roots discharging the pus characteristic of chronic alveolar abscess dry up, so to speak, and after extraction their sacs appear to be shrivelled and inert. There are cases too advanced for any cure except that of extraction; for example, if pyorrhoea involves as much as one-third of the membrane from the apex, the remaining part of the periodontium of the tooth, being necrosed, cannot be brought to life again, so the tooth involved could not be tightened up sufficiently to be useful for mastication, and the best treatment would be extraction. Even in such cases, however, a course of vaccine given before extraction is followed by much more rapid healing of the tissues after the operation and by less systemic disturbance. The treatment used before the operation acts preventively also where infection is expected to follow surgical action. The following are typical of many cases I have treated by this method.

Case 1.—A man of 56, suffering from dyspepsia, alimentary toxæmia, and a marked degree of pyorrhoea alveolaris; the mouth was fetid and pus pockets were present about all the teeth. After the first few injections the patient's general condition improved almost immediately. The languor, headache, and dyspeptic symptoms diminished, and by the end of the course there was no need of further medical treatment, the bad odour and pus having disappeared.

Case 2.—A young man of 23, who complained of vague rheumatic pains, accompanied by general malaise, but with no other objective signs than pyorrhoea alveolaris. This patient's general condition also improved from the commencement of treatment, and after twelve injections the pyorrhoea was cured, and he reported that he had never felt better.

Such results justify the hope that in the future pyorrhoea alveolaris will prove to be always curable, and that this treatment will serve as a prophylactic against toxæmia and systemic complications of pyorrhoea. Goldenberg, indeed, goes further, and holds that this local inoculation is not only indicated in pyorrhoea alveolaris, but also in all cases of dental infection—for example, the complication of infection due to the difficult eruption of wisdom teeth, and so forth. My own experience of the method has convinced me that it is of the greatest value, and marks the dawn of a new era in the treatment of pyorrhoea alveolaris, the most widespread and serious disease with which the dental practitioner has to grapple. If my article helps to spread knowledge of this last and most important advance in our methods of attack on this modern scourge of civilized people, it will have achieved its purpose.

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TREATMENT OF UTERINE HAEMORRHAGE NOT DUE TO PREGNANCY OR NEW GROWTH.

BY

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THE successful treatment of cases of uterine haemorrhage often becomes a difficult and urgent one, for there are many which do not respond to medicine or curetting. There then appears to be nothing left but the major operation of hysterectomy.

Being greatly impressed by the possibilities of radium in certain instances, I purchased, in 1920, 200 mg. of radium bromide, and during the past three years have treated a number of patients with it; amongst these were cases of uterine haemorrhage, and, as a perusal of the notes of nine consecutive cases will show, the treatment was completely successful in each instance. Some of them had already been curetted more than once without any improvement. Where the bleeding is due to fibroids this is generally best left to the surgeon to deal with, unless the fibroid be a submucous one, when radium will often bring about a cure.

The cases quoted are all those of menorrhagia and metrorrhagia; the etiology of this condition I do not propose to go into, as it is a question about which much controversy still exists.

Before undertaking radium treatment it is, of course, necessary to eliminate the possibility of malignant disease, and for this purpose it may be necessary for the patient to submit to a curetting; if this has to be done the radium may

be introduced into the cervix uteri at the time of the dilatation.

The most convenient form in which to have the radium is in a tube containing 50 or 100 mg. of radium bromide; the latter strength was used in my cases. In addition, a similar tube or applicator is often advantageous for applying to the abdominal wall to obtain a cross-fire action if required. The tube may be used either unscreened if inserted directly into the cervix, or screened if placed in the vaginal vault. In either case an outer covering of pure rubber tubing is used to cut off the alpha rays, which are non-penetrating and cause superficial burning of the tissues. The vagina is then lightly plugged with gauze and the radium left in position for the time determined upon.

The length of exposure is a most important factor with regard to the successful treatment, and will depend upon the amount of radium bromide used, the thickness of the screening, the age of the patient, and the severity of the condition present. It must be borne in mind that there is a danger of producing complete cessation of the menses; this fact should be carefully explained to the patient, her relations, and medical attendant. Women near the climacteric, where the haemorrhage is profuse and previous treatment has failed, often prefer this to the alternative of hysterectomy. If, however, the dosage is correctly estimated there is little fear of the menses ceasing.

It is best to start with a small dose, and, if this does not prove sufficient, to repeat it after the next period. In a young adult I have found it safe to commence with a tube of 100 mg. screened with 1 mm. silver *plus* rubber, and to leave this in for seven hours. The second dose will depend on the result of the first. It may even be necessary to give a third, but this seldom happens. The patient should stay in bed for the day, when the tube can be inserted in the morning and removed during the afternoon. There is no need for the patient to lie up afterwards as there are seldom any after-effects. Nausea and vomiting may occur, and there may be a feeling of general malaise with rise of temperature, but these symptoms disappear in the course of twenty-four hours, and are rare unless a prolonged application has been given; they should be treated on general lines.

The first period or two after the application may show no diminution in quantity, or may even be excessive, or the bleeding may continue for some days or even weeks before it finally ceases, as occurred in Case ix. This, however, is rare, the improvement as a rule being noticeable from the first.

In middle-aged women, where the bleeding is severe and has resisted all previous treatment, a longer exposure is necessary, and in these cases an external application should be given at the same time as the internal, either by means of an applicator or tube. In either case a screen of 1 mm. of silver and rubber is necessary, and in addition ten to twelve layers of lint must be interposed between the applicator and the abdominal wall in order to prevent burning of the skin. An exposure of from fourteen to sixteen hours will as a rule bring about the desired result. The after-treatment consists in ordering a simple vaginal douche daily for a few weeks.

The question naturally arises as to what effect this treatment may have on the possibility of pregnancy. It may be definitely stated that it has no deleterious effect, for although pregnancy is uncommon after treatment, it is no more so than in patients not so treated who are the subjects of these conditions.

Vaginal discharge is almost always associated with this type of haemorrhage, and is often profuse and offensive. Radium has a remarkably beneficial effect on this condition as well as on simple leucorrhoea, which rapidly clears up after one or two applications.

CASE I.—*Metrorrhagia.*

Mrs. B. H., aged 34; four children. Admitted December 1st, 1921, with the history that in November, 1918, laparotomy was performed for ruptured pyosalpinx; in April, 1919, she was curetted after a month's continuous loss; in September, 1921, she was readmitted to hospital for severe bleeding—bilateral salpingectomy and right oöphorectomy performed; this was followed by a normal period in October; in November, 1921, the loss was stated to have been

excessive, with many clots; on November 29th flooding recommenced. On admission the patient was losing freely.

On December 12th she was curetted and a tube of 100 mg., screened with 1 mm. platinum, placed in the uterus for twenty-four hours.

On June 2nd, 1922, the patient wrote that her general health was fair; she had had no more bleeding whatever. The vaginal discharge was profuse for a month after the treatment, but since then it had been very slight. She had gained in weight.

CASE II.—*Metrorrhagia.*

Mrs. D., aged 25; widow, no children. Seen January 26th, 1921.

History.—Married eight years. Right tube and ovary removed four years ago; since then the menses had been very profuse—rhythm 7/21; also excessive vaginal discharge.

A tube of 100 mg. radium bromide, screened with 1 mm. silver and rubber, was placed in the posterior vaginal fornix for seven hours.

On March 28th, 1922, the patient wrote that her general health was excellent. The menstrual flow had remained normal, and the rhythm was 6/28. The vaginal discharge improved wonderfully after the radium, but had returned somewhat.

CASE III.—*Metrorrhagia.*

B. W., aged 50; eight children, four miscarriages. Seen May 30th, 1921.

History.—Excessive vaginal loss for the past two years, worse for the last two months; offensive vaginal discharge. Menses: 15-7/28, normal loss; for the past two years the loss had lasted from seven to fourteen days and occurred every three to four weeks; the last period lasted twelve days.

Treatment.—Under general anaesthesia the cervix was dilated and a sound passed 3½ inches. A tube of 100 mg. radium bromide, screened with 1 mm. silver *plus* rubber, was inserted into the uterine cavity and left *in situ* for eighteen hours; a similar tube and screening was placed above the symphysis pubis for fifteen hours.

Result.—On September 14th, 1922, the patient wrote to say that she had had no more haemorrhage and the menses had ceased. There was still a slight discharge, but her health was better and she had gained weight. I heard from the patient again on March 21st, 1923; she said that her health was very good and that she had not been so well for years; she adds, "My friends remark how well I am looking. I am indeed very grateful to you. There is now no bleeding and no discharge."

CASE IV.—*Metrorrhagia.*

Miss C., aged 35. Seen December 14th, 1920.

History.—For many years has had profuse vaginal discharge, also great menstrual loss—5/29; regular; no pain. Had been curetted for this but without benefit.

She was treated with a 100 mg. tube of radium bromide, screened with 1 mm. silver *plus* rubber, placed in the vaginal vault for seven and a half hours.

On January 10th, 1921, the patient reported that she had a good deal of pain four days before the period began, which ceased when the flow commenced. The loss was much less and lasted only five days. She is much gratified by the result so far.

On February 8th she reported: "Period came on two days before expected, lasted six days, but was not so bad as it used to be." The vaginal discharge was much less. The same dose as above was given, but for eight hours.

The patient was seen on May 16th, 1922, and stated that the periods had remained normal in quantity and duration ever since the last treatment.

CASE V.—*Metrorrhagia.*

R. S., aged 56; ten children. Admitted March 7th, 1922.

History.—Excessive loss for the last twelve months, with much vaginal discharge. Was curetted in 1919 for metrorrhagia; this was followed by temporary improvement.

Treatment.—A tube of 100 mg. radium bromide, screened with thin rubber tubing only, was put in the cervical canal and left in position for eighteen hours.

On April 4th haemorrhage had begun again. Treatment was therefore repeated for fourteen hours, the tube being now screened with 1 mm. silver.

On September 25th the patient wrote to say that there was no bleeding whatever, and the discharge had entirely ceased. Her health was excellent, and she had no pain. On March 22nd, 1923, the patient wrote to say that she had had no bleeding since she left hospital twelve months ago. There was a slight watery discharge at times.

CASE VI.—*Fibrosis Uteri.*

Miss E. W., aged 50. Seen August 21st, 1921.

History.—Continuous bleeding with occasional "flooding" for the past twelve months. Menses began at 13; rhythm 7/28. Remained normal till about four years ago, when the periods became profuse with clots and considerable vaginal discharge. She was curetted six months ago, since when symptoms had been less severe.

Treatment.—The uterus was explored and the mucosa found to be soft and friable. A tube of 100 mg., screened with 1 mm. silver *plus* rubber, inserted for eighteen hours.

March 23rd, 1922: Patient says haemorrhage ceased after application till September, when she had a period lasting five days. Since then there had been no trace of bleeding and no vaginal discharge.

The patient wrote on March 21st, 1923, to say that she was very well. There had been no bleeding and no discharge since she last wrote, a year ago.

CASE VII.—*Haemorrhage from Cervical Stump following Subtotal Hysterectomy.*

Mrs. R., aged 42. On March 15th, 1921, a tube of 100 mg., screened with 2 mm. lead *plus* rubber, was placed in the posterior fornix for ten and a half hours.

The patient has written recently saying, "I think I can say I am cured. I have no more pain nor any haemorrhage."

CASE VIII.—*Menorrhagia.*

Mrs. H. I., aged 36; one child. Treated November 1st, 1922. This patient first came under my care two years ago. She was then suffering from menorrhagia, which was having a serious effect upon her health. She became very nervous and excitable and was worse after each period. Various remedies were tried from time to time with little or no benefit. The periods, as a rule, lasted six or seven days, and came on every twenty-six to twenty-seven days. The last period was the worst she had had. Latterly they had been preceded by shivering and a feeling of extreme exhaustion, the patient being so bad that she had had to go to bed for several days after the haemorrhage had ceased. Curetting was out of the question owing to her nervous condition, and I decided to give her a dose of radium, examination having failed to reveal any obvious abnormality. The uterine sound passed 3½ inches. There was no discharge between the periods.

A 100 mg. tube of radium bromide, screened with 1 mm. silver, was placed in the vagina for seven and a half hours only, as I was anxious to avoid as far as possible the production of an artificial menopause. This danger was explained to the patient and her husband beforehand. The only alternative seemed to me to be a subtotal hysterectomy, but I am convinced the patient's nervous system would never have stood the operation.

The result of the treatment has so far exceeded expectations. The onset was normal and not preceded by any discomfort or nervous manifestation. The loss was also normal in amount, and lasted five days only. She was able to be about the whole of the time and was delighted with the result so far. It of course remains to be seen what the next periods will be like, but should they become somewhat more profuse I feel sure another small dose will effect a permanent cure.

April, 1923: The patient has been under constant observation. The periods remain normal both in quantity and rhythm. She has no pain nor discomfort and has had no return of the nervous prostration. She is now strong and well and is able to resume her social duties without trouble or anxiety.

CASE IX.—*Metrorrhagia.*

Miss J., aged 42. Seen November 1st, 1922. This patient has a history of menorrhagia extending over several years. She is a school teacher. The periods began at 12, and lasted seven days every twenty-three. She was curetted seven years ago for excessive and irregular bleeding with "flooding." Eighteen months ago she began to lose almost continuously until July last, when she had a severe "flooding" which lasted six days. She was then again curetted. The loss then stopped for a month, but has now begun again and is continuous.

When I saw her she was very anaemic, the mucous membranes being quite blanched; her pulse was 120 and temperature 99°. There was a very offensive reddish-brown discharge; the cervix was normal, and the uterus freely movable and not obviously enlarged.

The alternatives here again were either a hysterectomy or radium treatment, but owing to the patient's state of health and the very obviously septic discharge the major operation was out of the question. I therefore gave her an application of radium both internally and above the symphysis pubis. The tubes were screened with 1 mm. silver and left in position for fourteen hours. I pointed out the risks of the artificial menopause to her, but, owing to the very serious state of her general health, decided to give her rather a longer dose than I should otherwise have done in a case less septic and exsanguinated.

On the fourth day after treatment the haemorrhage had ceased; the discharge was very slight by the end of the week and the temperature normal. She went home obviously much improved even in so short a time, and was to report to me in three weeks. The brown discharge continued until the end of December, when a period began and a few clots were passed.

On January 13th, 1923, she wrote saying she was much better, adding, "It is nice to be more or less normal again." I heard from her again on January 29th; she had had serious haemorrhage on one day followed by continuous loss; she had felt very slack and was sleeping badly. She asked me whether I thought she had not better apply for a pension and retire. To this I replied that I was quite sure she would ultimately get quite well and advised her for the present, at any rate, not to send in her resignation.

She wrote again on March 21st, saying she had got steadily better since her last letter to me, and that she had felt quite well and done full work all the term.