Experiment 3. Operation. Two end-to-end anastomoses with maccaroni bobbin. Edges being sutured with only one continuous suture through all the layers of the intestine. Gastro-enterostomy was also performed with maccaroni as a mechanical device.

Twelve hours after operation animal (in good condition and feeding) was killed. The bobbin used in the gastro-enterostomy was found to have slipped into the stomach and was considerably softened although in no way disintegrated. The wound was clean but not as firmly adherent or in as good condition as the intestinal wounds. The bobbins in the intestine were found to be in position, considerably softened but not disintegrated. The serous surfaces were adherent and no leakage or sepsis was present.

These experiments tend to show that in the maccaroni bobbin we have a device which, besides facilitating intestinal suturing and holding the sutured ends in position until firmly adherent, serves as a conduit for the intestinal contents and at a period of time not under twelve hours or later than thirty-six hours, is digested and absorbed.

REFERENCES.

[1] Glossular quater Magisturum super Chirurgian Roguii et Rolandi. Paris, 1854.
[2] Senn, N.: Intestinal Anastomosis. 349-385, p. 8 B. M. L., 17 C.
[3] Murphy, J. B.: Intestinal Approximation. 24, p. 4.
[4] Harrington, Ring: B. M. L., 4, 17 C.
[5] Keller: N. Y. Med. Jour., May, 1903.
[6] Halsted, W. S.: Phila. Med. Jour., 1898, i, n. 2, 63-68.
[7] O'Hara: N. Y. Med. Jour., April, 1903.
[8] Robson, A. W. M.: Brit. Med. Jour., Lond., April 1, 1903, 688-689.
[9] Boari, Ade: Arch. ed. atti d. Soc. ital de Chir., Rome, 1897, xi, p. xlv.
[10] Neuber Serelled F.: Chir., Berl., 1884, xiii, 55-57.
[11] Wackerhagen, S.: N. Y. Med. Jour., 1898, lxvii, n. 14, Aug. 2, 484.
[12] Metcalf, W. F.: Jour. of Am. Med. Asso., Chicago, 1898, xxxi, n. 7, Aug. 13, 325-328.
[13] Bishop: On Enterorraphy. Med. Chir. Maneberter, 1885, vol. i.
[14] Halsted: Intestinal Anastomosis. Bull. of Johns Hopkins Hospital, Balt., 1891, vol. ii, p. 1, Jan. 10.
[15] Brit. Med. Jour., Lond., 1893, vol. i, p. 188, April 1.
[16] Kummer: Centralbl. für Chir., Leipzig., 1891, n., 40.
[17] Parlavecchio: Nurro metodo per le enlorvanastourse vell aner e laludi e per le gastro de le celecisto-enterostomis. Tl. Policlin. Roma, 1898, v, 8-16, April 15 and Aug. 15.
[18] Cannon and Murphy: Ann. of Surg., April, 1906.

Clinical Department.

VICARIOUS MENSTRUATION WITH A REPORT OF TWO CASES.

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VICARIOUS menstruation is such a rare condition that some have denied its existence. A study of the literature certainly leads to the conclusion that many of the reported cases are spurious. Still there are many others that hardly admit of a doubt, cases, for example, where vicarious bleeding has occurred regularly for years, but has always ceased during pregnancy. The condition has occurred at all ages from the first menstrual period to the menopause. Some patients show pelvic abnormalities obstructing the flow, while in others the pelvic conditions have been normal. There is great variability in the site of hemorrhage, some bleeding from the nose, some from the lungs, stomach, rectum, eyes, ears, gums, bladder, nipples or umbilicus. In some the bleeding has been confined to a nevus, a scar, a fistula or a leg ulcer. Usually the hemorrhage occurs from but one site, but a few cases have occurred in which at regular intervals corresponding to the menses there has developed a tendency to bleed in various if not in all situations. Such a case is the following:

CASE I. Mrs. E. F., aged thirty-six, applied for treatment at the Medical Out-Patient Department of the Boston City Hospital on Dec. 1, 1903. There was nothing of importance in the family history, particularly no hemophilia. She had two children, a boy and a girl, neither of them bleeders. The patient was born in England and came to America in 1898. Apart from an indefinite history of an attack of "inflammation of the bowels" she had always been well. She used liquor freely, frequently to the point of intoxication. The menstrual history was, up to the onset of her final trouble, normal.

In the summer of 1902 she began to suffer from menstrual irregularity and in December of the same year normal, uterine menstruation ceased wholly only to be replaced by the phenomena for which she sought relief. At more or less regular intervals, averaging somewhat less than four weeks, a dark colored rash would appear on the legs and more sparsely over the rest of the body. At the same time she would have nose-bleed and "blood-blisters" would appear on the lips, gums and tongue. Each attack lasted but a few days. Each attack left her paler and weaker than before, and in the intervals she did not regain her previous health. She complained also of headache, dyspnea, puffiness of the face and swelling of the feet. The bowels moved daily and the appetite was good. Her diet was ample in amount and mixed in character, including an abundance of fresh fruit. When first seen she was recovering from a severe attack.

Physical examination showed a well-developed and well-nourished woman in good general condition, but very pale. The area of cardiac dullness was slightly increased and there was a systolic murmur at the apex transmitted a short distance towards the axilla. The lungs, abdomen and abdominal viscera were normal. There was a fading hemorrhagic eruption, most marked on the legs, a large ecchymosis on the back of one hand and several small, hemorrhagic vesicles on the tongue and lips. The urine was normal.

The blood was as follows:

Hemoglobin, 45%; red corpuscles, 1,520,000; white corpuscles, 5,400.

A differential count of white corpuscles showed nothing abnormal. The most marked features of the smear were the achromia and the small number of platelets. No nucleated reds were seen. The coagulation-time was not studied, but the bleeding from minute punctures was unusually free and clotting appeared to be much retarded.

She was given iron, arsenic and calcium chloride and instructed to take in her food as much gelatin as possible. She steadily improved and at the end of a week there remained no evidence of the hemorrhages, except for the rapidly diminishing anemia.

The patient had prophesied her next attack for December 20, and as this date approached she was observed with both interest and skepticism. On the 21st she presented herself at the clinic in a condition that removed all doubts. There was a purpuric eruption on the legs and fore-arms, with a few spots on the trunk. There was slight bleeding from the mucous membranes of the nose and mouth. On the whole the severity of the attack was much less than before. She was not seen again until March 7 when she returned to the hospital in the midst of a very severe attack. She stated that in the interval she had had two others.

A second blood examination was made on March 11, with the following results:

Hemoglobin, 45%; red corpuscles, 2,912,000; white corpuscles; 15,100.

A differential count of white corpuscles showed nothing abnormal. There were no nucleated reds. There was marked achromia and marked variation in the size of the reds, the average being noticeably small. There was moderate poikilocytosis and slight polychromatophilia.

The woman was advised to enter the wards for the purpose of further study and treatment, but refused. She soon after became a patient of the Suffolk Dispensary. I am indebted to Dr. Clark of that institution for the information that the hemorrhagic attacks continued to occur at intervals approximating the menstrual periods. Each month she appeared to lose more than she regained and she finally died in an attack on Dec. 3, 1904.

To summarize: We have a woman who menstruated normally up to the age of thirty-five, when, without previous history of hemorrhages, menstruation ceased and she began to have regular, periodic attacks resembling hemorrhagic purpura. Severe, and finally fatal, anemia resulted.

There is nothing in this history to suggest hemophilia. There was no general, permanent tendency to bleed, no suggestion of the disease in the ancestors or children. Cuts and wounds healed as in normal individuals. Moreover, the age of onset is greater than in hemophilia, which rarely begins later than twenty-two.[1] Another condition which predisposes to hemorrhages in various parts of the body is cirrhosis of the liver and in this case the alcoholic habits of the patient strongly suggest its presence. The suspicion, however, could not be verified, and at best such a diagnosis would leave unexplained the close relationship between the hemorrhages and the menstrual periods. The physiology of normal menstruation is as yet but poorly understood, and one is certainly not justified in saying that in the case herein reported the periodical hemorrhages accomplished a function that would otherwise have been brought about by the normal uterine flow. In making the diagnosis of vicarious menstruation one merely registers the fact that the attacks resembled in their periodical occurrence the normal menses, which ceased when the attacks began, and that they were therefore somehow connected with that function. That they were truly vicarious in a physiological sense cannot be affirmed.

A review of the literature of the last twenty-five years shows very few cases like this one. Heitzmann,[2] in 1884, collected a number of cases of menstrual exanthemata, some of which were purpuric. In certain of these cases there was atrophy, under-developement or other marked anomaly of the uterus causing obstruction, and in one or two of these local treatment resulted in recovery. Rouvier[3] quotes Puech to the effect that out of 200 cases of vicarious menstruation 8 were from multiple sites, while out of the 334 collected by Rouvier 4 were from all parts of the body. In 1888 Butler[3] reported a case of a woman of alcoholic habits in whom the menses ceased for nine months. A general, hemorrhagic, vesicular eruption, together with bleeding from the nose and throat, occurred during this time, but it is not clearly stated that the attack recurred regularly at each catamenial period. She recovered.

I have found but four cases where, in place of the normal uterine flow, there occurred periodically a condition resembling the severe type of hemorrhagic purpura.

1. Barnes[4] described a case of Clark's. A woman of eighteen who had never menstruated began to have attacks every month of bleeding from the gums and nose and occasionally from the stomach, together with a purpuric eruption. She finally died of severe anemia in an attack. An autopsy showed, in addition to extensive hemorrhages in the internal organs, a rudimentary uterus and normal ovaries. In one of the latter was a recent, false corpus luteum.

2. Andrade (quoted by Barnes[5]) described a case in which hemorrhages from the stomach, nose, gums and skin replaced the normal menstrual flow. "Menstruation returned."

3. La Forte (quoted by Heitzmann[2]) reported the case of a woman of twenty-six who had had, since the age of fifteen, menstrual molimina, without actual flowing. At regular intervals there occurred bleeding from the lungs, nose and skin. The vagina was congenitally absent. A successful operation for the formation of a new vagina completely relieved the symptoms, normal menstruation being re-established.

4. Quite recently Schechner[6] has reported a case almost exactly like mine. A woman of forty-seven suddenly ceased to menstruate, the normal flow being replaced by subcutaneous hemorrhages and nose-bleeds of great and increasing severity. She finally died in an attack.

Fatal cases of vicarious menstruation are rare. In addition to the cases already referred to there are, in the older literature, a few dubious instances. In some of the cases reported as fatal, death was only in an indirect way due to vicarious menstruation. Kober,[7] for example, reported a woman with incipient tuberculosis in whom the normal uterine flow was replaced by regular, vicarious hemorrhages from the lungs. Each attack was followed by an acute process in the lungs. The patient finally died, but death was not a direct result of hemorrhage. In 12% of Rouvier's cases the vicarious bleeding was from a cancer of the stomach or a tuberculous focus in the lung. Two others died directly of hemorrhage, making a total mortality of 14%.

The following case represents a much different type:

CASE II. Miss S. J. C., age twenty-nine, a nurse. For the opportunity of reporting this case I am indebted to Dr. J. N. Coolidge, to whose service at St. Luke's Home she was referred by Dr. S. M. Gordon, of Fall River.

The patient knows of no bleeders in her family. Two brothers and two sisters are living and are not bleeders. She knows nothing about her mother's father, to whom one would naturally look for a history of hemophilia. She has no maternal uncles. Her

mother died with paralysis of both legs; she may have been syphilitic. No ancestors on her father's side were bleeders.

As long as the patient can remember she has been subject to severe nose-bleeds. She says that cuts and wounds bleed more with her than they do with others, and, as a child, she was always obliged to lie down when she cut her finger and hold it up. Blows always leave large ecchymoses. She once had a severe hemorrhage after the extraction of a tooth and was once in danger of her life as the result of bleeding from a wound on the leg. The resulting scar, however, indicates a wound of sufficient magnitude to be serious in a normal person. Seven years ago an abscess was opened without undue loss of blood.

Menstruation began at the age of twelve. The first period lasted two weeks and she lost a dangerous amount of blood. She continued to menstruate irregularly about every two weeks. Each time the uterine flow was preceded by nose-bleed for several days and was generally accompanied by bleeding from the gums. For the past four years there has been also a purpuric eruption. She never noticed blood in the urine, feces or sputum. She once vomited some black material that she thought was blood. The uterine flow was commonly severe, from six to twelve napkins being used. Sometimes the loss of blood was so severe as to incapacitate her for several weeks. These attacks occurred about once a year, always in cold weather.

She was first seen by the writer on Feb. 2, 1906, during a menstrual period which had commenced with a nose-bleed. Examination showed an apparently healthy young woman in good general condition and not pale. The only evidence of abnormal bleeding was a few small petechiæ on the fore-arms. The thoracic and abdominal viscera and the reflexes were normal.

An examination of the blood showed a normal percentage of hemoglobin and normal numbers of white and red corpuscles. Stained smears showed no abnormalities either in the differential count of leucocytes or in the morphology of the red corpuscles. The coagulation-time by the Brodie-Russell method was twenty-one minutes. The normal time by this method, according to Pratt, is four or five minutes.[9]

A guaiac test for blood in the feces, after abstinence from food containing hemoglobin for three days, was faintly positive.

Under treatment she improved rapidly, but the loss of blood at the menses continued to be excessive and the intervals short and irregular so that she was flowing more or less all the time. A day or so before each exacerbation of the uterine flow she always had nose-bleed and fresh crops of petechiæ. She was seen in April by Dr. Edward Reynolds, who found both ovaries diseased and recommended operation. Ovariotomy was performed by Dr. Wadsworth. The left ovary was triple the normal size and was cystic; it was removed without the tube. The right one was also enlarged and adherent with the tube to the back of the broad ligament. With some difficulty it was separated from its adhesions and removed with the distal half of the tube. There was considerable oozing from the bed of this ovary and from the two small punctures in the uterus made with the French hooks. The hemorrhage was not in any way alarming. Convalescence was perfectly uneventful.

For the first two or three months after the operation at the times when the menses were expected, she had slight nose-bleeds and hemorrhages from the gums, with a few spots on the skin. Then without any periodicity she continued to have occasional slight nose-bleeds and spots. About eight months after the operation she menstruated profusely, but had no accompanying hemorrhages from extra-genital sources. She was recently seen by the writer and appeared to be in excellent health. The coagulation time was nine and one-half minutes.

To summarize this case: A young woman, without family history of hemophilia, gives a story of a tendency to hemorrhagic conditions from early childhood. The first menstruation is accompanied by menorrhagia and thereafter each period is associated with an exacerbation of the hemorrhagic diathesis. Ovariotomy influences the periodicity but does not altogether abolish the tendency to hemorrhages.

This case is probably to be regarded as one of mild hemophilia, since the bleeding from the skin and mucous membranes at the time of the menses was merely an intensification of a permanent, though not well marked, hemorrhagic diathesis. It is a well-known and generally acknowledged fact that hemophilia is a disease of the male sex. But this rule is not an invariable one. Particularly if these mild forms are taken into account, the classical statement of Grandidier,[10] to the effect that only one bleeder in thirteen is a female, must certainly be modified in favor of the greater frequency of the disease in that sex.[11] The onset of the disease in this case in childhood is in accord with the generally observed facts in hemophilia. The fact that she was operated upon without undue loss of blood does not nullify the diagnosis, since bleeders quite frequently show the tendency to unusual hemorrhages only at certain periods. Litten[12] says that large surgical wounds are less apt to bleed dangerously than trivial ones, and even refers to a case in which Fordyce stopped a hemorrhage in a bleeder by enlarging the wound. According to Grandidier, women with slight hemophilia show little tendency to traumatic hemorrhage.

Female bleeders quite commonly suffer from profuse menstruation, but a study of the literature leads to the conclusion that there is not commonly at the monthly periods any increase in the tendency to bleed from other sites, such as was shown in my case. In some published instances, however, such exacerbations of the hemorrhagic tendency have occurred. Kehrer,[13] in 1876, mentioned three cases from the literature in which female bleeders had unusually severe manifestations of their disease at the time of the menses. Köhler[14] refers to a hemophilic woman who had severe bleeding from "all orifices," a few days before each period. Hadden[15] has reported a girl of fourteen in whom there was no family history of hemophilia. Purpuric spots had been observed at times for five years. There had been unusually severe hemorrhage from slight wounds, and two severe nose-bleeds. The first menstrual period was very severe and prolonged, and caused marked anemia. Blood punctures from the ears bled several days. There was a general purpuric rash. A subsequent menstrual period was associated with an abnormal loss of blood, but there were no petechiæ. The author considered the case one of hemophilia.

Extra-genital hemorrhages recurring at the

menstrual periods fall naturally into three groups, of which the two more unusual ones are illustrated by the cases herewith reported.

In the first and commonest form the uterine flow is replaced by bleeding from some other site, but there is no general hemorrhagic tendency. Such cases usually run a favorable course, so far as the general health is concerned, the vicarious hemorrhage causing no more unfavorable symptoms than normal menstruation.

In the second form, typified by Case I, the normal flow ceases and there is a general hemorrhagic tendency, with a picture like purpura hemorrhagica. The resulting anemia may prove fatal.

The third form, typified by Case II, is probably to be regarded as closely allied to, if not identical with, hemophilia. In the few cases recorded a family history of this disease is often lacking, but there are several common and suggestive features. There is generally a history of purpura, nose-bleed or severe bleeding from trivial wounds in childhood. The first menstrual period is apt to be associated with severe menorrhagia. The cases are spoken of as vicarious menstruation merely because, along with the normal monthly flow, there may be an exacerbation or a tendency to bleed present at other times as well. Uterine menstruation is absent in some cases, but in others, as in ours, it is excessive.

Surgeons are naturally and properly loth to operate on these cases of hemorrhagic diathesis. Yet it is natural to expect that ovariotomy will give relief where the condition shows a periodicity corresponding to the menses. Bartlett [16] removed the ovaries from a woman in whom normal catamenial flow was replaced by periodic bleeding from the stomach, the operation being undertaken for other surgical indications. Two months after operation the vicarious bleeding recurred and continued at regular intervals of three or four weeks. This is the only case I have been able to find where ovariotomy was done in a case of vicarious menstruation. The case obviously belongs to the first group of the classification suggested above. In my Case I, operation seemed very promising since the hemorrhagic diathesis existed only at the menstrual periods, and yet the loss of blood was such as to cause a progressive anemia. In cases where vicarious menstruation is merely a manifestation of hemophilia, operation is to be undertaken with more timidity, and is of course not to be thought of in severe cases. It promises fairly certain relief from one source of hemorrhage, viz., uterine menstruation, and it offers a probability of relief from the periodic exacerbations of the hemophilic tendency.

REFERENCES.

[1] Litten: Deut. Klin., 1903, iii, 421.
[2] Heitzmann: Medicinischer Jahrbücher, 1884, p. 9.
[3] Butler: Med. Press and Circ., 1888, xlv, 135.
[4] Barnes: Brit. Gynec. Jour., 1886, ii, 173.
[5] Barnes: Diseases of Women, 1874, p. 156.
[6] Schechner: Wien. klin.-therap., Wochenschr., 1905, xii, 1258.
[7] Kober: Berl. klin. Wochenschr., 1895, xxxii, 32.
[8] Rouvier: Ann. de Gynéc., 1885, xxiii, 24.
[9] Pratt: Jour. of Med. Research, 1903, x, 120.
[10] Grandidier; Schmidts Jahrbücher der Medicin, 1872, cliv, 81.
[11] Immermann: Ziemssen's Cyclopedia of the Practice of Medicine, 1878, xvii, 3.
[12] Litten: Nothnagel's Encyclopedia of Practical Medicine, American edition.
[13] Kehrer: Arch. für Gynäk., 1876, x, 201.
[14] Köhler: Quoted by Grandidier.
[15] Hadden: Occidental Med. Times, 1903, xvii, 49.
[16] Bartlett: Transactions of the International Medical Congress, Ninth Session, 1887, ii, 321.

SENILE TREPIDANT ABASIA. REPORT OF CASES.

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THE following cases are reported to draw attention to a peculiar disturbance of gait occurring in elderly people and presumably associated in some as yet inadequately explained way with general arterio-sclerosis:

CASE I. Mrs. C., eighty-three years old, was first seen Oct. 22, 1903. She gave the following history: Up to three years before she had considered herself well, except for the natural infirmities of advancing years. At that time she began to notice a disturbance in walking, particularly characterized by difficulty in starting. At times, when once started, she was able to progress fairly well, but the first movements necessary to taking a step were very much hindered, particularly when embarrassed by the presence of any one in the room. Going down a certain flight of stairs had become increasingly difficult and at the time of my first visit was impossible. The patient felt that she was growing worse.

Physical examination showed equal pupils with adequate light reaction, normal heart and no definite radial arterio-sclerosis so far as could be determined by ordinary methods of examination. The hand grasp on both sides was good; the reflexes of the arms lively, but not markedly different, with a probable slightly greater reaction on the left than on the right. The knee-jerks were both active, with a questionable Babinski sign on the left. No plantar reflex was obtained on the right. There was slightly greater difficulty in moving the left leg than the right. In general the patient appeared vigorous for one of her years and gave no indication of definite local or general disorder.

The point to which I desire to draw particular attention is her difficulty in locomotion. When standing and asked to take a step forward, it was practically impossible for her to do so by an ordinary act of the will. After much difficulty, hesitation and "muscular stammering," she was finally able to start the muscular movements necessary to walking, and still with much difficulty, taking short and uncertain steps, she was able to progress a certain distance with much show of effort. There was in this case no element of spasticity nor ataxia, nor could it in any sense be regarded as the gait of ordinary feebleness. The disturbance in locomotion, in other words, was out of all proportion to the other symptoms which she showed.

Certain exercises were prescribed which she followed out with faithfulness and with certain definite temporary improvement. When seen two weeks later she was distinctly better and was able to a certain extent to walk alone. At this time she complained of difficulty in writing very similar in character to that of walking. She was able to copy and write spontaneously correctly, but only after much effort.

She was seen again two years later, and during the interval had grown decidedly more feeble. She complained of spasmodic twitching of the legs at night sufficient to keep her awake. The reflexes were very active, still there was no ankle clonus, and the Babinski sign was altogether indefinite. As at the previous visits the left side showed slightly greater involvement than the right. The heart was arythmic and feeble; the