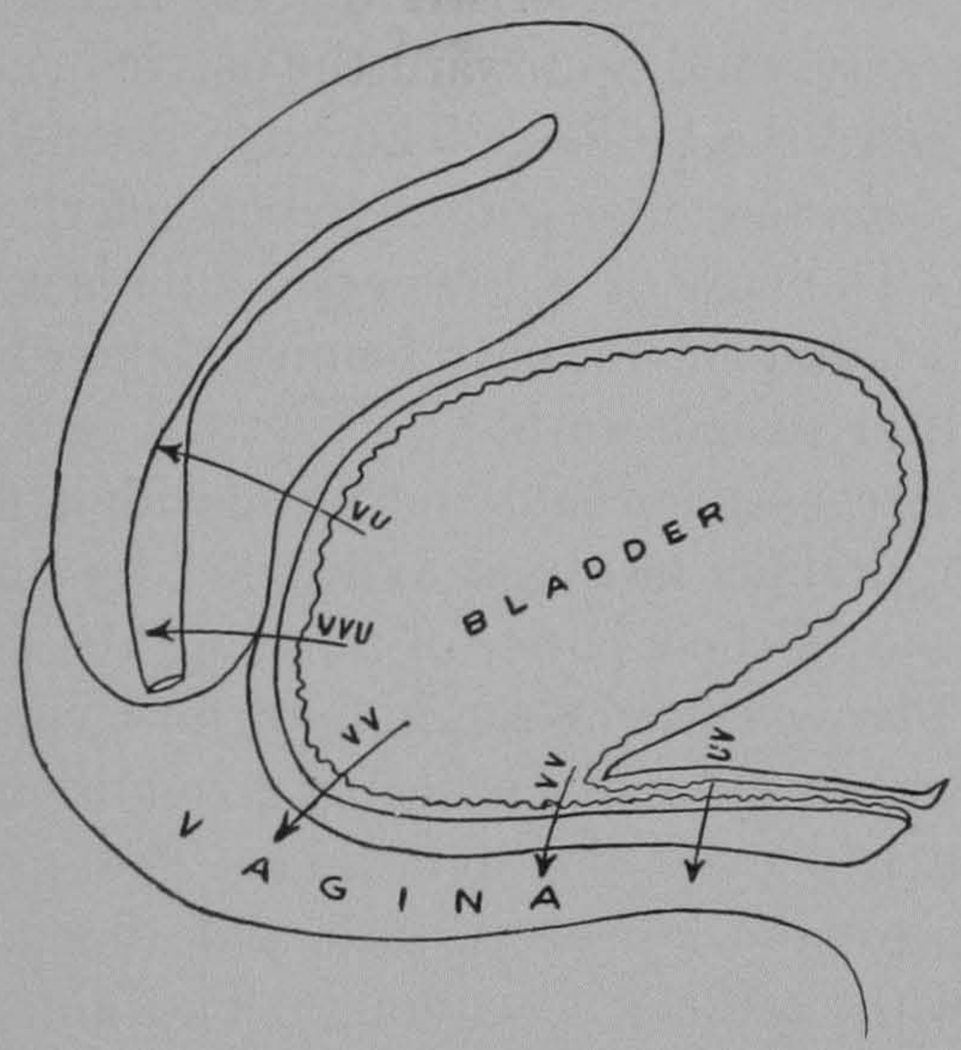
GENITAL FISTULÆ.

GENITAL fistulæ are abnormal avenues by means of which some portion of the urinary tract or the bowel communicates with the genital tract or the exterior of the body.

Fecal fistulæ are formed by a communication between the rectum or the small intestine, and the uterus, vagina, or bladder.

Urinary fistulæ are formed by a ureter emptying into the

FIG. 145.



The Various Forms of Vesical Fistulæ; *v*, *u*, vesico-uterine; *v*, *v*, *u*, vesico-vagino-uterine; *v*, *v*, vesico-vaginal; *u*, *v*, urethro-vaginal.

uterus or vagina, by the bladder discharging into the uterus or vagina, or by an opening from the urethra into the vagina.

URETERAL FISTULÆ.

Ureteral fistulæ are sometimes congenital, discharging low down near the external urethral orifice: they commonly arise, however, from severe labors in which the laceration has extended through the cervix and beyond into the vault of the vagina and out into the broad ligament, tearing the ureter, or they follow a vaginal hysterectomy. After granulation and cicatrization are completed the

ureter will be found discharging into the uterus or vault of the vagina.

DIAGNOSIS.—This can be made by watching the os uteri, or the small orifice in the vault of the vagina, when the urine will be seen discharging at intervals of a few seconds to a minute or more, in small jets. The patient complains of a constant discharge of urine, and yet she voids the urine which collects from the other kidney at regular intervals. The injection of an aniline solution into the bladder brings no corresponding discharge from the fistula; on the contrary, its discharges remain clear. Especial care must be taken not to be misled in the diagnosis when a vesico-vaginal fistula, constantly draining the bladder, exists with a uretero-uterine fistula. If the ureteral orifice can be seen and a catheter introduced, it passes in the direction characteristic of the ureter; that is, to the back part of the pelvis and up toward the pelvic brim, and possibly over the brim toward the kidney. The intermittently flowing urine can be collected from the outer end of the catheter.

TREATMENT.—The cure of a ureteral fistula is a matter of considerable difficulty, and should only be undertaken by a surgeon of considerable skill in plastic work.

When the ureter empties into the uterus high up out of sight, the corresponding kidney has been extirpated by some surgeons as the only means within their power of relieving the patient from the constant flow. The sacrifice of the kidney, however, is a procedure repulsive to the surgeon for the relief of a condition apparently so trivial. A better plan is the following: The patient is placed in the left lateral or the dorsal posture, and the posterior vaginal wall retracted with a Sims speculum. The anterior lip of the cervix is caught by a pair of bullet forceps and the uterus drawn down. If it is not evident, on account of the deep cervical laceration and the scar-tissue, on which side the fistula lies, the cervix is split up until the orifice is visible. If the side on which the fistula is located can be detected, the cervix is separated for half or two-thirds of its extent from the vaginal vault and gradually drawn downward. The cellular tissue is slowly and carefully peeled up on that side until the ureter is found at the fistulous orifice.

After freeing the ureter for from a half to one inch out into the cellular tissue, it is severed from its uterine attachment. An antero-posterior incision is made in the supravaginal portion of the bladder about half an inch long. The end of the ureter is cut off quite

obliquely and turned into the bladder, and the sutures so inserted as to retain the ureter in place. The first is passed so as to catch one side of the incision except the mucosa, enough of the under wall of the ureter to hold it, and the opposite side of the incision. The next suture catches the bladder-walls a little more superficially, but includes the ureter in the same manner. Each of the following sutures proceeding from below upward is passed more superficially until the upper limit of the incision is reached. Care must be taken not to narrow this part of the incision so as to compress the ureter. Two or three superficial sutures catching the bladder-wall and outer coat of the ureter complete the union on all sides. The incision in the vault of the vagina is then closed by fine silk or silkworm-gut sutures, or it may be packed loosely with iodoform gauze.

Or the abdomen may be opened, the ureter traced from the point where it crosses the pelvic brim to its entrance into the uterus, liberated at this point, dissected up for an inch, and bladder implantation performed as described in the chapter on Diseases of the Urethra, Bladder, and Ureters.

Uretero-vaginal fistulæ may be closed by passing a sound into the ureteral orifice and dissecting up the ureter for about a third of an inch, opening the bladder just above the end of the ureter, turning its end into the bladder, and closing the incision by sutures on the vaginal side.

Another method is to open the bladder close to the ureteral orifice, and pass a catheter through the urethra and bladder and through the opening into the ureter. The short portion of the catheter visible in the vagina is then shut in by an oval denudation embracing both vesical and ureteral openings. Careful transverse union with deep sutures of silkworm-gut and superficial sutures of silk then establish the channel of communication between ureter and bladder.

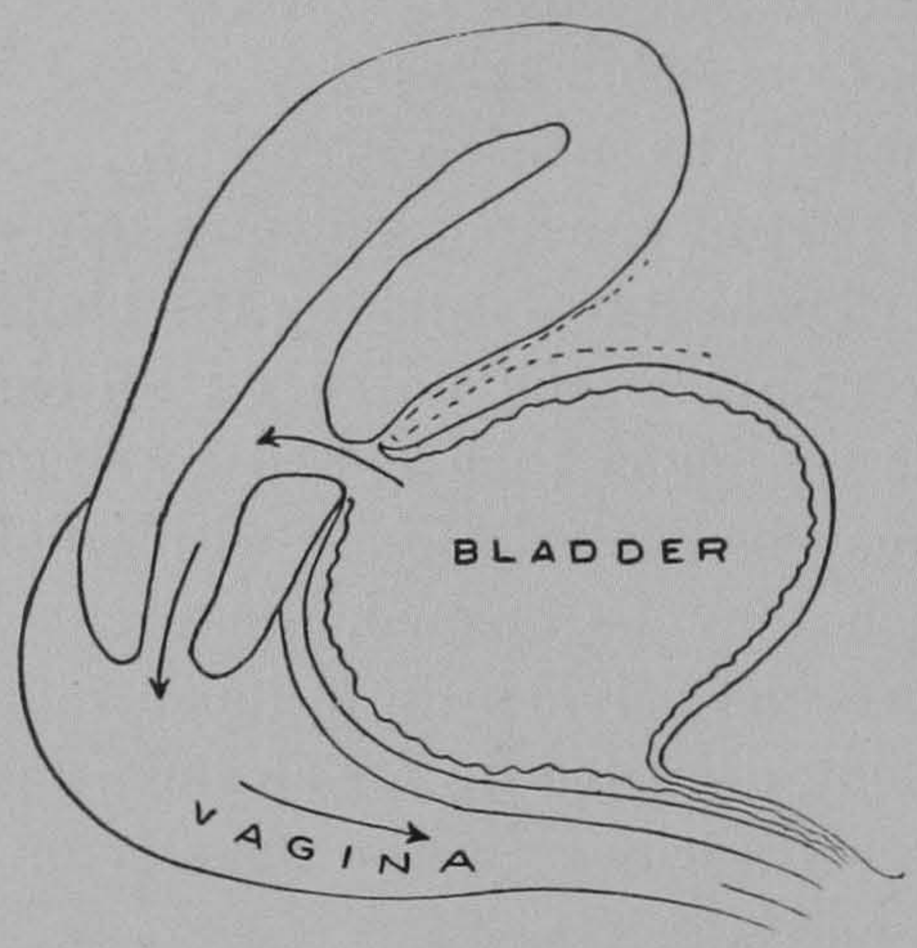
Vesical Fistulæ.

Vesico-uterine fistula; vesico-utero-vaginal fistula; vesico-vaginal fistula.

Vesico-uterine Fistula.—In this form of fistula there is a direct communication between the bladder and cervical canal, so that the urine escapes constantly through the os uteri externum. The demonstration of the vesical involvement can easily be made by injecting a colored fluid into the bladder, when it will be seen to escape from the cervix.

TREATMENT.—The musculo-fibrous tissue forming the cervical canal has a remarkable tendency to contract and close spontaneously any fistulous opening arising from a severe labor. If, therefore, but a short time has elapsed since the receipt of the

FIG. 146.

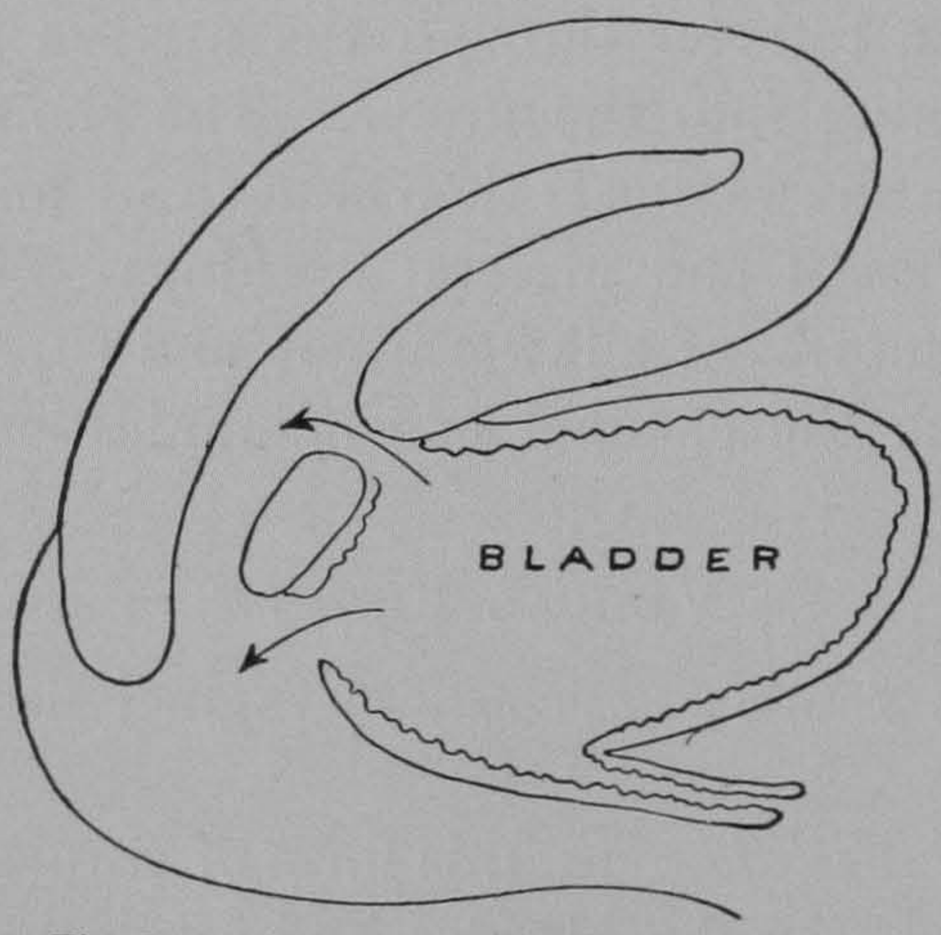


Vesico-uterine Fistula. Course taken by the urine indicated by arrows.

injury, the operator can well afford to wait a few weeks or months until he sees what nature alone will be able to accomplish.

Persistent fistulæ may be closed one of three ways: Where the

FIG. 147.



Vesico-uterine Fistula divided into two channels by a Septum of Scar-tissue.

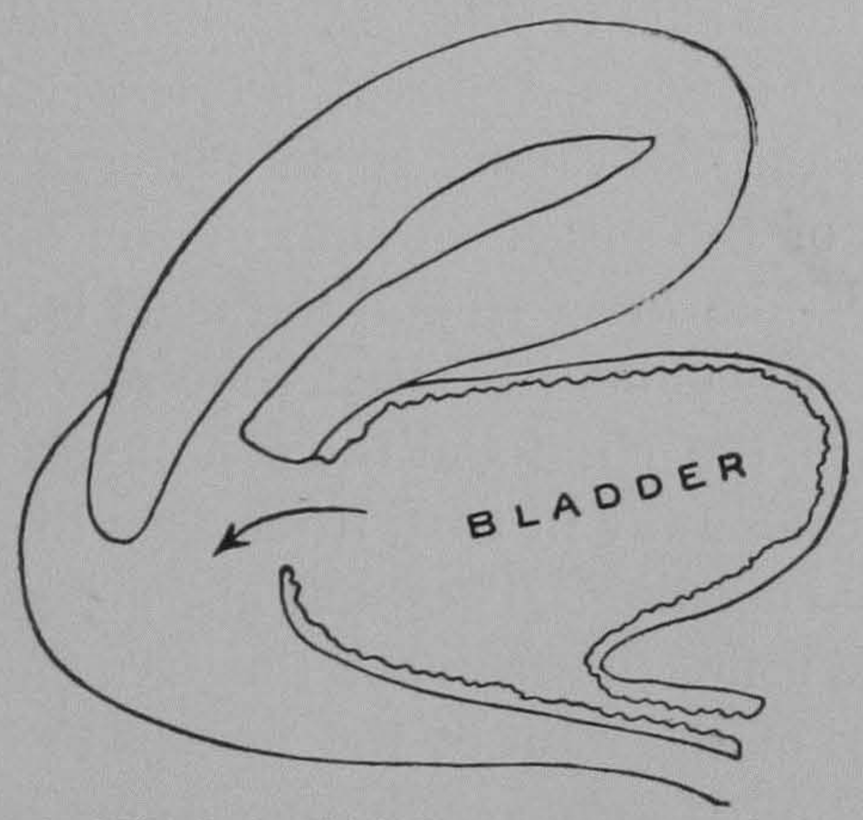
fistula is situated high up in the uterus and the amount of cicatricial contraction in the vagina prevents a proper exposure, the abdomen may be opened in the median line just above the symphy-

sis pubis, the uterus drawn out of the incision, the peritoneum incised transversely at the vesico-uterine fold, and the bladder carefully dissected from the uterus until the fistula is reached. The bladder should be emptied, the fistula cut through, and the opening in the bladder closed by a series of interrupted silk or fine catgut sutures, four or five to the half inch, including the whole wall down to the mucosa. The edges of the opening in the uterus should be freshened and drawn together by a row of interrupted silk sutures. After carefully cleansing the field, the peritoneum may be re-attached to the uterus, the field of operation entirely concealed, and the abdomen closed.

The *second method* is the reverse of the first, in that the vaginal vault is incised in front of the cervix, and the dissection carried up between the bladder and the uterus until the fistula is severed. This is closed by a row of interrupted silk sutures through the thickness of the bladder-wall, exclusive of the mucosa. The uterine opening may be left to itself, and a small strip of iodoform gauze pushed up, anterior to the cervix and under the fistula. The vagina is also loosely packed with gauze, which is renewed in three or four days. At the end of a week the pack is left out and a daily vaginal douche of a warm boric-acid solution given.

In the *third method*, where the fistula lies near the vault of the vagina the cervix may be split up into the track of the fistula,

FIG. 148.



Vesico-utero-vaginal Fistula, in which the posterior lip of the cervix is destroyed.

which is freshened from the bladder to the uterine surface. If necessary, sufficient cervical tissue should be cut away from the sides of this incision, so that the denuded fistula forms the apex of

a wedge, and is closed when the sides of the cervix are brought together. Two to four silkworm-gut sutures are passed through from the vaginal surface of the cervix, and when these are tied the fistulous area is efficiently closed. The sutures should be removed in about ten days.

Vesico-utero-vaginal Fistula—In fistulæ of this character the opening is at the cervico-vaginal junction in front, median, or to one side of the middle line. The neighboring cervical tissue is cicatricial, and there is usually marked loss of substance. Where there is much cicatricial tissue in the cervix, it is best to draw the cervix downward and backward and dissect the bladder with the fistula free from the uterus, for a short distance above the vaginal vault. The fistula should then be treated by making a denudation extending from the vesical mucosa out on to the vaginal surface about a quarter of an inch broad.

If the fistula is transverse to the axis of the vagina, the tissue above should be brought down to the tissue below by a row of silkworm-gut sutures, entered a short distance off from the denuded surface and passing down to the mucosa of the bladder. These sutures should be passed about five to the inch. They should be brought snugly together without constricting the tissues. Where the tissue pouts between these deeper sutures, the work of approximation may be completed by superficial silk or fine catgut sutures. If the long axis of the fistula is in the axis of the vagina, the stitches should be passed from side to side.

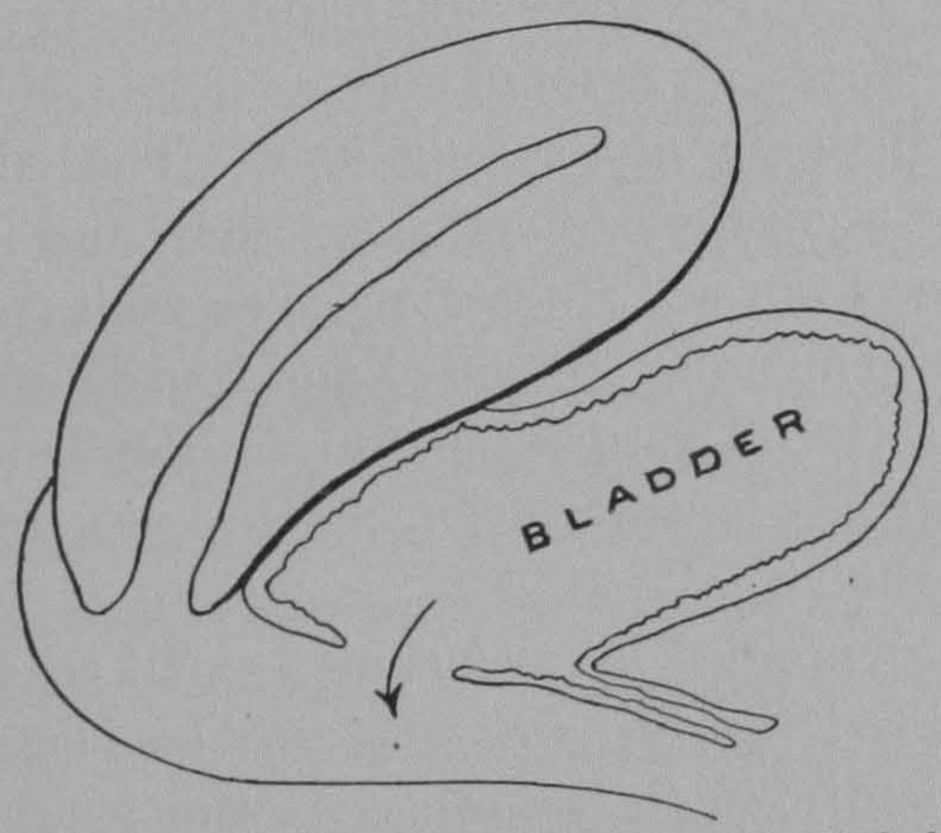
Vesico-vaginal Fistula.—A direct fistulous communication between the bladder and the vagina is the classical affection, brought within the reach of the surgeon's skill by the labors of Sims and Emmet. These fistulæ arise from protracted labors, in which the fistulous part of the bladder has been compressed sufficiently long, between the head of the child and the symphysis pubis, to produce a slough, which comes away in from three days to a week after labor, leaving the artificial opening. They may also arise from direct injury of the tissue while using the forceps; they are more often the consequence, however, of the want of the forceps to obviate the delay. They have also followed unsuccessful operations of the surgeon on the anterior vaginal wall.

These fistulæ vary in size from a pin-point to one or two inches in diameter. The small ones are often the remains of an unsuccessful attempt to close a larger fistula. In form, a vesico-vaginal fistula

is round, oval, or irregular. One of the most important complications of the condition is a cicatricial contraction of the vagina and the presence of cicatricial bands extending from the fistula out on to the vaginal walls.

TREATMENT.—When the vagina is contracted by scar-tissue, this must be divided in one or more places and so stretched as to afford an ample exposure of the fistula. The attempted closure of the

FIG. 149.



Vesico-vaginal Fistula; bladder adherent to the uterus along the darkly-shaded line.

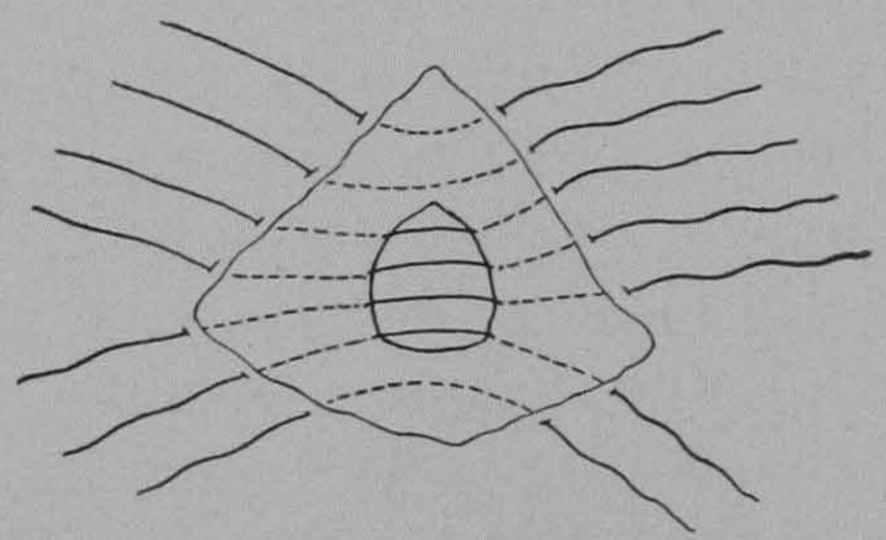
fistula will succeed in direct ratio to the satisfactory exposure, which allows every step of the operation to be accurately conducted.

If the vagina is eroded and coated with phosphatic concretions, this must be relieved by weak warm boric-acid douches—about a teaspoonful to the quart—and the erosions are touched occasionally with a solution of nitrate of silver, about 5 or 10 grains to the ounce. The operation can most conveniently be performed with the patient in the lithotomy position, with well-flexed thighs held up on the abdomen by a leg-holder, and with the buttocks resting on the perineal pad for drainage. The posterior vaginal wall is then retracted with a Sims speculum. The denudation of the margins of the fistula is made by marking with a sharp tion of the margins of the fistula is made by marking with a sharp knife the outer limit of the area to be denuded, from a quarter to an eighth of an inch from the edge of the fistula. With a fine right-angled tenaculum or with a pair of long fine rat-tooth forceps the operator catches hold of a piece of the tissue thus outlined, lifts it up a little, and proceeds to denude the whole down to the mucous membrane of the bladder. The denudation may be accom-

plished with a sharp small-bladed knife, but it will more easily be made by means of a long pair of scissors, with delicate blades that come to a sharp point, and are slightly curved on the flat surface. No undenuded islets of tissue should be left to interfere with the union after approximation. The direction in which the tissues should be brought together depends upon the form and the size of the fistula. In the case of small fistulæ it is immaterial; in circular fistulæ the vaginal tissue yields most readily in drawing the upper border down to the lower, shortening the vagina, and placing the scar across its axis. A long, oblique fistula should be approximated in the direction of its long axis. The edges of a round fistula cannot be accurately brought together, and it often becomes necessary to dissect out a V-shaped piece at each end of the fistula, thus rendering the opening elongated and its edges easy of approximation. Two sorts of sutures should be used in approximating the denuded margins—silkworm-gut for the deep, and fine silk for the superficial stitches.

The sutures are applied by means of a small curved needle with a silk loop as a carrier. The first one may be placed at either end or, often conveniently, in the middle. If the fistula is a large one, the suture may be tied at once, thus facilitating even closure on both sides of it. Each silkworm-gut suture should enter the vaginal mucosa from an eighth to a sixteenth of an inch from the edge of the denudation, and appear at the margin of the mucous membrane of the bladder, to re-enter at the mucous margin on the

FIG. 150.



Operation for Vesico-vaginal Fistula. Stitches introduced preparatory to closure.

opposite side and reappear on the vaginal mucosa at a point corresponding with the point of entrance. No suture should penetrate the mucous membrane of the bladder where it is liable to become the point of a future fistula. Five or six similar sutures to the inch should be inserted, and one at or just beyond each angle.

These sutures should then be brought together and tied snugly, approximating the tissues without strangulation. The pouting tissue between these deep stitches can be approximated by fine silk or catgut sutures.

The ends of the sutures should be cut about half an inch long, and a loose iodoform gauze pack placed in the vagina. Should there be any tension whatever upon the sutures, longitudinal incisions must be made deep in the scar-tissue on both sides of the fistulous opening until all tendency to tension is relieved. These incisions should be made short, so that they may be closed by stitches introduced in the direction of their long axes, thus further relieving the tension. This precaution is oftentimes absolutely necessary to the success of the operation.

Under no circumstances should a sigmoid or other catheter be placed in the bladder for permanent drainage.

For the first three days the patient should be catheterized every three hours, after which she may be allowed to void her urine, taking care not to hold it longer than six hours, until the sixth day, when she may be allowed to pass the night without waking. In the case of small fistulæ the patient may void her urine from the very first. If the vaginal pack becomes wet or soiled, it should be removed at once, otherwise it may be left in place for two days, when it is removed and the vagina allowed to remain empty. It is not necessary to use a vaginal douche at any time unless there is a discharge from the vagina. All the sutures should be removed in from eight to ten days.

Urethral Fistulæ.—A fistula following labor and involving the urethra is usually small and of its interior half—that part projecting into the vagina. Fistulæ in the long axis of the urethra are at times made artificially by Emmet's operation to relieve vesical tenesmus. In closing the fistula, if small, the denudation may extend in a circle around it in a manner similar to the vescio-vaginal fistula; if large, a wedge-shaped piece may be cut out of the under part of the urethra with the fistula at its base, and the denuded surfaces brought together by silk sutures, extending down to the mucosa and applied closely and with extreme accuracy.

Fecal Fistulæ.

Fecal fistulæ are abnormal avenues for the escape of the contents of the small or the large bowel, either by the vagina or by the

bladder. The fistulous orifice, having no sphincter, affords an avenue for the constant escape of fecal matter when the contents of the bowel are fluid. If the fistula is small, opening into the sigmoid flexure or rectum, and the contents of the bowel formed, the escape of feces occurs but rarely.

One of the commonest and most distressing symptoms of these fistulæ is the more or less frequent escape of the intestinal gases, which pass out with an audible bubbling or hissing noise, and by the evident odor so distresses the patient that finally she entirely avoids society and remains at home brooding over her ailment.

Recto-vaginal Fistula.—Recto-vaginal fistulæ are the most frequent; they consist in a communication between the rectum and the vagina through the recto-vaginal septum, at some point between the cervix uteri and the vulva.

Recto-vaginal fistulæ in the upper part of the vagina are not uncommon sequelæ of a cancer of the cervix uteri, and are due to a destruction of the upper part of the septum. In most cases of this class the disease is already in its last stages, and nothing can be done to cure the affection. The duty of the physician is limited to keeping the parts as clean as possible by repeated irrigations with warm water slightly medicated with boric or carbolic acid.

Recto-vaginal fistulæ in the lower part of the vagina and recto-vulval fistulæ commonly arise from imperfect union of the tissues after an attempt has been made to repair a complete tear of the septum. When these fistulæ are reduced to the size of a pin's head, the closure may be effected by stimulating the tract with cantharidis or with a little nitric acid.

Fistulæ may be closed by making a broad denudation, extending from the sound tissue, around and deep down into the fistula, and then passing sutures, one or two deep, of silkworm-gut, and the remainder of silk or catgut, from side to side, just as in a vesico-vaginal fistula operation. The sphincter ani should be thoroughly dilated so as to render the rectum temporarily incontinent. A loose iodoform gauze pack should be placed in the vagina. On the eighth day all sutures should be removed.

When the fistula extends close to the sphincter muscle or is bounded on its lower side by a thin band of cicatricial tissue, or is very large in diameter, the best course to pursue in its treatment usually is to cut through the sphincter muscle and thoroughly

denude the fistulous area, thus securing snug apposition throughout with greater ease and without constricting the tissues.

The suture and after-treatment of these cases are similar to those adopted in cases of complete tear of the septum.

When the small intestine opens into the bladder at some point within the upper pelvic cavity, the only plan of treatment is to open the abdomen, find the fistulous tract, and sever the adherent intestine from the bladder, taking care, when necessary, to sacrifice rather the bladder than the bowel. This part of the operation will usually prove difficult, owing to numerous surrounding adhesions among the bowels, which must be separted with pains-taking care. After loosening the knuckle of bowel from the bladder, each viscus should carefully be protected by thick pieces of gauze to avoid contamination of the surrounding peritoneum, and the openings, first of the intestine, then of the bladder, should be closed by sutures. If necessary a portion of the bowel can be excised and the ends joined together with the Murphy button.

The cure of fistula involving different parts of the genito-urinary tract requires the nicest kind of judgment and skill. These operations are the most delicate and difficult of plastic surgery and are not to be attempted lightly. It is only by the most conscientious work that satisfactory results will be obtained.