

## FIBROMYOMATA—ESPECIAL REFERENCE TO RADIUM TREATMENT

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**F**IBROMYOMATA of the uterus are met with frequently. It is estimated that thirty-three per cent. of women have fibroids large or small at some time during their life. It is rare to see them clinically present, that is, producing symptoms before the age of thirty, but from the age of thirty to fifty they become increasingly frequent. We removed four by myomectomy in a girl of eighteen while operating for retroversion and chronic appendicitis. Very little is known in regard to the cause of these tumours, but it seems fair to assume that both their onset and growth bears some relation to the menstrual function. This is borne out by the fact that single women who are sterile are more prone to fibroids than are married women, and married women who are sterile have more fibroids than those who have borne children. The fibroids may be the cause of sterility in some cases, but sterility and the single life certainly increase the percentage of fibroids. Their active period coincides with the menstrual function and no new ones form after the menopause.

They are composed of fibrous tissue and smooth muscle fibres arranged without any definite order and appear as an outcropping from the body of the uterus, practically always from above the internal os. The uterus is enlarged and its mucosa hypertrophied, but the uterine circulation is not as much increased as one would suppose, myomata having a poor blood supply.

Myomata are classed according to their location, as:—

1. Subserous. The subserous type are covered on all sides by peritoneum and have as their pedicle their blood vessel and the peritoneum. If they grow out into the folds of the broad ligament we call them intraligamentary.

2. Interstitial. Myomata which are muscle covered, thickly on one side, thinly on the other, according to direction of growth.

3. Submucous. Myomata which projects into the uterine cavity.

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#### 4. Cervical. A rare variety.

*Clinical symptoms.* 1. Hæmorrhage is the prominent symptom in seventy-five per cent. of the cases. It varies from a simple increase of the menstrual times and flowings to a profuse sudden flooding, or a daily severe flow. It brings in its train the line of anæmic symptoms that we see so markedly in many of these cases, the yellow chlorotic like type, the shortness of breath, heart palpitation and loss of ambition. In single subserous tumours, hæmorrhage may not be a symptom. In submucous cases it is a marked symptom. The usual case has multiple tumours, probably one of each variety, and the hæmorrhage will be moderate or severe according to the predominating type.

2. Pain. Fifty per cent. of our cases were free from pain and a large number free of any discomfort. Pain of a severe type means one of three things: (a) Dysmenorrhœa due to a small fibroid; (b) An attempt to expel a submucous fibroid; or (c) Some complication, tubal inflammation, appendicitis, pressure symptoms.

3. Pressure symptoms include dyspnoea due to the size of the growth, pelvic weight, bladder or rectal difficulties, œdema of the legs, pressure on ureters and referred pains down the limbs due to direct nerve pressure.

4. Minor symptoms are leucorrhœa, sterility and repeated miscarriages.

*Clinical signs* are mainly from palpation. We find usually a fair sized firm tumour, round in outline with at times irregular bosses, each hard and distinct. Mobility is a marked feature, except in the very large tumours and those of smaller type that have become wedged into the pelvis and have formed a pelvic cast. In thin walled patients, by pressing in above the pubes, the round ligaments can be rolled under the fingers and the tumour mapped out above. With such signs the diagnosis of the subserous type is fairly certain.

In submucous cases we can feel the choked cervix or the actual tumour projecting through the cervical canal. In many cases of the interstitial variety the cervix will be carried high up or will feel like a dimple on the tumour mass.

The sound will show an elongated uterus. We rarely use the sound as a diagnostic aid.

*Differential Diagnosis.* Subserous type: From tumours of adnexa or parametrium, ovarian tumours, hæmatocele and hæmatoma, pyosalpinx and hydrosalpinx, round ligament tumours, omental tumours. Interstitial type: Pregnancy, chronic metritis. Submucous type: Mucous polypus, abortive and ectopic

gestation, inverted uterine body, carcinoma, chorio-epithelioma. In all cases try and exclude: (1) Pregnancy; (2) surrounding inflammations; (3) carcinoma—with hæmorrhage irregular, slighter, due to some easily known cause, persistent watery discharge, recurring pains and appearance of cervix; (4) Sarcoma—hæmorrhages and cachexia; (5) degenerations—necrosis, cystic collections, calcifications. Degenerations are indicated by sudden growth.

*Treatment.* Not all fibroids require treatment.

*Operative treatment.* Supra-vaginal hysterectomy is the favourite operation. Have the patient in the Trendelenburg position. Make a median abdominal incision carrying it well down to the pubes, grasp uterus with forceps, pull down omentum if possible and pack off the intestines with gauze. Apply clamps to the round and broad ligaments together close to the uterus. Tie off both ligaments separately close to this clamp. Cut the broad ligament close to the round ligament. Push down with gauze and the uterine artery region will be exposed. Do the opposite side. We now have only three forceps in the abdomen. Grasp these in one hand and pull up and back, thus outlining the bladder. Cut well away from the bladder with blunt scissors, making a generous anterior flap. Do not make a posterior flap. Apply clamp on one side to the uterine artery at about the level of the internal os and about three-quarters of an inch higher, apply a second clamp; cut between them and on through the cervix pulling up strongly at the same time. As the opposite side of the cervix is reached, it parts with a little snap and the uterine artery stands out practically by itself and may be grasped easily. When the uterus is lifted out we have only two clamps in the pelvis, one on each artery.

The cervix is grasped with tenacula and a ligature passed on each side. The long ends of this can be used to tie the uterines. Double tie all the large vessels. Pass another ligature on each side through cervix, round and broad ligaments drawing all together snugly and in this manner raising the cervical stump. Suture the free edges of peritoneum or simply attach the bladder flap to the back of the uterus.

*Myomectomy* in young women desirous of child-bearing is the operation of choice. An incision is made around the tumour in such a way as to leave some flap. The tumour is shelled out and the cavity closed with interrupted cat-gut sutures carefully placed. In larger tumours we can partially control the bleeding by temporarily clamping the larger accessible vessels.

*Treatment by Radium and Gamma Rays.* Radium and hard rays generally have been in use now for some time. In 1915 I

found in Johns Hopkins Hospital library reports of twenty-five hundred cases. Since then it has been more and more used on this continent and practitioners such as Kelly, of Baltimore; Clark, of Philadelphia; Schmidt, of Chicago; and Dr. Stacey, of the Mayo Clinic, are reporting series varying from two hundred and fifty down.

Radium we use in its tube form—a glass capsule in a silver container. This is enclosed in a special capsule of a brass alloy to which is fastened a chain, the chain being fastened to the napkin or a bandage to guard against almost loss of the radium. The capsule is enclosed in a rubber finger cot. The patient is prepared as for a curettage, no anæsthetic is given as a rule. Morphine is given to allay nervousness, and Hagar's dilators used one after the other till the operator feels that he can insert the radium apparatus. This takes about one half the dilatation one needs for an ordinary curettage. Many of these myomatous uteri have very patulous canals and the radium can be easily inserted. We have used as a general anæsthetic a few whiffs of ether in cases with a hard cervix and small canal. In all cases clinically doubtful, a curettage is performed if necessary under ether and carcinoma excluded.

We are using one thousand to one thousand, eight hundred milligram hours at one dose, and in the majority of cases one dose will suffice. The patient is kept in bed from two to four days. In some cases we have combined this method with hard ray treatment from special  $x$ -ray tubes, using 20- $x$  to each field. The tumours disappear more or less rapidly according to the type. The time varying from three months to a year.

In a period of six years we have treated by the ray treatment approximately one hundred cases. Our results have been:

- (1) Absolute failure—two.
- (2) All symptoms relieved, tumour largely reduced—twelve cases.
- (3) All symptoms relieved, tumour small—seventeen cases.
- (4) All symptoms relieved, no appreciable tumour—fifty-three cases.
- (5) Recent cases, too recent to classify—fourteen cases. Twelve at least of these patients will be cured.

Our absolute failures were both in calcified fibroids. One in a diabetic aged sixty-five; the other a patient aged fifty-four. Neither were relieved in any way and the second patient we operated on. Coming from Johns Hopkins in 1914, fresh from seeing Dr. Kelly's work, we made the mistake of treating some unsuitable cases. At that time no one knew just how to distinguish the fav-

ourable cases from the unfavourable. In the future following the lead of Dr. Kelly of Johns Hopkins and Dr. Clark of Philadelphia, we will regard as suitable cases all uncomplicated fibroids up to the size of a five months' pregnancy.

We will regard as unsuitable cases (1) any tumour extending above the umbilicus; (2) any tumour having inflammatory lesions of other organs as a complication; (3) any tumour with any suspicion of malignancy; (4) any tumour causing severe pressure symptoms.

We will regard as especially suitable (1) all fibroids of the above size in patients over forty years of age; (2) all such fibroids not producing severe pressure symptoms; (3) fibroids in which hæmorrhage is the chief symptom; (4) fibroids of any size in bad surgical risks when hæmorrhage and not pressure is their chief symptom.

The disadvantages of radium as a treatment are:

(1) To the patient, some slight nausea in about five per cent. of the cases. There is practically no pain nor tenderness.

(2) To the surgeon the disadvantage may be summed up in one word; the fear of overlooking a possible carcinoma. Thus far we have escaped this mistake. The cases of carcinoma we have seen in this six years' work have been very easy to diagnose in the majority of cases.

The advantages of radium treatment:

(1) Its safety. No deaths are reported by any worker.

(2) No loss of patients' time in treatment nor in convalescence.

(3) The expense is about one-half the total cost of operation.

(4) Patients are in better general health than after operation.

(5) Radium can be used where operative mortality would be high, as in chronic nephritis, diabetes, severe anæmiæ, heart lesions or tuberculosis.

(The history of a number of cases, some operative, some radium cases are omitted.)

Practically we find that we meet three or four cases suitable for radium treatment to each operative case.

In conclusion I must state that none of this work is original. I desire to express my appreciation for personal demonstrations of their work to Dr. Graves of Boston for his operative technique and his method of using radium. To Dr. Leda Stacey of the Mayo Clinic for a description of the methods there employed. To Dr. Burnam, the associate of Dr. Howard Kelly, for his advice on different occasions. And Dr. Schmidt of the Augustana Hospital of Chicago for his kindness in allowing me to obtain duplicates of his intra-uterine radium screen.