difficulty except from hemorrhage which came from the vaginal tissue and needed a tampon to control it. October 27, 1874, she returned stating that she had menstruated several times without pain,

but had suffered very much latterly and had had no show at the time of the last period. On the following day, with the assistance of Dr. George T. Harrison and Dr. A. E. M. Purdy, I etherized her, and after making my way into the cavity, divided the tissues laterally, in four different directions, to the fullest extent, without entering the peritoneal cavity. The wound was packed with cotton which had been saturated in a solution of alum, and over this was placed a dressing wet with glycerine. October 30, she had a chill, with rapid increase of pulse and elevation of temperature. The dressing was all removed and for fear of blood-poisoning a large double catheter passed into the uterus and a large basin full of hot water, to which a little carbolic acid had been added, injected. I then formed a drainage tube from a portion of block-tin tubing about an inch and a half in length. I divided it into three portions, the middle one being for the tube, while I cut away from each end all but enough to form two prongs, or flanges, half an inch long and opposite to each other. This was introduced and the prongs within the cavity were spread apart by passing a pair of scissors through the tube and then separating the blades. The prongs on the vaginal end were turned back so that the tube became then fixed in the wound, as a button through a button-hole.

She began to improve afterwards and returned home in three weeks. After the next period I introduced a hollow hard rubber tube, which I had had made some two inches long, slightly curved and in appearance not unlike the instrument used for the trachea, with the exception that there was a long lateral slit or opening, on each side. With great difficulty, and by watching her every few days, I was able to keep some contrivance of the kind in the passage for fourteen months. I then abandoned the tube, as it had caused her to menstruate too freely from the irritation produced by its presence in the canal. She was under observation for a month or two and I flattered myself that I had relieved her. During the past winter she has suffered very much and at

length ceased to menstruate during a long attack of cellulitis, through which she was attended by Dr. Jos. C. Hutchison, of Brooklyn. She was too ill to visit me for several months, until recently, when on examination I found her condition essentially the same as existed at my first examination, over three years ago. Her future, in all probability, is to be death from peritonitis or blood-poisoning.

CASE IX. — Mrs. St. J., aged 21, was admitted to the Woman's Hospital October 1, 1869. At fourteen she felt pains in the side and back with headache; these pains returned afterwards with great regularity, as at the menstrual period, but without a show. After a careful examination I was unable to detect any evidence of the uterus, but as she was a married woman I decided to establish a vagina by operation. This was done on October 12, without difficulty, by the method described, and I had already completed the canal, to the depth of three inches, when through carelessness, I ruptured the septum, just below the bottom of Douglass' cul-de-sac, into the rectum. As the glass plug could not be used, under the circumstances, the operation was abandoned, and the parts were allowed to close.

January 27, 1870, I again operated, and at the time of her discharge, February 18, the canal had healed, and was four and a half inches deep. No uterus was found, and the case has only been presented to show that accidental rupture into the rectum is of little consequence beyond the delay.

In forming a vagina it is essential that the whole operation be completed at the same time, and that the passage should be made much larger than seems necessary, since it will contract under all circumstances. If the operation be only partially performed, and afterwards completed, contraction will always take place at the dividing line between the two operations, and be a source of irritation afterwards, since this band must always be overstretched before the other portion of the canal can be detected.

The surface lining the canal is essentially a cicatricial one,

and will consequently contract to a greater or less extent ; but, when healed over glass, it approaches nearer to mucous membrane in character. When tissues are divided by the knife, the contraction is always greater than when lacerated or broken up by means of the scissors. If a passage be opened by a knife alone, the plug will be gradually expelled by adhesions of the surfaces, from above downward, until the original condition be attained. This will always occur unless some portion of the mucous membrane has remained intact at the upper part of the canal. When merely a section of the vagina has been divided, the required diameter can be preserved so long as a bougie is retained, but after discontinuing its use, the incised tissue will gradually contract, until the false passage becomes obliterated, or reduced to a mere sinus.

Experience teaches us that a surface which has been lacerated heals with less rapidity than when divided by the knife. Consequently, if the tissues be cicatricial in character, we may thus gain time for the modifying effects, through absorption, which would be excited by the pressure of the dilator.

A common mistake is made in the operation for opening a vagina, as shown in Case V. and Case VII., where a constriction was left. To avoid this it is necessary that the new canal, opening into the portion dilated, should be as large in diameter, if not larger, than any other part, since that which has been overstretched will contract with greater rapidity so as to leave this constricted portion a source of irritation afterwards. Whenever the canal has been opened throughout at the same time, and to an equal calibre, it can be kept open afterwards, for an indefinite period, without irritation, by the introduction of the glass plug for a few moments, daily.

It has been recommended by all writers, that the retained menstrual blood should be evacuated slowly, through fear that it may escape by the Fallopian tubes into the abdominal cavity. This I regard as an objection based entirely on

theoretical views. Dilatation of these tubes, throughout their length, must necessarily be rare. If it were so easy for the fluid to escape, when this condition exists, it would always be driven out into the abdomen by the uterine contractions, which are frequent, long before a necessity is recognized for surgical interference. If it were known that they were dilated and filled with fluid at the time of the operation, it would be essential to the safety of the woman that a free opening be made below, since the fluid would naturally flow in the direction offering the least resistance. No attempt should be made to aid the expulsion of the fluid from the uterine cavity by manipulating the organ through the abdominal walls. Should the Fallopian tubes be distended by fluid, such interference would be more likely to rupture them — or force the blood into the abdominal cavity — than would occur from uterine contraction.

After the uterine cavity has been emptied, its walls will remain smeared with this tar-like fluid, which cannot be gotten rid of, for several days, until it has become partially decomposed and reduced to a watery consistency. In the anemic condition of the patient and the irritable state of her whole system, she is the more susceptible to blood-poisoning, and it is remarkable, under the circumstances, that it does not occur in every instance of exposure. With all due care, it is often impossible to protect the woman fully from this danger, or from inflammation, yet the risk must be, beyond question, greatly lessened by a thorough washing out of the uterine cavity.

Dr. C. H. F. Routh¹ reports a case of congenital absence of the vagina, with retained menstruation, in which he operated to open a vagina on January 7, 1870. The passage was made chiefly by aid of the fingers, and the fluid was allowed to escape by a small opening. "Its exit was helped by an injection of a weak, warm, watery solution of iodine." A large gum elastic catheter was left fastened *in situ* with

¹ "On a Remarkable Case of Absence of Vagina," etc., *Transactions of the Obstetrical Society of London*, vol. xii, p. 34.

tapes. The same weak solution of iodine, to which carbolic acid was added, was used to wash out the canal as the discharge became profuse. Death resulted on the seventh day. It was found, at the *post mortem* examination, that a teacupfull of the fluid had escaped into the abdominal cavity, through a sloughy-looking aperture in the Fallopian tube.

In the progress of this case, lasting a week, there were symptoms of blood-poisoning, but not such as would have been expected had this quantity of fluid remained in the abdominal cavity from the time of the operation. Therefore, in the absence of peritonitis, I believe rupture took place but a short time before death. Inflammation and sloughing of the tube had been going on for several days in consequence of the distention, and the blood-poisoning may have originated from this condition. Rupture and escape of the fluid into the abdominal cavity was evidently but a question of a few days, therefore, a premature occurrence might have taken place when she "was rather frightened by noise in an upper ward, and said she felt as if something had turned completely in her inside." This was at an alarm of fire, and it is reasonable to suppose that rupture did occur at this time, as shortly after "The whole aspect of the patient was indicative of shock and internal hemorrhage," a condition which continued until her death. As the fluid did not escape from the fimbriated extremity of the tube, when subjected to compression, it may be assumed that the canal had been dilated from the uterus. In other words, that the mouth of the tube entering the uterus was the most dilated portion when the organ was distended. If this be true, the fluid would have passed out of the tube, into the uterus, with a free outlet below for its escape at the time of the operation. The probabilities are all in favor of the supposition that had there been this free outlet the fluid would have been drawn out in the direction of the current before it became imprisoned by the gradual contraction of the uterus.

Dr. J. M. Richmond, of St. Joseph, Mo., has reported¹ the result of an operation for opening the vagina in a case of complete occlusion resulting from a traumatic injury similar to the one received by Case III., and occurring at the age of eight years. He followed the mode of operation recommended by me in the paper to which I have already referred, with the exception that it was not completed at once. There were many features in common between this case and the one reported by me; Dr. Richmond's case was that of a married woman, at the age of twenty-one; there had been no effort at menstruation, and no evidence of the existence of the uterus could be detected. On July 31, 1871, the passage was opened to the depth of three inches, and after it had healed, on September 6, it was extended to nearly five inches without finding the uterus. After both operations the parts had been healed while wearing the glass plug of Dr. Sims. Three months after, there was a slight show.

In February, 1872, the menstrual blood was detected oozing through a small opening; this was enlarged, and the os uteri found, into which a probe passed to the depth of less than two inches. The uterus afterwards developed, she continued to menstruate regularly, the vagina remained open, and the great value of the record is the satisfactory report of the case, made five years after the operation.

Dr. Routh made the following statement to the Obstetrical Society: "Among the few cases of absence of the vagina recorded, *I do not find any in which the case exactly resembles this, and in which the vagina was made and the uterus punctured at the same time*, sponge tents having been used after incisions made, and the progress of the operation extended over several days."

This statement was made nearly four years after I had placed on record my method of operating; just six years after the operation had been witnessed by the members of

¹ Reported from the *St. Louis Medical and Surgical Journal*, January, 1877.

the American Medical Association, and about seven years after my first case.

Amussat, in the report of his case, given several years after the operation, throws out the hint that in a similar instance he would favor the completion of the canal at one operation, but he never put the suggestion into practice. All operators subsequent to Amussat followed his teaching in opening the vagina by several distinct operations, and in the gradual evacuation of the retained menstrual fluid by a small opening. Although he broke down the tissues with his finger, fearing to use the knife, it was done chiefly to form a bed to insert the sponge, and by a method entirely different from the one described by me.

I may therefore claim to have been the first operator on record who completed the opening of the canal at a single operation ; to have separated the tissues by freely sweeping the finger from one side of the pelvis to the other ; to have given free exit to the retained fluid, and then to have washed out the uterine cavity with warm water, in order to prevent blood-poisoning.

The completion of the canal at one operation, by which the danger from inflammation is greatly lessened, is based on sound surgical principles. The entrance from the new passage into the dilated portion, about the cervix, should always be made larger than any other part of the vagina, for otherwise there will always be a constriction at this point. The formation of bands must be avoided, since the calibre of the canal can never be greater than that of the most constricted part, and the presence of a band always renders the patient more liable to the danger of cellulitis, from the irritation produced by the introduction of the dilator or plug. Unless a dilator be frequently used, the new canal will always contract to some extent, and without it be soft and of a uniform calibre throughout, it will be impossible to keep it open with all due care.

I have pointed out the advantage of allowing the menstrual fluid to have a rapid exit, and there can be no objec-

tions advanced to the procedure, except on theoretical grounds. Having disposed of the asserted danger from passage of the fluid through the tubes into the abdominal cavity, the fear of shock to the patient may be advanced as an objection to, and likely consequence of, the rapid escape of the fluid from the uterine cavity. From the freest opening it would be impossible, on account of the tenacious character of the fluid, to empty the uterus so rapidly as to produce any shock. If such a result were likely to follow the rapid evacuation of fluid from the uterus, it should, at least, sometimes occur from the sudden escape of the liquor amnii.

The glass plug was devised by Dr. Sims to be used after cicatricial bands in the vagina had been divided, so that by pressure absorption might take place, and the parts be rendered soft, preparatory to closing a vesico- or recto-vaginal fistula. I was the first to employ this instrument in the treatment of those cases after the operation of forming an artificial vagina.

After a large injection of warm water has been given, and a glass plug of proper size been introduced, all the air and fluid will have been displaced, or pressed out, so that a vacuum is produced. The parts are then shut out from the action of the air, and the instrument is retained in place by atmospheric pressure, so long as the woman remains quiet. The instrument is cool, clean, and unirritating: it keeps up steady pressure on the parts, and consequently prevents undue congestion. But, above all, it possesses two great advantages, when made of glass, of being innocuous and transparent, so that the surface may be seen at all times, as through a speculum, without removal of the instrument.

I regard the washing out of the uterine cavity as a most important precaution against blood-poisoning, and of no less value, for the same purpose, is the use of the glass plug during the after-treatment.

The formation of an artificial vagina, and the evacuation of retained menstrual fluid, has been so frequently followed

by fatal consequences, that the results must be attributed to the usual plan of treatment.

This practice has been to fill the canal, made through the loose cellular tissue, with sponge, lint, or other porous substances, which must retain and keep the parts constantly bathed in the decomposed discharges. However applicable such a course of treatment might prove in other parts of the body, it is not a safe one to be employed in the region of the female pelvis. The practice will present so favorable a condition for blood-poisoning and for exciting inflammation, that it would be remarkable if any case should escape the consequences.



