

*Kelly (H.A.)*

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A PRELIMINARY REPORT ON  
THE MORPHOLOGY OF OVARIAN  
AND MYOMATOUS TUMORS

BY HOWARD A. KELLY, M. D.

PROFESSOR OF GYNÆCOLOGY AND OBSTETRICS IN THE JOHNS HOPKINS UNIVERSITY,  
GYNÆCOLOGIST AND OBSTETRICIAN TO THE JOHNS HOPKINS HOSPITAL, BALTIMORE

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FIG. 1.

The normal abdominal outlines for the sake of contrast with succeeding cases of enlarged abdomen.



FIG. 2.

An abdomen made scaphoid by the removal of a large fibrocystic tumor. The mass is a gauze drain. This shows the reverse of the conditions to be studied.

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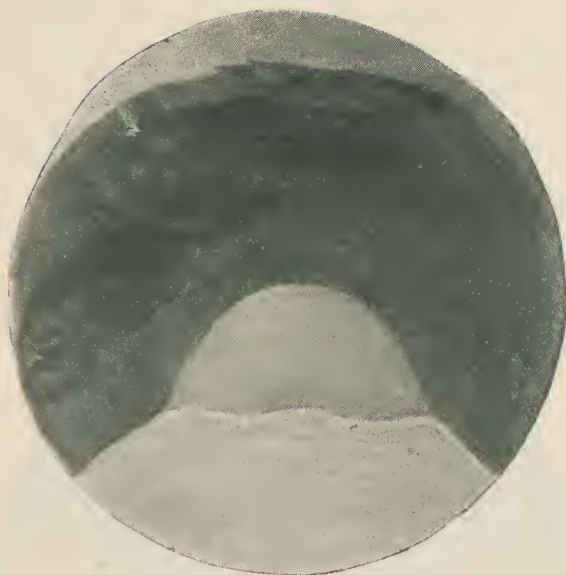


FIG. 3.

Globular distension of the abdomen by an ovarian cyst, seen from below.

## A PRELIMINARY REPORT ON THE MORPHOLOGY OF OVARIAN AND MYOMATOUS TUMORS.<sup>1</sup>

BY HOWARD A. KELLY, M. D.,

Professor of Gynæcology and Obstetrics in the Johns Hopkins University, Gynæcologist and Obstetrician to the Johns Hopkins Hospital, Baltimore.

I will offer no apology for presenting for the consideration of the Southern Surgical and Gynæcological Society any facts relative to the life history of ovarian and myomatous tumors, affections which are so constantly before the members from a severely practical standpoint.

I use the word morphology in a broad non-technical sense to include changes in the contour of the patient's body caused by these tumors, as well as peculiarities in the form and disposition of the tumors themselves. I propose, therefore, briefly to consider certain characteristic peculiarities produced in the (a) form of the abdomen, (b) peculiarities in the disposition, or packing away of these tumors within the abdominal cavity, and (c) peculiarities of form assumed by these tumors in so far as they are affected by the constraining con-

<sup>1</sup> Delivered at the meeting of the Southern Surgical and Gynæcological Society at Louisville, Ky., November 16, 1892.

stricting influences of their environment; in other words the extent to which they are capable of being moulded by the pressure of neighboring structures.

*(a) Characteristic Traits Evident Upon Inspection of the Abdomen.*

The general tendency of tumors growing out of the pelvis and extending up into the lower part of the abdomen is to produce marked distension of the lower abdominal zone, at once evident to the eye, and readily recorded by measuring the distance from the umbilicus to the

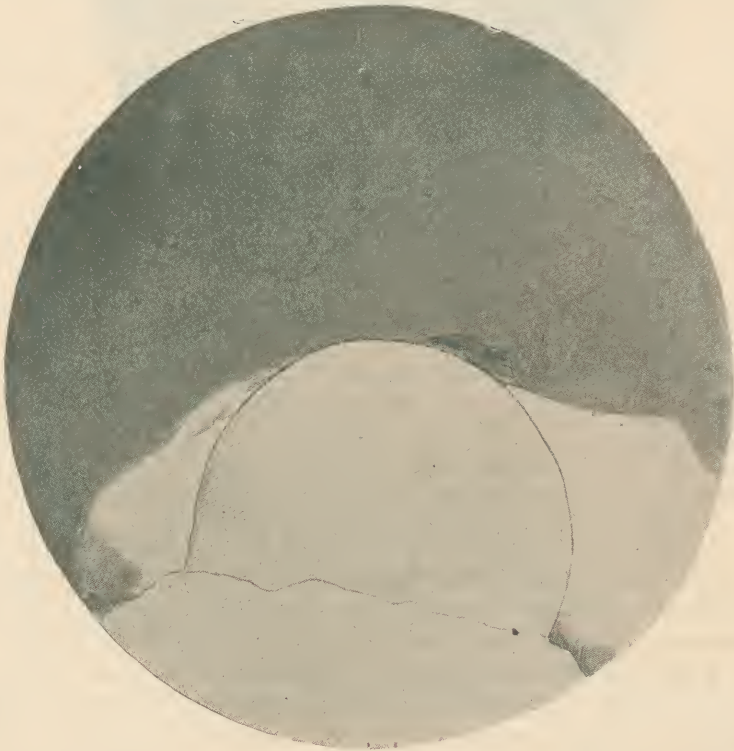


FIG. 4.

Marked example of the globular distension of the abdomen by an ovarian cyst in an old woman.

anterior superior spines and symphysis, which is increased beyond the normal, while the distance from the umbilicus to the sternum and ribs remains proportionately but slightly, if at all, changed. This generic





FIG. 5.

The large bosses of an ovarian cyst in a young girl. The tumor seen in profile.



FIG. 6.

A quartering view of the tumor shown in profile in Fig. 3, showing the large bosses.

difference I will demonstrate by comparing a group of tumors, arising from the upper part of the abdomen, with a pregnancy eight months advanced, taken as a type of tumors arising from below.

The form of abdomen characteristic of large ovarian cysts is a globular or ovoid distention of a part or the whole of the abdominal wall, pushing out the infra-umbilical portion much more than the supra-umbilical, at least so long as the tumor occupies the lower half or two-



FIG. 7.

This patient has a large polycystic ovarian tumor. She is in addition excessively fat. The great distention of the upper abdominal zone is evident and characteristic of the obese.

thirds of the abdomen. This enlargement is uniform in parovarian cysts and polycystic tumors exhibiting but few bosses, due to the fact that the latter are composed of one or two large cysts associated with a mass of smaller ones, and the large cyst is best accommodated in the median line in the distended concave anterior abdominal wall, while



FIG. 8.

The same patient shown in Fig. 5 after removal of the tumor. The difference in outline is simply the patient minus the tumor.

the smaller ones lie in the flanks and consequently do not show on the surface.

The alate or winged-shaped chest is due to a pushing out of the lower ribs, and is a characteristic of any mass big enough to distend the entire abdominal cavity.

Prominent exceptions to the general rule just enunciated that pelvic tumors distend most markedly the inferior abdominal zone are the

notable stretching of the upper abdomen in very fat women with large ovarian tumors, and the like distention of the abdomen in rachitic dwarfs in advanced pregnancy.

Myomata being less yielding retain more prominence in the median line, and often look like a pregnant uterus, striking differences, however, are the breadth of the tumor and a peculiar abruptness in its upper outline.

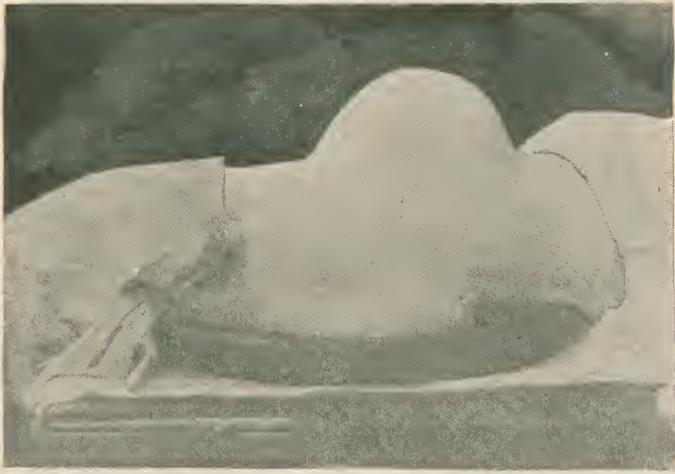


FIG. 9.

Shows well the vertical outlines of a myomatous uterus. Note especially the upper border.

Nodular Myomata on the other hand stand out in marked contrast to the smooth outlines of cystic tumors in giving to the lower abdomen a lumpy bossed appearance, thus exhibiting through muscles and skin a softened exaggeration of their irregular outlines. This peculiarity still remains prominent although softened, after these tumors have undergone fibro-cystic degeneration.

The contrast of the globular outline of the ovarian tumor with the more or less bossed appearance of a large fibro-cystic tumor is well shown in one of our photographs.

The flattened ovoid of an ascites, which is no tumor, shows well the striking difference between an enlargement contained in its own sac wall and one free and without definite form in the abdominal cavity.

It is well to bear in mind, however, that occasionally a simple

ascitic accumulation will distend the abdomen prominently in the median line, presenting a deceptive appearance, a close mimicry of the encysted tumors.

(b) . *The Disposition of Tumors in the Pelvis and Abdomen follows the Laws of Accommodation.*

The problem presented is that of a body with a smooth surface and of varying degree of mobility, contained within an irregular cavity with a smooth lining and subjected to frequent movements of succussion—the law is, that the body in question finally assumes a position best adapted to its form, subject to the single restriction of its attachments or adhesions.

Small ovarian tumors up to the size of a goose egg commonly lie on the same side from which they originate.



FIG. 10.

The uterus from the patient seen in Fig. 8. The ovarian tubes are seen on either side.





FIG. 11.



FIG. 12.

A myomatous uterus lifting the lower abdominal zone forward. The hazy line from the umbilicus to ensiform is diagnostic, as it shows by contrast the splinting of the lower abdominal zone by the tumor.



FIG. 13.

The nodular outlines of a large fibrocystic tumor.

Upon continuing to grow, the cyst at first extends over on to the opposite side of the pelvis, and then proceeds to enlarge upwards into the abdominal cavity. As soon as the cyst leaves the side on which it originated, it commences to put traction upon its pedicle thus pulling



FIG. 14.

The same fibrocystic mass lifted out on to the abdomen and before removal.

the uterus towards that side. By thus shortening one fornix the opposite fornix is made wider, and the tumor is thus in this case more easily palpated through the vagina *on the opposite side* to its attachment and the natural but erroneous inference in attempting to locate it is that it is a right or a left sided tumor according as it is felt more easily on the right or left side.

The facility with which the simpler monocystic and some jelly-like tumors accommodate their form to their surroundings may be well seen by noting the effect of gravity outside the body, where they at once collapse into a flattened ovoid mass.

In the body such cysts as well as the softer myomata often fill the pelvis and bud out into the abdomen until they assume the shape of a gourd or a clove with short stem and big head. Within the



abdomen they are ovoid or flattened ovoid, according to the distension of the sac.

Cystic tumors filling the pelvis and a part of the abdomen are rarely found to originate in some upper abdominal tumor. I have here for demonstration a photograph of an enormous kidney, containing over a gallon of pus, extending from the pelvic floor up through the abdomen and pushing up the left ribs.

Polycystic ovarian tumors, left to grow until they extend above the umbilicus, if not detained by adhesions, are most apt to lie markedly displaced to the right side. The explanation of this peculiarity is the same as that I have suggested for the right obliquity and torsion of the uterus in advanced pregnancy. The tumor is simply displaced over



FIG. 15.

A paunched abdomen containing neither fluid nor tumor, but closely resembling an ovarian cyst.



FIG. 16.

The flattened abdomen of an ascitic accumulation due to carcinosis of the peritoneum.

on to the right side by the stomach, for the repeated soft impacts of the constantly alternately enlarging and contracting stomach are far more potent than the tendency of gravity to keep it forward in the median line, or the tendency of the movements of the patient to dispose of it in some other position. For the same reason in big ovarian tumors



FIG. 17.

The lump seen on the right side is a dense myoma uteri, the larger portion of which is wedged in the pelvis.

an enormous sac will sometimes be found directly under the concavity of the liver snugly fitting convexity into concavity. This dextro-position of the tumor will not be apparent on the surface before opening the abdomen, when a distended stomach compensates the inequality, and gives the surface a uniformly rounded appearance.

The disposition of the intestines in the case of tumors rising from the pelvis is peculiar and worthy of note. They are at first crowded up above away from the front, and then out into the flanks. The omentum and transverse colon lie in front of or across the upper part of the tumor, which thus, almost always remains infra-omental.

The disposition of myomatous tumors is interesting. Not infrequently one or more remain fixed in the pelvis where they grow until they choke vital organs and threaten the life of the patient. There is a peculiar sort of myoma often met, which tends especially to occur



FIG. 18.—The same abdomen shown in Fig. 16 but here shown from a quartering view. The dark spot is the umbilicus.



in women who have borne children when they develop myomata, appearing as a more or less uniform enlargement of the whole uterine body, assuming the appearance and characteristic position of the pregnant uterus, bellying out the abdominal wall in the median line in front.

(c) *Form Changes in the Tumors Themselves.*

Multiple myomata usually lie like saddle-bags hanging one on either side in the iliac fossæ and the groins, this is due to the more or less rigid linea alba which always tends to find the sulcus between two tumors.

Although myomata are among the densest tumors met with, they often show the impress of the structure with which they have been in constant contact during their growth, in a remarkable way. Thus, I have seen a distinct sulcus about sixteen cm. long, caused by the constant pressure of the linea alba running up the length of a large tumor. Of course, upon extirpating the tumor I observed the sharp unyielding fibrous linea exactly fitting this sulcus, and noted further that the sulcus did not simply arise from the junction of two myomatous nodules.



FIG. 19.

The same patient shown in Fig. 18, with the tumor lifted up out of the abdomen but not removed. The top of the tumor in the picture rested on the floor of the pelvis. The nodule near the operator's right hand caused the prominence on the skin in Fig. 18.



FIG. 20.

A profile view of the tumor seen in Fig. 19. The upper nodular mass lay free in the abdomen. The lower mass is a myomatous cast of the pelvis. The right side exactly fitted the sacral curve in the median line. Suppressed nodules are seen on the surface of this tumor.

Again, I have seen a broad myoma with its back broken, as it were, bent over the promontory of the sacrum and the lower lumbar vertebræ, showing upon removal on its posterior surface an exact mould of the broad vertebral ridge.

To show how fruitful and interesting such observations may become the following points of interest were culled in one day out of four cœliotomies (abdominal sections) for myomata, in the first case the nodule was small lying in the posterior surface of the uterus near the fundus, which it had toppled over causing a retroflexion; in the second case the myomatous uterus was of the size and form, with the exception of a little greater breadth, and almost of the consistency, of an advanced pregnancy. Another case was a large subserous fibro-cystic tumor filling the pelvis and rising up into the abdomen as if it had overflowed the pelvis like molten wax. The remaining case, a multinodular myomatous mass, proved most interesting from the standpoint of this investigation. The tumor had formed a dense attachment

by one of its nodules, to the rectum low down in the pelvis. The rectum, however, was displaced and dragged over into contact with the right pelvic wall. This anomaly could only be explained by assuming that the myomatous nodule had originally occupied a position in the median line where it adhered to the rectum, and later in some way it had become rotated to the right and dragged the rectum with it. This interpretation was borne out by the further observation that the body of the large uterus reaching up to the umbilicus was rotated one-fourth way around from right to left, so that the right tube and ovary lay under and parallel to the linea alba. This dextrotorsion of the uterus was explained by the fact that the linea alba lay in a groove about two cm. deep between two large fibrous nodules, the only masses found on the fundus, one in front, an old hard white nodule about five cm. in diameter,



FIG. 21.

The same tumor shown *à posteriori*. The breadth of the tumor is the breadth of the pelvis, and the surface visible is a cast of the surface of the posterior half of the pelvis including the sacral hollow.

and one posterior, redder and more succulent, about eight cm. in diameter. The explanation is briefly this: Originally there were two prominent nodules, one anterior at the fundal extremity, and one posteriorly at the cervical extremity. The latter became adherent to the bowel. Later a large nodule developed posteriorly at the fundal end, and growing rapidly, pushed the uterus up out of the pelvis and pushed the mass anterior to the fundus forward until it came under the fibrous linea alba, which, striking its smooth convex surface, deflected it to the left side, thus rotating the uterus and dragging the cervical nodule with the rectum over to the right side.

In this explanation I am confirmed by her physician, Dr. Hildebrandt, of Pennsylvania, who has kept her under close observation for



FIG. 22.

several years, that the big mass on the right side, has been noted both by himself and the patient as of recent growth.

One of the most remarkable and yet not uncommon instances of this adaptation to environment is shown by a case still in the ward at The Johns Hopkins Hospital. An unusually dense myomatous mass choked the whole pelvis, and after opening the abdomen was extracted with patient persistence and the use of considerable force, and only after partly breaking it off from its pedicle near the fundus, although there were no adhesions. Its attachment with that of several





FIG. 23.

other nodules was near the fundus, but this particular nodule had been caught in its growth beneath the promontory of the sacrum where it continued to develop until all the pelvic viscera were compressed and the patient reduced to a pitiable condition. You will observe in the photograph the irregular anterior surface adapted to the cervix and lower part of the body of the uterus; the posterior surface, however, is as exact a model of the sacral concavity as could be obtained by pouring plaster into the pelvis and filling it from floor to brim. This is beautifully shown both in profile and full view taken from behind.

This brief study is only intended to be suggestive. One of its objects is to stimulate closer observation of details in these important cases which we are now-a-days handling in such wholesale fashion.



