2. The report of only five-year results—total cases and early cases. For comparison with the operative results obtained, we must take the same period that surgical clinics do—that is, five years.

3. Inclusion in statistics of all patients that either have not been traced, or are dead from any cause, as *dead from cancer*. This may seem unfair in some instances where it is difficult to trace cases, or in hospitals that do not have a "follow-up," but if the rule applies to everyone it can only affect a small percentage of cases, and may lead to a better follow-up system. Heyman, in his statistical analysis of over 8,000 cases, has followed this procedure.

4. Operability rate and primary mortality. These should be given for comparison with cases treated by radical operation.

PROPHYLAXIS.

The role of chronic irritation as an etiological factor in the development of carcinoma makes it imperative that lacerations and erosions of the cervix should not be neglected. In a study by Farrar of 300 consecutive case histories of cancer of the cervix at the Woman's Hospital in New York it was found that pregnancy had occurred in 96 per cent. In 288 cases 11.1 per cent. of the patients had had the last pregnancy less than five years and 20.3 per cent. less than ten years before entering the hospital for the malignancy. We believe that the immediate repair of cervical lacerations, when done under proper conditions as in a hospital, will lessen the danger of subsequent development of carcinoma in the cervix.

CONCLUSIONS.

In conclusion, I wish to draw attention to the following creed which I hold.

There is less primary mortality, less morbidity, less loss of time with radium therapy than in the radical operation for carcinoma of the cervix.

The palliative results in cases not permanently cured are an important advantage not to be ignored.

The morbidity results of the radical operation—fistulae, thrombosis, suppuration, etc.—are not to be forgotten.

Vesical and rectal fistulae should be increasingly less frequent in radium therapy as the technique develops.

Repeated irradiations are of distinct value, and subsequent treatments should be based on the reaction to the initial or test dose.

A personal monthly inspection or follow-up is an essential throughout the period of observation, in order that by a watchful waiting we may discover a recurrence in its incipency and thus extinguish the fire before it has gained headway.

Large amounts of radium are not necessary to produce results.

A standardization of statistical reports on irradiation of cancer of the cervix is needed for comparison of results in different clinics.

We believe that our results show that radium is preferable in all classes of cervical carcinoma. We also believe that in the very early cases the radical operation will give the same result as radium, but at the cost of high primary mortality and greater morbidity.

As to the early cases—and how few we see!—with the present statistical figures available it is not yet proved which gives the best results, but the available figures do not show that the operation is any better than radium.

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RADIUM IN THE TREATMENT OF CARCINOMA CERVICIS AND INTRACTABLE MENORRHAGIA.*

BY

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CARCINOMA CERVICIS.

THESE observations are based on a study of over 200 cases treated with radium since January, 1926, and an experience of 130 radical operations (Wertheim). All the cases were checked by pathological report.

Radium bromide (100 mg.) was applied for twenty-four hours to the external os, if it was ulcerated, or into a crateriform cavity if one existed. In a few cases 200 mg. was used. After the application the patient rested for fourteen days, took potassium iodide, 5 grains thrice daily, and had a douche every day.

Pathology.

Forty-five uteri which had been exposed to radium and had been reported to be malignant were sent for a further report after removal. Radium had been applied at least fourteen days previously, and in some cases one or two months had elapsed. Nine reports, when referring to the malignant growth, contained such terms as "disorganized," "retrogressing," "some necrosis," "being phagocytosed," and three stated that there was no evidence of malignancy. In the remaining thirty-three uteri the malignant cells were apparently unaltered.

Radium applied directly to the growth can produce a beneficial result, but my operative experience makes me doubt its practical value in dealing with glandular deposits.

In order to appreciate the results the terms "operable," "borderline," and "inoperable" must be defined. These are based on the local condition as judged by the possibilities of the radical operation (Wertheim), and without reference to the age or general condition of the patient. For the benefit of those who are not conversant with operative technique it might be useful to state that the radical operation entails removal of a cuff of vagina with the cervix, as well as the extirpation of the lymphatic glands. An ordinary total hysterectomy, sometimes called panhysterectomy, does not allow of this.

Operable means that the growth is limited to the cervix, or has involved the vagina only to a limited extent, and that there is little, if any, infiltration of the cellular tissue.

Inoperable implies (1) that the ulcer extends so far down the vagina or into the broad ligaments as to prevent removal, or (2) that the cellular tissue in the ligaments or round the cervix is densely infiltrated.

Borderline refers to the intermediate cases. This classification will, to some extent, depend upon the individual operator.

1. Operable Cases.

In 20 cases considered operable prior to January, 1928, radium alone was used. These cases were not submitted to operation owing to such causes as age, general condition of the patient, or the presence of heart disease or diabetes; in two cases operation was refused, and in two others the application of radium made the condition clinically inoperable.

Results.

Excluding two cases which have been lost trace of, the after-history of the 18 at the present date is as follows:

Improved	...	...	...	...	...	...	3
Stationary	...	...	...	...	...	...	3
Worse or dying	...	...	...	...	...	...	6
Dead	...	...	...	...	...	...	6

* Read at the Annual Meeting of the British Medical Association (Section of Obstetrics and Gynaecology), Cardiff, 1928.

I do not now use radium as a routine prior to operation, since in several instances it appeared to make the local condition worse and even inoperable, while the operation area is certainly made more vascular if it has been applied recently. It should be used if the ulcer is spreading on to the vagina and there is some surrounding infiltration. A ureter can be dissected out of an infiltrated area, but, if the infiltration is due to malignancy, I am satisfied from histological reports that the only chance of success lies in devitalizing the malignant cells by radiation prior to operation.

I compared the after-results of 38 operable cases which had the radical operation alone with a similar number which had the radical operation after a preliminary application of radium. At the time of making the record a minimum of three years had elapsed in the purely operative group, and of one year in the radium group. The results are as follows:

Operation only :	Per cent.
Alive and well	60
Operative deaths... ..	5
Recurrence	30
Death from other causes	5
Radium and operation :	
Alive and well	44
Operative deaths... ..	16
Recurrence	34
Death from other causes	6

These results appear most unfavourable to radium, but the correct interpretation of them, in my opinion, is that by the use of radium it is now possible to include in the "operable" group cases which, in earlier days, one would have hesitated to operate on. It does not alter my opinion, however, that the preliminary use of radium, even in an early case, increases the operative risk and that in some cases it appears to aggravate the condition.

2. Borderline Cases.

These require particular discrimination. Radium may improve the local condition and render a previously fixed and ulcerated cervix mobile and smooth, but this improvement may be more apparent than real so far as ultimate operative treatment is concerned. Ulceration may be inhibited, but tissues which have been destroyed can never be replaced, and from time to time I have regretted disturbing the scar tissue which followed an application of radium; the bladder has been opened, or the cervix has torn during the operation.

3. Inoperable Cases.

In these cases radium undoubtedly improves the local condition. There is usually a smoothing and ultimately contraction of the ulcerated area, and not infrequently a diminution in the secondary infiltration. The patient reports that she feels better, and that the bleeding, and even the discharge, has ceased. The actual duration of life does not appear to be very greatly influenced in the majority of cases.

Of 23 cases considered inoperable in 1926, and treated by radium alone, 4 are alive in July, 1928, but 3 of these are going downhill. The one exception shows no evidence of growth after eighteen months. This was a case of extremely superficial ulceration spreading down the vagina to the urethra, which rapidly disappeared after one application for twenty-four hours of 200 mg. of radium bromide.

Five cases seen in 1926, and considered inoperable, were so improved after radiation that the radical operation was performed. Of these, 2 died shortly after operation, 1 survived operation and lived thirteen months, and 2 are alive and well to-day and with no evidence of recurrence.

The after-history of 24 inoperable cases seen in 1927 is as follows: 17 are already dead, 5 are dying, and 2 show no definite change.

I am convinced that radium is invaluable in dealing with this condition, and that, in certain cases, it can produce results little short of miraculous. It is certainly the only treatment of proved value which can be used in the majority of cases met with, and undoubtedly produces beneficial results in most cases. I am equally convinced that it has not superseded the radical operation when such is possible. Its use is specially indicated in elderly women in the late fifties, as the growth appears to be particularly responsive to radiation.

MENORRHAGIA.

Fifty-five cases treated with radium have given most encouraging results. A multipara in her forties, whose heavy losses will not respond to drugs or curettings, and who would otherwise have her uterus removed, is a typical case justifying this treatment. The advantage of effecting a cure without resort to the major operation is obvious.

After excluding malignancy and pelvic inflammatory trouble the uterus is dilated, vigorously curetted and irrigated, and 100 mg. of radium bromide is inserted for twenty-four hours into the uterine cavity. The radium is tied in the distal portion of a rubber tube, the proximal end of which lies in the vagina to allow of easy extraction. The vagina is lightly packed with gauze. After removal the patient rests for fourteen days and keeps her bowels regular. Apart from slight sickness during treatment nothing untoward is noticed.

The usual after-result is the establishment of the menopause at once, or after a few weeks, during which the patient notices a slight brown discharge. In one instance the patient's doctor reported that a pelvic abscess had discharged after her return home.

Results.

Thirty-seven patients aged 40 and over were treated, all except 4 having had one or more pregnancies. All, with one or two exceptions, had been curetted on one or more occasions. Of the 37, 9 must be excluded, as they have been too recently under treatment, but reports indicate that they are in process of being cured. Among the remaining 28 there were 27 complete cures; the failure was an early case and due to faulty technique, and would almost certainly have responded to a second application. While 40 is a convenient milestone, younger patients were met with who gave a similar history prior to being treated.

In a series of 14 patients, 3 of whom were in their late twenties and had been curetted three to five times, 11 were cured. Of the remainder 1 is too recent to record, and the 2 failures were due, in my opinion, to faulty technique, the radium in one case being inserted into the cervical canal, and in the other the uterus had not been curetted prior to the application.

Four patients were treated who had small fibroids varying in size from a walnut to a golf ball. In 3 of these amenorrhoea was produced, but the fourth was a failure due to the subsequent extrusion of a submucous fibroid. One of the 3 apparent successes has since shown signs of degenerative changes taking place in the fibroids.

CONCLUSIONS.

Radium treatment is safer, and almost as certain in its results as hysterectomy, and is the preferable form of treatment in such cases. The advantage to the patient in every respect must be obvious. It is specially indicated in patients suffering from disease of the heart, lungs, or kidneys, where a long anaesthetic and major operation should be avoided and a cure must be certain. It is also the ideal treatment in extremely nervous and elderly patients. Its use in cases complicated by small fibroids would only be justified by the general conditions already mentioned, and not as a routine procedure.

Radium might be of use in producing the artificial menopause in patients suffering from pathological blood disease, with a view to conserving their blood supply.