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woman doctor refused to go to see her. She was referred to me and examination showed an apparent fibroid and I suspected malignant degeneration, the mass reaching almost up to the navel. Upon operation it was found to be an enlarged ovary almost the size of a fetal head which was diagnosed as a primary carcinoma of the ovary. In answer to Dr. Holden, it is only fair to say many patients refuse to submit to the modern methods of diagnosis, they want medicine.

Dr. Mills.—I expected criticism and I am glad the cases have created interest. This woman suffered from dyspepsia but the chief symptoms were in the lower part of the abdomen. While in the hospital her stomach emptied itself well. At the German Hospital they did not find the disease of the stomach until they operated. I agree with Dr. Holden that we should have better preoperative examinations.

Dr. Taylor.—I saw a case recently in Philadelphia at Dr. Deaver's clinic which may be of interest, a carcinoma of the breast in a man. I had never heard of a case until this operation. Dr. Deaver, in operating made a complete excision from the acromian process down to the costal cartilages and cleared out the axillary glands also those at the side of the chest along edge of latissimus dorsi. In the course of an hour while other cases were being operated upon the report came back from the pathological laboratory that the glands were not infected but that there was no doubt of the breast condition. Carcinoma of the male breast is exceedingly rare.

Dr. Earl H. Mayne read a paper on

PERFORATION OF THE UTERUS THROUGH THE USE OF INSTRUMENTS, WITH CASE REPORTS.

Just how frequently this accident occurs, it is hard to determine with any degree of accuracy, many cases, especially those happening in private practice, not being reported. In hospital practice more exact statistics may be secured.

In the Coney Island Hospital, from its opening in May 1910, to December 31, 1916 only three cases have been observed, the total number of cases admitted to the gynecological and obstetrical services having been approximately two thousand.

In the Cook County Hospital, Chicago, during a period of five years, three cases of perforation were noted among 495 abortions and 2343 pregnancies cared for during that time.

A diligent search of the medical literature from 1895 to 1907 by Heineck yielded 160 cases; from 1911 to 1915 inclusive Schwietzer was able to find 105 cases reported.

The type of case referred to in these reports is that produced by instruments introduced through the cervical canal. The uterus is often perforated in the operation for cancer by the heat method. Such accidents are not unexpected and are often necessary for thorough destruction of the growth; these cases, therefore, do not properly belong to this group.

Uterine perforations have taken place in the most skilled hands and the occurrence cannot therefore be considered a wholly pre-

ventable accident. Its recognition, however, when it does occur, is most important, and its proper treatment is a matter requiring careful judgment.

To differentiate between false perforations and true perforations is very essential, but not always easy. I can only mention a few of the conditions under which false perforations may occur: a dilated Fallopian tube, permitting the curet to enter it, ectopic gestation in the uterine portion of the Fallopian tube with abortion into the uterine cavity; myomatous uteri, especially where degeneration and softening of the growth has taken place; double uterus; uterus unicornis; etc.

There have been cases where the abdomen has been opened and the uterus removed for this accident when no true perforation has been found. In the true perforation the peritoneal cavity is most frequently entered; however, the bladder, the rectum, the space of Retzius, the vesicouterine space, the culdesac of Douglas and the space between the folds of the broad ligaments; have all been entered by the curet, sound or dilator.

These perforations may be attended by considerable morbidity; the mortality however is likely to be low. It is when the abdominal cavity is entered and its contents injured that the most serious results follow and the mortality becomes high.

It is interesting to note that probably 25 per cent. of the perforations are caused by the dilating instruments. In the minds of most of us the curet and sound have had to bear the entire blame. With such a large proportion of these lamentable accidents caused by dilators, we must also use these instruments with the utmost care.

When perforation occurs high surgical skill is required to determine the safest course for the patient. In the series of cases referred to above the mortality was well above 25 per cent. This high death rate proves that we are dealing with a serious condition. A much larger number of these cases will recover under judicious surgical intervention than under a purely expectant treatment.

Under no circumstances should irrigation of the uterus be done where perforation is suspected. Several deaths have been shown to be due to antiseptic solutions being forced into the abdominal cavity or infection spread thereby.

When perforation has occurred and the uterus still contains secundines, curettage should only be completed after the abdomen has been opened and the uterus seen from above. If the finger can be used as a curet it should have preference over all other tools. Whether the abdomen shall be opened or not will depend largely upon whether the gut or omentum has been injured, whether a considerable hemorrhage has taken place or active bleeding is going on; whether the contents of the uterus are septic or the instrument entering the abdominal cavity has been a carrier of infection; whether the size of the perforation is large or the number of perforations many.

If infection has begun, total extirpation of the uterus is indicated. Expectant treatment should only be given when the perforation is

small; when there is no suspicion of infection; when there is no intraabdominal injury, and when the contents of the uterus have been completely removed.

The following cases were treated at the Coney Island Hospital. The first is given in some detail as it was unusually interesting.

CASE I.—Mary T. aged twenty-four, Italian, married, the mother of three living and healthy children. She became pregnant again and soon afterward her husband contracted typhoid fever, dying in the hospital later. Shortly after his death she miscarried when she was four months pregnant. There appeared to be a retention of the placenta and her physician attempted to remove it under ether anesthesia. He told me later that he did not succeed in removing it and was greatly shocked when he saw a loop of intestine presenting in the vagina. The patient was then sent to the C. I. Hospital where she arrived at 10:30 P. M. on April 11, 1916. Her condition was one of shock, pulse 150 of poor quality small and thready, her weight was 180 pounds and her abdominal wall very fat. She was prepared for operation as quickly as possible and the abdomen was opened at 11:30 P. M., through the usual median, incision. Much blood and many blood clots were found in the abdomen. Diligent search failed to reveal the placenta and we concluded that it must have passed previous to curetment. The uterus was torn posteriorly from one uterine artery to the other just above the internal os, and through this opening a loop of ileum had been pulled. This was carefully withdrawn and examined; the gut was detached from its mesentery for 24 inches, torn in several places to or entirely through the mucous membrane; the mesentery of the sigmoid was also punctured in several places. Twenty-six inches of the small gut were resected and an end-to-end anastomosis made; the injuries to the mesentery of the sigmoid were repaired. A hysterectomy at the internal os was performed leaving both ovaries which were healthy. The abdomen was closed and the patient was given 2 quarts of saline by rectum before being removed from the operating-table. Her pulse at this time (12:50 A. M.) was 160, one hour and twenty minutes having been taken for the operation.

Her convalescence was stormy, on the fifth day following operation a fecal fistula developed, this closed spontaneously at the end of six weeks. The temperature ranged from 100° F. to 104° F. for a period of four weeks when it became normal. The patient left the hospital on June 8 in excellent condition.

This patient was seen on December 12, 1916. Her condition was splendid, weight normal, bowels regular, digestion good. Able to perform her usual work without discomfort of any kind. Menstruates for one day each month.

CASE II.—L. O. B., aged nineteen, U. S., servant, single. Admitted to the C. I. Hospital May 23, 1912 in a septic condition. A diagnosis of punctured uterus with intraperitoneal hemorrhage and peritonitis was made. Immediate operation was performed. The abdomen was opened and found to contain a large quantity of blood. There was a perforation in the fundus of the uterus about

1 inch long. A medium-sized soft rubber catheter was found among the intestines, the intestines and peritoneum were covered with a thick exudate. Complete hysterectomy was performed and a Mickulicz drain was placed. The patient died the following day.

CASE III.—Mrs. N., aged thirty-four, Norwegian, married. Admitted to C. I. Hospital, September 15, 1914. She was accompanied to the hospital by her family physician who stated that he had been called to attend this patient for severe bleeding from the uterus. He found she had had a miscarriage and from the history given she had not passed the placenta. She was about three months pregnant. On attempting to remove the placenta with the curet he felt the instrument suddenly pass through the uterine wall before the placenta had been removed. When the patient arrived at the hospital she was in shock, pulse 154, small and thready. She was subjected to immediate abdominal section. Considerable blood was found in the abdominal cavity, a perforation about 1¼ inches long was found in the fundus of the uterus. This was closed by interrupted catgut sutures, the blood was sponged from the abdominal cavity. Before the abdominal cavity was closed the placenta was removed from the uterus per vagina by the curet. The abdomen was then closed and 2 quarts of saline were given by rectum before the patient was removed from the operating-table. She made an uneventful recovery and left the hospital in three weeks.

CASE IV.—A. M., aged thirty-seven, Scotch, married, mother of two children; suffered from retrodisplacement. During her third pregnancy she miscarried between the second and third month. This was followed by protracted bleeding. I was consulted and advised curetment, this was accepted. Under ether anesthesia it was found impossible to get the uterus into the correct position. The curet was then used but in spite of the usual care, the posterior wall of the uterus was perforated. This was shown by the presence of fat material curetted from the rectal wall. In this case a drain was placed through the cervical canal for forty-eight hours. The patient had an uneventful convalescence.

CASE V.—In this case in which I assisted, a large soft retrodisplaced uterus was curetted, preliminary to abdominal section for a suspension of the uterus by the Gilliam method. The operator punctured the fundus anteriorly, with the curet. When the abdomen was opened the perforation was found to be about 1 inch long This was closed by interrupted catgut sutures. The uterus was then suspended and abdomen closed. The patient made an uneventful recovery.

DISCUSSION.

DR. POOL.—The surprising thing at an operation when perforation occurs is the ease with which it occurs. There is probably not a man in this room who has not had this experience, unless he is like the men who claim they have never lost a case of appendicitis. The inference is that he has not operated. A woman came into the service recently with a history of incomplete abortion last September.

She went along for two months without bleeding; I think she had one menstrual period. From that time there was bleeding, so much so that there was thought to be a possible epithelioma. She was curetted by an assistant and the curet went through the wall of the uterus. He made an incision in the culdesac to drain out the blood and the patient is now doing very nicely and is going to get well. I have perforated the uterus after abortion with a large size Palmer curet, going through the wall without knowing it. The blame rests on the doctor not for doing it but for not recognizing it when it is done.

Dr. McNamara.—Perforation of the uterine wall during curettage after abortion is a surgical accident that may take place in the best of hands. In a case like that cited by Dr. Mayne and Dr. Robertson it can take place without undue force where the degeneration of the uterine wall has taken place. I have exhibited at least one specimen here where this accident had occurred and the uterine wall not showing to the naked eye where it was degenerated. It is not always the result of bungling work.

Dr. Walter B. Chase.—I think it is a nice question in doing a curetment to know just how far you have gone. I remember one case when I was cureting for an accidental abortion, I became conscious of the fact that I had gone far enough to enter the abdominal cavity; I knew this by measurement. There was no sensation conveyed to my hand that I had perforated the uterine wall. There was no evidence of shock, nor was there any of local trouble or infection. I am convinced that the uterine muscle is so elastic and resilient that you can push a curet quite a distance against it without perforation, unless it is markedly diseased or greatly attenuated.

Dr. Wm. Pfeiffer.—This accident has twice happened to me. The first time was at the patient's home with the Goodell dilator, and was not discovered until the curet was inserted and found to pass beyond the fundus; there was no reaction, no douche used, no further interference found necessary, and the patient made an uneventful recovery. The second time was during a curetment under strict asepsis, and here also there was no reaction, the hands off policy being followed with the same good result. Another case occurred in Dr. Judd's service at King's County Hospital in a patient the victim of a criminal abortion; in this instance there was a loop of gut protruding from the vulva, and an intestinal anastomosis was done after resecting about 8 inches of the sigmoid. Hysterectomy was not done, but the culdesac was drained, and this patient also made a good recovery.

Dr. Hyde.—It is interesting in some of the cases to note the change in the patient's condition when this accident occurs. I have been present in three cases. The pulse jumps so that the anesthetist notices it. Dr. Chase's remarks remind me of a case that occurred in the service of the late Dr. Hinds at the German Hospital. In measuring the depth of the uterus with a Simpson sound the instrument disappeared and we thought the uterus had been punctured. An abdominal section was done and the uterus was found to be normal. The sound had gone into the left tube.

Dr. Mayne.—It has been stated by some that the Fallopian tube cannot be entered by the curet, but the recital of the case by Dr. Hyde proves that it can be. I recall one other case in which a perforation occurred. In cureting a woman about the period of the menopause we removed some material that made me suspicious of carcinoma of the fundus. During the curettage the curet seemed to pass through the uterine wall. Realizing that we had probably a carcinoma we took her to the sanitarium and did a hysterectomy, and careful examination failed to find a perforation. The curet had gone to the peritoneal covering only.

Dr. Henry M. Mills read a paper on

ACCIDENTAL INJURY TO THE URETER IN GYNECOLOGIC SURGERY.

After referring briefly to the salient features of the condition and the more recent literature, Dr. Mills reported three cases of injured ureter which he had observed.

Case I, which I saw first had a leakage of urine through the vagina. The case was one in which a panhysterectomy had been performed for a fibroid uterus reaching nearly to the umbilicus. The cystoscopic findings by Dr. Read were as follows: The left ureter was free and the urine flowed freely. Right ureter obliterated about 4 inches from bladder opening and catheter could not pass the obstruction. Methylene blue appeared in the left ureter in nine minutes, and did not appear in the right at all. About the right ureteral orifice was a spot covered with mucus plaques. Methylene blue in bladder appeared in vagina in one minute. From these findings we judge that the right ureter had been ligated about 4 inches from the bladder and the leakage was due to a vesicovaginal fistula near the orifice of the right ureter. The patient, after observation for one week, left the hospital. I have learned from her physician that the fistula closed spontaneously three or four months later.

Case II.—M. A., aged forty-three. Mother of two children. Menstruation regular up to one year ago when she began to flow every two or three weeks, duration six days, three or four heavy towels saturated daily. Vaginal examination: Uterus greatly enlarged, studded with fibroids; movable; adnexa not palpable; no tenderness in either fornix. Blood count: Red cells, 2,740,000; white cells 9600; hemoglobin 90 per cent. The operation consisted in a supravaginal hysterectomy and double salpingo-oophorectomy; cervical canal disinfected with phenol and alcohol; the round and broad ligaments were sutured to stump of cervix. Eleven days after operation the patient was moved from one bed to another. At this time she discovered for the first, the bed wet from urine. Upon examination urine was found leaking from the cervical canal. Three days later the cystoscopic findings by Dr. Fraser were as follows: The ureteral catheter passed up toward the right kidney is blocked at a distance of 1½ inches above the bladder; no urine obtained from the catheter on this side. Catheter passed up 8 inches in left ureter and urine flowed through in normal manner.

The vagina contained urine, was swabbed out and packed with plain gauze. Indigo-carmin then injected and at end of twenty minutes the dye showed from left ureteral catheter. At the end of twenty-five minutes the vaginal tampon was removed and showed blue stain. Diagnosis: obstruction of right ureter with leakage of urine through cervical canal. Three days later, the patient being in excellent physical condition an attempt was made to do an implantation of the ureter into the bladder. The patient was very fat and the pelvis deep. The broad and round ligaments having been sutured to the stump of the cervix changed the topography of the pelvis considerably. Indigo-carmin had been injected hypodermatically as an aid. A diligent search was made to locate the ureter at the crossing of the iliacs and also at the vesical end but it could not be demonstrated. A transperitoneal nephrectomy, as advised by Graves, in his Gynecology, was considered before closing the abdomen, but it would have taken a very courageous surgeon, indeed, to attempt it in this particular case. The case was transferred to the genitourinary service and three days later Dr. Cochran did a nephrectomy through a lumbar incision. The kidney was found to be perfectly normal with no dilatation of the pelvis, in spite of the occlusion of the ureter for at least ten days. When the kidney was removed the stump of the ligated ureter was picked up at the bottom of the wound and it was so friable that very gentle traction of the forceps pulled it asunder. It was remarked that possibly the patient was syphilitic. The Wasserman reaction, however, was negative. If the distal end of the ureter was in the same condition I am certain no one could implant such a ureter into the bladder. The patient has made a perfect recovery. The urine report from time to time shows normal urine. Systolic blood pressure one day after nephrectomy was 115.

CASE III is very similar to Case II, in which a supravaginal hysterectomy had been performed previously. A small fistulous opening in the left vaginal fornix leaked urine. The cystoscopic findings by Dr. Fraser were as follows: The right ureter admitted a catheter 11 to 12 inches. The left ureter admitted a catheter 1½ inches. Hypodermatic injection of indigo-carmin shows a stain from the right ureter but none from the left ureter. Gauze in the vagina shows a stain at the end of thirty minutes. Diagnosis obstruction of the left ureter about 1½ inches from the bladder. It is now six months since the hysterectomy was performed and the fistula still persists. It is planned to attempt an implantation of the ureter into the bladder in the near future.

In the three cases above the first was a ligation of the right ureter, with a vesicovaginal fistula which closed spontaneously. The other two were unilateral ligations of the ureter with vaginal fistulæ. One of these was treated by nephrectomy and the last one requires operation as the fistula still persists not closing after a lapse of six months.

These cases are too few to draw any conclusions, but from reading it appears the proper procedure in a unilateral injury of the ureter would be.

When discovered at operation: 1. Implantation. 2. Anastamosis. 3. Ligation and dropping. 4. Nephrectomy.

When discovered subsequent to operation: Where there is fistula; incomplete: waiting four months; complete: operate as soon as able: 1. Implantation. 2. Anastomosis. 3. Ligation and dropping. 4. Nephrectomy. Where there is ligation and no fistula develops: doing nothing or nephrectomy for cause.

DISCUSSION.

Dr. McNamara.—It is impossible to add anything to what Dr. Mills has so completely covered on this subject, practical as well as in the literature. I was present when he tried to find the severed ends of the ureter and the difficulties were so great as to make it almost impossible. The difficulty of locating the ureter in normal condition is great but in the presence of pathological tissue it is still greater. The conclusions mentioned by the writer of the paper are the only ones that can safely guide us. As soon as the occlusion occurs it is safer to take out the kidney. I hope someone will say a word about prophylaxis, the means of avoiding these accidents. We are all aware of the dangers of a fibroid hanging over and obstructing the ureter, such an accident being almost unavoidable.

Dr. Robertson.—Regarding prophylaxis. I assisted Dr. Judd recently in a hysterectomy for fibroid in which ureteral catheters were passed on both sides and these made excellent guides in determining the anatomical relations. They helped materially.

Dr. Pool.—Cases in which the accident occurs are usually difficult to operate upon. In the course of an operation for the removal of a large fibroid we have already subjected the patient to a severe strain and I am rather in favor of ligation as the easiest way out of a difficult problem, and such a course would be justified. So far as a secondary operation is concerned I would never undertake to dig up a ureter than has been implanted.

Dr. Zimmermann.—I believe this accident occurs more frequently than we are aware of. Many a case of death from peritonitis or so reported is due to the injury to the ureter, and many cases will clear up themselves. One case in which it did happen to me was where I had removed an enormous fibroid and twenty-four hours later the patient began to leak urine. The case cleared up absolutely. I concluded that I had injured but not occluded the ureter. In many cases there is a temporary hydronephrosis and the atrophy. This accident is more probable in removing pus tubes and intraligamentous cysts, as in those cases there is a displacement of the ureter and the anatomical relations are dislocated. I believe if I had a case to-morrow I would tie it off and if anything occurred I would do a nephrectomy later.