

**CASE OF UTERINE FIBROID TREATED BY ERGOTINE INJECTIONS, AND FINALLY REMOVED BY MEANS OF THOMAS'S SCOOP. By MARY PUTNAM JACOBI, M.D., of New York.**

Mrs. S., æt. 42, mother of nine children, of which the youngest is eight years old, consulted me on July 3d for menorrhagia and metrorrhagia of five years' standing. Intense anæmia had been developed in consequence of the repeated and prolonged hemorrhages, and the skin of the patient had a subicteric tint, which from time to time deepened to a real jaundice hue. She was subject to attacks of aphonia, which, singularly enough, did not coincide with periods of hemorrhage, but alternated with them; the voice being regained as soon as the flow set in. For this aphonia, even more singularly, the patient had received, during six months, local treatment of the larynx at the clinic of a specialist.

A year before consulting me, Mrs. S. had been sent to the clinic of an eminent gynæcologist, and, as far as I could understand from her report, the hemorrhage had been ascribed to granulations, which were then removed. After this, she was better for a little while, but all symptoms soon returned, and at the time of consulting me, uterine hemorrhage had been going on for a month, and still persisted. It was unattended by pain.

Physical examination of the uterus disclosed two principal facts. The uterus, which was entirely in place, was, to bimanual palpation, consider-

ably enlarged, while the sound only penetrated to the depth of eight centimetres. No irregularities of outline were discoverable in the uterus, either externally or internally. The cavity was moderately dilated. The dull wire curette passed over the fundus of the cavity, occasioned considerable bleeding, but removed no distinct granulations. The bleeding was arrested by swabbing with nitric acid diluted with equal parts of water.

On the 10th of July I saw Mrs. S. again. The hemorrhage had not returned, and she was feeling better, but had lost the use of her voice, so that she could scarcely speak above a whisper. She received a prescription of ergot and gallic acid for the menstrual periods, and I lost sight of her again until the 20th of October. At this date the results of the examination were exactly the same. The internal administration of ergot had had some, but not a very marked, effect upon the menorrhagia, but there had been no intermenstrual hemorrhage. It was evident that the diagnosis lay between a simple hypertrophy of the womb and a mural fibroid, with much greater probability of the latter, on account of the shallow depth of the cavity as compared with the evident enlargement of the uterine walls. I proposed the administration of ergotine hypodermically, and to this the patient consented.

Between the 20th and the 27th, six hypodermic injections were given, each containing one grain of ergotine dissolved in four minims of glycerine, four minims of water, and one minim of carbolic acid. The first three injections caused no pain, and very little local induration. With the fourth, the patient began to have uterine cramps, which lasted for an hour or two after the injections. The local indurations caused by the injections were also very painful. On the 29th the seventh injection was given, and after that the patient did not return until the 8th of November. During this interval she menstruated, but the flow lasted only four days, and was not too profuse. During its continuance she had taken twenty grains of gallic acid every three hours. Feeling much encouraged by this diminution of the menorrhagia, she submitted to the eighth injection, and received two more during the course of the following week. The pains consequent upon these injections became always more severe, and on the 15th, two or three days after the last injection, flowing returned, accompanied by a spontaneous access of pain. This lasted for three days, was expulsive in character, and so violent that the attendant physician could only control it by hypodermic injections of morphia. Finally, on the afternoon of the 18th, the patient "felt something slip down in her belly;" at the same moment the pains abated and the hemorrhage ceased. Summoned in haste, the attending physician discovered a tumour projecting from the cervix uteri, and at once recognized that it had been forced down by means of the ergot. I saw the patient on the 22d. I then found a tumour projecting from the cervix, whose inferior extremity was the size of a turkey egg. The finger could easily be swept all round the tumour between it and the cervix, but the pedicle could not be reached. The fundus of the uterus was not depressed. The visible surface of the tumour was partly vascular, bleeding on touch; partly covered with spots of superficial gangrene. A sanious discharge oozed constantly from the uterus.

On the next day I removed the tumour, with the assistance of Dr. Krohlpfeiffer, the attending physician, Drs. Bopp, Strauss, Gunckin, and Cushier. As soon as the patient was etherized, it was easy to draw down the tumour, and to invert the uterus sufficiently to bring the tumour almost

entirely outside of the vulva. By means of Thomas's scoop, I then, in a few minutes, and without the slightest difficulty, cut through the base of the tumour, less than an inch below its point of attachment to the fundus uteri. The tumour was almost regularly ovoid in shape, so that its base was very nearly as broad as the inferior free extremity. But the base was composed of such dense, non-vascular tissue that absolutely no bleeding took place after the section, and only a trifling oozing after the replacement of the uterus.

The tumour measured seven and a half inches in its longer circumference, and six and a half in its shorter. As already stated, a portion of the free extremity was superficially vascular, and the remainder was covered with green spots formed by superficial gangrene of the mucous membrane. On making a longitudinal section on the left of the tumour, extending upwards from the vascularized portion of the free extremity, a strip of cavernous tissue was found, composed of large sinuses filled with dark coagula. These sent projections into smaller sinuses. This vascular strip was one-quarter of an inch broad, and extended to within one inch of the base. Its depth from the surface measured one-half of an inch. Below the clot, the tissue was uniformly white, and composed of fibrous bands, which formed a coarsely reticulated tissue.

Three longitudinal sections were made on the posterior aspect of the tumour. The section the furthest to the right passed, at almost its middle, through a ring, one-quarter of an inch in diameter, of vascular sinuses filled with dark red coagula. The second section exhibited only two or three minute points of coagulum. The third plunged, at the depth of half an inch below the surface, into a group of largely dilated sinuses filled with coagula. All these sinuses were lined by a smooth, transparent endothelium, demonstrated to be such by treatment, in the fresh state, with nitrate of silver.

Thus everywhere the bloodvessels, or rather blood sinuses, were found on the surface and towards the free extremity of the tumour. The base and the centre were bloodless. The vessels did not run from the base to the free extremity, but the reverse. They must, therefore, have been developed from the mucous surface, in other words, from the vascular layer of the endometrium, and not from the sinuses of the uterine wall. This development into sinuses was in accordance with the general tendency to imitate the uterine type of structure which characterizes uterine fibroids. Mural fibroids are often described as developed in the fibrous stroma of the uterine parenchyma, and becoming submucous, sessile, or pedunculated, by growing *towards* the uterine cavity. But the arrangement of bloodvessels described in our case would imply that the tumour began in the embryonic cells lying under the endometrium, and which are normally destined to furnish material for the menstrual decidua.<sup>1</sup> The cavity appeared to be normal in length (eight centimetres), until the tumour began to descend from the fundus.

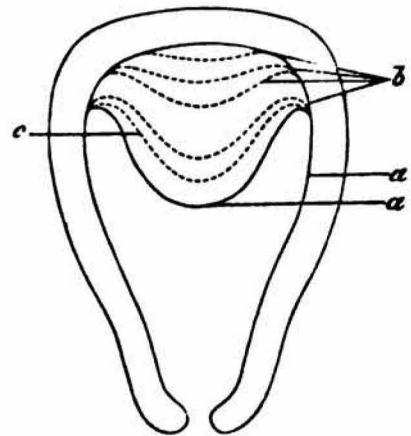
The tumour, therefore, had not grown from above downwards, but from

<sup>1</sup> See the paper entitled "Membranous Dysmenorrhœa," by Drs. George and Frances Hoggan, in Arch. für Gynæk., Bd. x.

below upwards. Successive layers of new tissue must have been constantly pushed upwards towards the fundus of the uterus, as still more layers developed in the embryonic stratum under the endometrium. Thus, the zone of proliferation would have been intermediate to the two extremities, analogous to the zone of growth lying between the diaphysis and epiphysis of bones. On this account the base, being almost the oldest portion of the tumour, was, therefore, the least vascular: *anatomical fact, explaining the apparently anomalous facility with which could be removed, without hemorrhage, a tumour whose surface had been bleeding profusely for five years.*

Microscopic examination confirmed the inferences drawn from the disposition of the bloodvessels.

The surface of the tumour was found to consist of a condensed network of fibres, generally non-nucleated. Immediately below the surface, the fibres were infiltrated with small round cells. Below this, in various parts of the surface of the tumour, was found a strip of microscopically cavernous tissue, composed of a very coarse reticulum of fibres, whose meshes were filled with extravasated blood. Below this strip of hemorrhagic effusion was a band of muscular fibres, arranged in parallel and concentric layers, moderately infiltrated with embryonic cells, which became more abundant in the deeper part of the surface section, until, at its deepest, they almost entirely replaced all fibrous tissue, and formed a zone exclusively cellular. This zone could be traced entirely around the surface of the tumour, at the depth of from one-eighth to one-fourth of an inch from the mucous surface. Sections taken below this zone, *i. e.*, towards the centre of the tumour, were everywhere composed of bands of nucleated muscular fibres intersecting each other at various angles, intermingled with patches of young conjunctive tissue, or with bands of mature conjunctive fibres. At the centre of the tumour the tissue was most coarsely fibrous, forming bands visible to the naked eye. Throughout this muscular fibrous tissue, cells were sparingly disseminated, almost disappearing from sections taken at or near the centre. Sections taken from the base of the tumour exhibited the same musculo-fibrous stroma and sparse development of cells. The latter portions showed only two or three minute bloodvessels, provided with muscular coats.



Schematic. *a, a.* Mucous surface of tumour, continuous with mucous surface of uterine cavity. *b.* Germinal layers of cells, successively effaced during growth of tumour and formation of stroma. *c.* Last germinal layer, persisting at time of removal of tumour.

Thus, the microscopic examination showed that the germinal tissue of the tumour was everywhere near the surface, accompanying the bloodvessels, whose surface distribution was visible to the naked eye, while the tissue below this germinal zone, constituting both the core and the base of the tumour, consisted of mature and non-vascular stroma.

The above diagram may serve to roughly represent the theory of the

development of the tumour, which we have deduced from the details of its structure as above described. The theory differs essentially from that which attributes the development of uterine fibroids to irritation of the muscular fibres of the uterine wall, and which describes the peduncle of polypi as bearing the bloodvessels from the wall into the tumour. According to this theory, the muscular fibre in the peduncle gradually atrophies and the vessels are obliterated.<sup>1</sup> According to the theory we have advanced, the non-vascularity of the peduncle or base is due to the fact that this part is the furthest removed from the mucous membrane in whose vessels the bloodvessels of the tumour originate. This theory of development in the germinal cells lying underneath the endometrium could not apply to such tumours as are completely imbedded in and surrounded by uterine parenchyma, nor which develop under the peritoneum.<sup>2</sup>

The expulsion of the tumour was effected by a process precisely analogous to that of parturition. The cervix was thinned, and dilated at the expense of its length, the fundus being spread out and flattened down upon the tumour—following it without inversion, as it would follow an ovum. On the day after the operation, the cavity of the uterus measured two and five-eighths inches, sensibly the same as before the removal of the tumour, but the walls seemed somewhat hypertrophied. Carbolized intra-uterine injections were made twice a day for a week, and the patient recovered without the least rise of temperature or other bad symptom.