

Incipient cystic disease of the parovarium and broad ligament / by Alban Doran.

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Incipient cystic disease of the parovarium and broad ligament.

By ALBAN DORAN.

[With Plate XI.]

THESE specimens are brought forward with the intention of throwing some light on the earlier stages of all cystic tumours of the uterine appendages that are not truly ovarian nor partly ovarian.

As the parovarium plays such a prominent part in the pathology of cystic tumours of the broad ligament, it is better that an actual dissection of that organ be first examined before any researches are made for the purpose of tracing the origin of minute cysts in its vicinity. We have trusted far too much to diagrams and to second-hand information for our knowledge of the parovarium. It is not sufficient for us to think of the parovarium as something also termed the organ of Rosenmüller or epioophoron; some obscure, insignificant structure beautifully figured in two or three foreign works on anatomy, so that no further notice need be taken of so "worked-out" a subject. It is equally unscientific to despise it as a "relic." Every part of the human body is a relic of what once was embryonic; most organs develop, it is true, and increase in functional importance, whilst the parovarium does not normally develop in the adult, and its functions, if there be any, are unknown. To the pathologist the parovarium should be of great interest, since, from or near it, cysts of the simplest and of the most complicated type may take their origin, and undoubtedly some such cysts actually arise from it, whilst others are merely associated with the parovarium by accidental proximity. To procure a good pair of uterine appendages suitable for the dissection of the parovarium, it is best to remove the internal organs of a young adult virgin who has not suffered during life from any disease of the pelvic viscera that tends to cause thickening of the broad ligament or long-standing congestion of its vessels. A still more suitable opportunity for examining the parovarium occurs when a multilocular glandular (and not papillary) cyst of the ovary is

removed, provided that the operation be uncomplicated; then, if no local inflammatory processes have existed, the broad ligament will be found lying, with the Fallopian tube, upon the cyst, very much stretched and thinner and clearer than in a healthy subject. The parovarium will be plainly detected on holding the tube and the ligament up to the light. If, however, the specimen be preserved in spirit, the tissues of the ligament become semi-opaque and obscure the view of the parovarium. It is necessary, therefore, to dissect off the posterior layer of the broad ligament at once. This can be readily effected if the tube and ligament, with a small portion of ovarian tissue, be pinned on a flat piece of cork and placed in a saucer filled with cold water. When the entire outline of the parovarium is exposed methylated spirit must be added; in a few hours the tubes of that structure will be sufficiently tough for further dissection.

This specimen¹ was thus prepared. The vertical tubes of the parovarium are plainly to be seen, and not only the horizontal canal into which they run is exposed, but that canal can be traced into a white fibrous band running in the direction of the uterus. This band is the "duct of Gaertner." In fact, this specimen demonstrates all the remains of the Wolffian body, excepting the commencement of the vertical tubes, which are lost in the hilum of the ovary, and the end of its duct, which is lost in the walls of the uterus. Some of the innermost vertical tubes that are generally obliterated are to be traced in this second specimen (fig. 1, *w r*). They may, according to Coblenz,² become the seat of those papillary cysts sometimes found between the parovarium and the uterus.

The second specimen (fig. 1),³ dissected in the same manner, is interesting as showing several small cysts, all in different parts of the broad ligament and its vicinity. The long pedunculated "hydatid of Morgagni" (*h m*) represents the blind extremity of

¹ The preparation is in the Museum of the Royal College of Surgeons. As it does not illustrate a morbid condition, I have not figured it. As a rule, the fibrous relic of Gaertner's duct is not so distinct as in this particular specimen.

² "Zur Genese und Entwicklung von Kystomen im Bereiche der inneren weiblichen Sexualorgane und ihre Behandlung," 'Virchow's Archiv,' Band lxxxiv.

³ It should be clearly understood that the uterine appendages are represented in this sketch as in their conventional and not in their correct position and relations, since the different structures could not be well demonstrated if they were drawn in their normal position, as described by Professor His, of Leipzig, in the 'Archiv für Anatomie und Physiologie,' 1881.

Müller's duct, which in the process of development breaks open near that extremity, and develops the Fallopian fimbriæ along the borders of the line of dehiscence.¹ At the outer extremity of the horizontal tube of the parovarium is a very similar cystic body (*tc*) also pedunculated. This terminal cyst of the parovarium, which is lined with cells that are endothelial in character and not with ciliated epithelium, is occasionally non-pedunculated, forcing apart the layers of the broad ligament as it increases in size. As a rule, however, it hangs from the ligament by a pedicle. Since pedicles of this type are poorly supplied with blood and readily become twisted, neither this terminal cyst, when pedunculated, nor the hydatid of Morgagni ever attain large dimensions.

On one of the anterior vertical tubes is a minute cyst (fig. 1, *pc*), and close to the point of entry of an adjacent tube into the tissue of the hilum of the ovary is a similar cyst, partly embedded in the ovarian tissue. Far away from the parovarium are some minute cysts (*bc*), adherent to the anterior layer of the broad ligament. They are more plainly visible anteriorly, through the ligament, when the specimen is fresh. When developed beneath the reflection of peritoneum on the upper border of the Fallopian tube they are often pedunculated (fig. 2), as they can more readily push the serous membrane upwards than insinuate themselves between its layers below the tube. In some cases these non-parovarian cysts become pedunculated, even when they are developed in the folds of the broad ligament below the tube, as in this specimen, where minute cysts project from the ligament above the parovarium (fig. 3). As a rule, however, these cysts, when they increase in size, push apart the layers of the broad ligament. They are lined with a layer of endothelium, and never bear ciliated epithelium nor solid growths. It is from a cyst of this type, free from the parovarian tubes, that is developed the cyst commonly but erroneously termed "parovarian," with its thin, transparent wall, its single cavity lined with flat or low columnar epithelium, and its clear, watery contents.

¹ The term "hydatid of Morgagni" is exclusively employed by some anatomists to signify the well-known pedunculated cyst found in connection with the testicle; this cyst is likewise believed to be a vestigial relic of the uppermost extremity of Müller's duct, the lower portion of which is represented in the adult male by the tissue round the sinus peculiaris in the prostatic part of the urethra. The use of the name "hydatid of Morgagni" for homologous bodies in both sexes is to be encouraged, being scientifically correct.

This non-parovarian cyst often arises close to the ovary, under the ovarian fimbria of the tube (fig. 5); as it develops it pushes the parovarium inwards, and rises, between the folds of the ligament, as high as the tube, which becomes stretched to an indefinite extent. The entire parovarium may often be found outside the wall of such a cyst posteriorly. The terminal cyst of the parovarium, which bears a layer of endothelium, may, as I have already observed, become enlarged without developing a peduncle. It then forces the layers of the broad ligament apart, and becomes a large unilocular cyst that is truly parovarian. As it enlarges it first comes in contact with the ovarian fimbria of the tube, which it stretches to an indefinite extent.

We will now take into further consideration the cysts in connection with the vertical tubes of the parovarium. These tubes are lined with ciliated epithelium; so are the walls of certain cysts in the ovary and the broad ligament. Such cysts have a tendency to develop solid papillary growths from their inner walls, and usually contain a clear watery fluid; when they have grown to a large volume the epithelium generally ceases to be ciliated. When they commence in the ovary they first appear in the tissue of the hilum, where relics of the Wolffian body exist, and grow to some size before involving the stroma of the parenchyma of the ovary; on the other hand, they tend to grow into the broad ligament, forcing apart its layers. I exhibited specimens of incipient papillary cysts of the ovary, illustrating their manner of growth, at the Pathological Society in the course of last session.¹

In that communication to the Society I discussed at length the question of mixed papillary and glandular cysts in ovarian tumours. As Wolffian elements extend into the tissue of the parenchyma of the ovary, and, on the other hand, follicles may grow into the tissue of the hilum, these mixed growths are readily accounted for. Even the typical glandular ovarian cysts may, in rare cases, push into the hilum, and force apart the layers of the broad ligament. But histologically it is only the ovarian cysts with papillary contents that need consideration in discussing cysts that spring from the parovarium. No case of multilocular cystic disease of the broad ligament, with glandular intracystic growths and no implication of the ovary, has ever been described, but large papillary cysts of the broad ligament, entirely free from the ovary, which remains healthy, yet

¹ 'Trans. Path. Soc.,' vol. xxxii, p. 33.

presenting all the characters of similar ovarian cysts, are now well known to pathologists. The incipient stage of such cysts may be seen in my second specimen springing from a vertical tube of the parovarium (fig. 1, *pc*); the cyst below it, partly in the ovarian tissue, would be still more likely to develop, under unfavorable circumstances, into a papillary cyst. From the generally obliterated tubes, of which a faint indication may be found on dissection (fig. 1, *wr*), similar cysts may develop between the parovarium and the uterus.

These cysts with papillary contents spread over the broad ligament with great rapidity. If once a cyst-wall bursts, papillary masses sprout freely into the peritoneal cavity and soon grow over the tube, the fundus uteri, and the visceral and parietal peritoneum. In these spreading cases I have found perfect cysts, filled with the characteristic growth, on the peritoneum of Douglas's pouch, far from ovarian or parovarian tissue. It is, from this fact, easy to understand how similar papillary cysts may also be found between the layers of the broad ligament, at the site of the above-described minute cysts of non-parovarian origin (fig. 1, *bc*); but whether, in such cases, these minute cysts themselves receive some morbid stimulus which causes their unperforated lining membrane to produce papillary growths, I cannot say, only I doubt this possibility. In mixed glandular and papillary multilocular tumours of the ovary, each locus generally produces one of the two forms of solid growth alone, excepting when a papillary mass perforates a compartment loaded with purely glandular growths.

These papillary cysts of the broad ligament are, after all, not very common, whilst the small cysts, bulging from the vertical tubes of the parovarium, are far from rare. This is not to be wondered at, for the chance of any one such minute cyst ever growing large is very slight. The parovarian tubes, and everything associated with them, tend to atrophy and not to enlarge; it is unusual to find one single tube thoroughly patent in an adult, and its lumen is always more or less choked with broken-down epithelium. The cavities of cysts directly connected with the tubes generally become filled with a similar material, and all growth ceases, as a rule, before such cysts attain the size of a pea.

It is the presence of papillary growths, springing from the inner walls, that is the essential feature of cysts derived from the vertical tubes of the parovarium and their prolongation into the tissue of

the ovarian hilum. Too much importance must not be placed on the presence or absence of ciliated epithelium. Dr. Fischel, in a paper, "Ueber Parovarialcysten und parovarielle Kystome," in the fifteenth volume of the 'Archiv für Gynaekologie,' discusses this epithelial question at great length. He admits that on the inner walls of many of these cysts with papillary growths, ciliated cells are absent, or only found in places, and is diffident with regard to Klebs's opinion that the ciliated epithelium may become changed into other forms, nor does he fully accept Spiegelberg's theory that the pressure of the fluid contents can flatten ciliated epithelium till it loses its cilia and becomes pavement epithelium. Dr. Fischel is more inclined to believe that when ciliated epithelium is not found under these circumstances, the simpler type that replaces it was never ciliated at all. Waldeyer has shown that the epithelium of the Wolffian body is not originally ciliated; the simpler non-ciliated epithelial cells covering the papillæ in these cysts represent this earlier type of Wolffian epithelium. On the other hand, it must be clearly understood that the inner lining of all the other cysts described in this paper is endothelial—that is, made up of a single layer of flattened epithelial cells; this I have often verified by nitrate of silver staining. The usual condition of a vertical tube of the adult parovarium renders microscopic examination of its epithelium very difficult, but I have far oftener found flattened or simple columnar cells than ciliated epithelium. For the reasons just given, I believe it to be better to trust to the anatomical position of cysts of the broad ligament, as seen by the naked eye in their earliest visible stage, rather than to any blind reliance on the presence or absence of a kind of epithelium not always found in the very structure on which the whole question depends.

It might be contended that some of the minute non-parovarian cysts are developed from Müller's duct, which ultimately becomes the Fallopian tube. There is no evidence, however, that any true Fallopian cyst has ever been found, excepting such as are developed within its canal from obstruction, papillary growths, or extra-uterine gestation. The minute cysts found on the upper border of the tube, under the serous membrane, are quite free from the tube and identical in character with the non-parovarian broad-ligament cysts found below the tube. The small shreds or tags that often project from the upper border of the tube, and are duly covered with a layer of serous membrane, are not cysts but abnormal fimbriæ (fig. 3). They result

from an exaggeration of the process of dehiscence which normally takes place near the extremity of Müller's duct, when the orifice of the tube and its fimbriæ are developed. If the split be prolonged backwards, a fringe may be formed some distance behind the normal fimbriæ, as in this specimen. But a cyst could hardly be developed in the course of this process, excepting the hydatid of Morgagni, which is almost constant, as the dehiscence never extends to the extremity of Müller's duct, and that extremity always tends to close at the point of dehiscence, so as to become at once a cyst hanging from the fimbriæ. The pedicle may be very long (fig. 1, *h m*), or even bear a second fimbria, as in this singular specimen (fig. 4). It often undergoes hypertrophy and elongation in cases of cystic disease of adjacent structures, or when chronic inflammation of the tube and ovary has existed for a prolonged period. In one case of long-standing suppuration of an ovarian cyst treated by excision, I found, when the entire cyst was ultimately removed, that the pedicle of the hydatid was six inches long, although the hydatid itself was not a quarter of an inch in diameter.

October 17th, 1882.

Magnus Ullt "Abscess of Gardner's Canal" Ann
Journ. Obstet. Vol 50, p 241. Amack Thou his case
Trans. Obst. Soc. Vol 36, p 552 impr Nov.

Mutshberger "Durch Laparotomie gewonnene Gart-
wässerige Cysten" (w. macro- & micro-cystic character). Monatsber
f. Geb u Gyn. Mai 1909 (Vol XX IX), p 507 (siehe Gardner
und Gardner, Mutshberger retains Danish orthography
in the 25 weeks quoted in the "Litteratur-Verzeichnis")

DESCRIPTION OF PLATE XI.

Illustrating Mr. Doran's paper upon Cysts in Relation to the Broad Ligament. From drawings by Mr. Doran.

FIG. 1.—The right uterine appendages, showing several varieties of cyst. The posterior layer of the broad ligament has been partly removed to expose the parovarium.

t. c. Terminal pedunculated cyst of the horizontal tube of the parovarium. *p. c.* Cyst developed from the side of a vertical tube of the parovarium. Below the outermost tube a small cyst projects from the hilum of the ovary. *W. r.* Relics of Wolffian tubes, internal to the parovarium (no trace of Gaertner's duct exists in this specimen). *H. m.* Hydatid of Morgagni, with an unusually long pedicle. *b. c.* Non-pedunculated broad ligament cyst, not connected with the parovarium or tube; two other cysts lie close to the tube, under the posterior layer of the broad ligament.

FIG. 2.—A pedunculated cyst developed under the broad ligament at its point of reflection over the upper portion of the Fallopian tube. The cyst is only apparently connected with the tube.

FIG. 3.—Portion of a left tube and broad ligament. The tube bears a true accessory fimbria some distance behind its extremity. Two pedunculated cysts and one that is sessile, project from under the posterior layer of the broad ligament. They are all separate from the parovarium.

FIG. 4.—The fimbriated extremity of the Fallopian tube. The hydatid of Morgagni has a very long, flat pedicle, bearing a fringed process.

FIG. 5.—A thin-walled cyst lying between the outer extremity of an ovary and the end of the ovarian fimbria of the tube, which crosses the cyst. (Twice the natural size.)

Fig. 1.

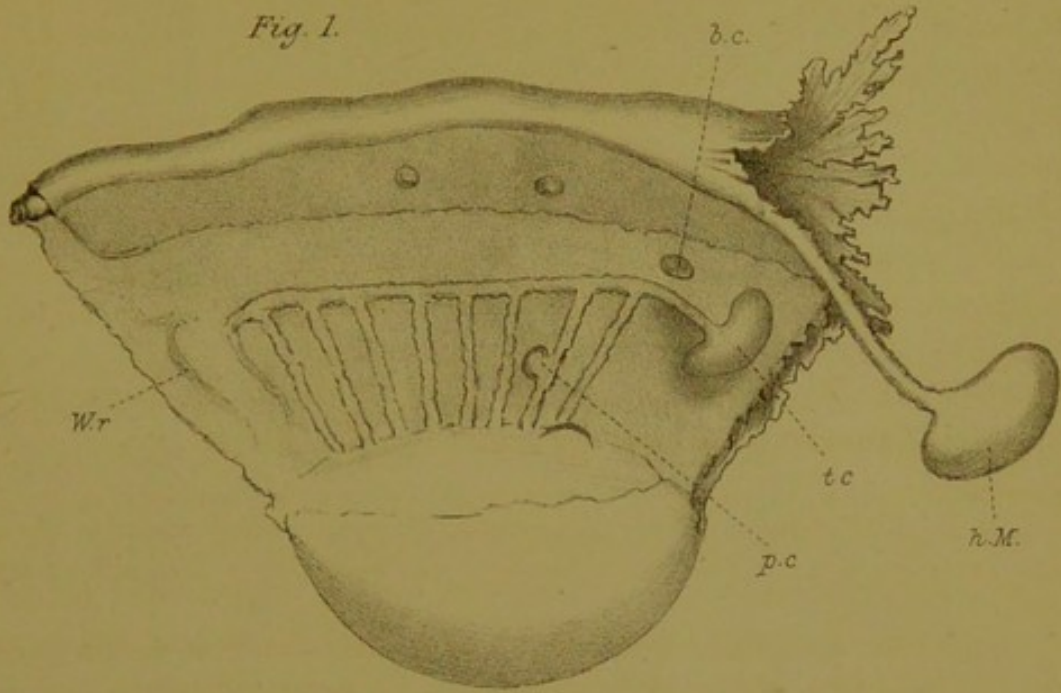


Fig. 2.

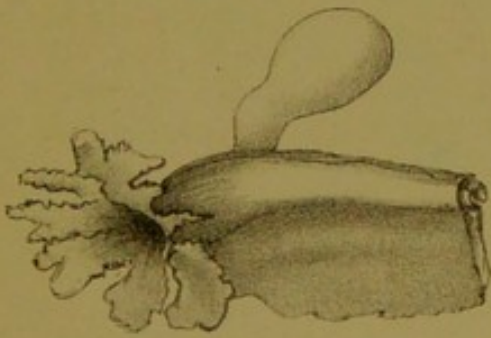


Fig. 3.

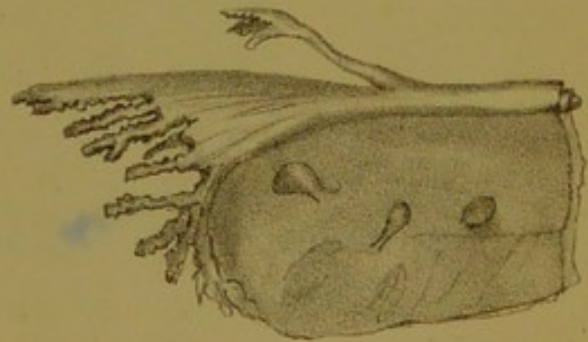


Fig. 4.

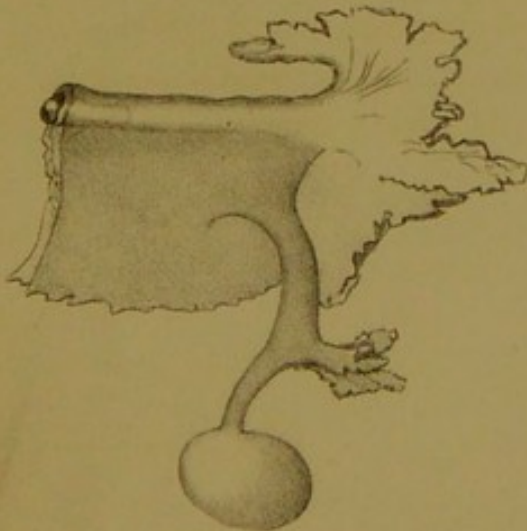


Fig. 5.



