

**Capsules, false and real, in ovariectomy : with notes of six cases / by Alban Doran.**

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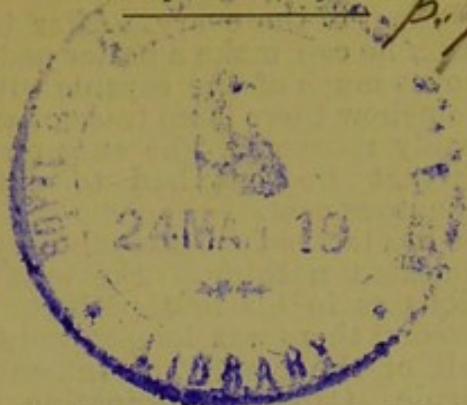
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## CAPSULES, FALSE AND REAL, IN OVARIOTOMY : WITH NOTES OF SIX CASES.<sup>1</sup>

By ALBAN DORAN, F.R.C.S.,  
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AN operator little experienced in ovariectomy may come across a kind of case which causes him some apprehension. There is a cyst, it reaches to the umbilicus or higher, but it also descends well down into Douglas's pouch. The cervix lies very high in the pelvis, and the fundus can be felt above the pubes. All these appearances point to an intraligamentous or encapsuled cyst. The novice makes an exploratory incision. He sees the uterus lying ominously in front of the tumour. One tube turns sharply round inwards and backwards on to the surface of the tumour, which resembles that of a common ovarian cyst with a shiny surface. He taps the cyst. Ordinary ovarian fluid escapes, then as he pulls on the collapsing cyst the whole of it, including the pelvic portion, comes out of the abdominal wound. To his intense relief he detects a normal pedicle—that is to say, the cyst is connected to the uterus by the Fallopian tube and the ovarian ligament, the mesosalpinx, with its layers normally apposed,<sup>2</sup> connecting those structures.

After much experience in ovariectomy he comes across a case with identical physical features. There is a history of pain and fever, or such a history may be absent. On opening the abdomen the fundus uteri is found, as expected, well above the symphysis. But it is flattened against the cyst, which seems as though covered by a dull red capsule. The tube appears to be lost on that surface. He taps the tumour, and thick or thin ovarian fluid, or even pus, comes away. Then he peels off the capsule as far as he can. He finds it very adherent and easily torn. In all probability he meets with adhesions above. Below, things are worse. The capsule seems to run indefinitely on to pelvic structures; no doubt he thinks he has opened up the parametrium, the lower part of the capsule being of course, he believes, the diverging layers of broad ligament below the

<sup>1</sup> Specimens exhibited before the West London Medical and Chirurgical Society, April 10th, 1896.

<sup>2</sup> This is the correct and accepted name for the broad ligament above the level of the attachment of the ovary, the mesentery of the Fallopian tube in fact. Its layers are naturally in apposition, whilst in the lower part of the broad ligament the serous folds diverge, the space being filled with parametric or pelvic cellular tissue. This distinction between the upper and lower parts of the broad ligament is of great importance to the operator.



level of the attachment of the ovary. After tedious manipulations he finds that he can make a better pedicle than he expected. He removes much of the capsule with the cyst, and then finds that somehow there is no trace of any capsule left. The patient probably recovers. The surgeon remains under the impression that he has had to deal with a bad case of intraligamentous cyst.

The truth is, he has tackled an undoubtedly difficult case, but he has enucleated nothing. The cyst had the same anatomical relations as in his first patient. The difference was that in the second there was long-standing inflammation of the outer wall of the cyst. The inflammatory product simulated a capsule. Careful examination after operation would have shown first that this "capsule" was not complete, but merged itself in the true cyst wall at many points; and, secondly, that the tube with its mesosalpinx intact was plastered down on to the surface of the cyst by adhesions. In the common forms of intraligamentous cyst the cyst wall completely opens up the layers of the mesosalpinx, coming immediately into contact with the tube, which it stretches to an indefinite extent. As for the parametrium, it was never opened at all. What the surgeon took for that layer of pelvic cellular tissue was simply inflammatory adhesion, binding the lower part of the cyst to pelvic structures. This condition is the essentially serious surgical feature of such a case. The surgeon can and does work away freely inside what he takes to be a capsule; but if there is no capsule his false impression may lead him to damage important structures.

Let us therefore consider these cases which are puzzling, and may be worse than puzzling, in the manner just noted. I may conveniently name them false capsuled cysts. Dr. Pawlik employs the term "pseudo-intraligamentous ovarian tumour."<sup>3</sup>

The difference between a true and a false capsuled cyst is seen in Figs. 1 and 2. In order, however, to clearly understand the relations of the structures under discussion the diagrams (Fig. 3) which I have prepared may afford some aid. It is No. 8 which is so often taken for a true capsuled cyst when the tube and mesosalpinx are held down by adhesions (*ad b D*) to the cyst wall, which is itself strongly adherent below to Douglas's pouch (*ad D P*). Let the surgeon look at the diagram, and beware of stripping up the layers of that peritoneal fold.

I will now describe some cases of false and true capsuled ovarian cysts, in my own experience. There is no necessity for me to dwell at length on cases of ovarian or broad ligament cysts which have a true capsule. This true capsule consists entirely of the mesosalpinx, the lower part of the broad ligament not being opened up. I have operated upon a large number of such cases, and so has every surgeon with a fair experience of ovariectomy. Their relations are indicated in Nos. 2 and 3 of the diagrams (Fig. 3). The dull red capsule, sliding freely over the cyst wall, is usually easy to recognise. Surgically, it often proves to be no capsule at all. That is to say, after tapping, the tumour comes out of the abdomen easily with its investing capsule, and a pedicle can be formed without enucleation.

<sup>3</sup> Ueber pseudo-intraligamentöse Eierstocksgeschwülste (Vienna: Sáfár. 1891.).



I will confine myself to less frequent conditions, and describe (i) a case of a common ovarian cyst, with the uterus unusually high up in front (Fig. 3, No. 8, without *ad b l*); (ii) a case of the same relationship of tumour to uterus, but with a false capsule (Fig. 1 and Fig. 3, No. 8, see *ad b l*) consisting of inflammatory deposit. Then after noting (iii) a previously recorded case where the mesentery formed part of the capsule, I shall turn to (iv) an instance of a parovarian cyst following between the layers of the lower part of the broad ligament (Fig. 3, No. 6), quite contrary to the rule in this well-known type of cystoma, and (v) where an ovarian cyst burrowed between the layers of the lower part of the

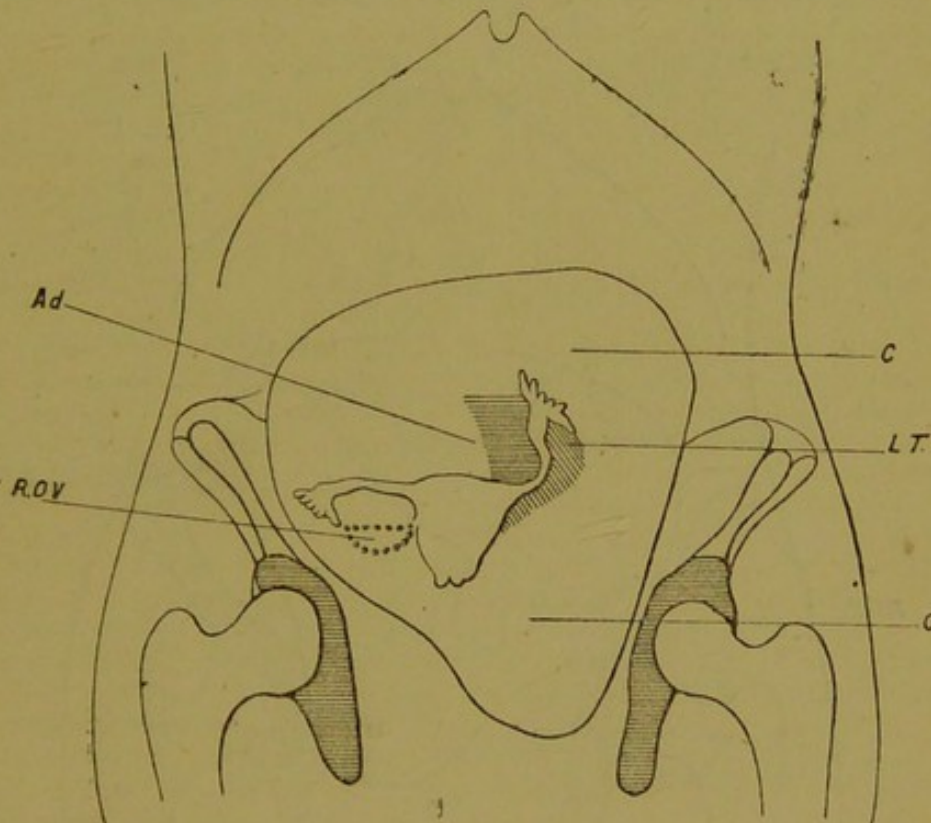


FIG 1.

Fig 1.—A false-capsuled ovarian cyst (after Pawlik). *c c* The cyst, entirely behind the uterus and extending downwards into the pelvis. *R.O.V.* Right ovary. *L.T.* Left Fallopian tube, with its mesosalpinx unopened, but it is bound down to the surface of the cyst and covered by adhesions (*Ad*). See also Fig. 3, No. 8, and Case 11.

broad ligament, leaving the mesosalpinx intact (No. 4), a rare and very puzzling condition. In the last case (vi) the cyst lay in a capsule consisting entirely of ovarian tissue (No. 7). This specimen is preserved entire in the Museum of the College of Surgeons. Unfortunately it is impossible to make instructive specimens out of the tumours of the other varieties above noted, since the operator is obliged to destroy irreparably the relations of the capsule, during ovariectomy.

CASE 1. M. C., aged 67, a spare, healthy old woman. A fluctuating tumour filled the abdomen as high as the umbilicus, and on the left side it reached higher. It extended far downwards into Douglas's pouch. The cervix lay high up in the pelvis, the sound entered  $2\frac{1}{2}$  inches, the fundus rising well above the symphysis the uterus could be made to slide in front of the cyst. This sliding of the uterus, I find, may often be



observed in cases of deeply encapsuled tumours, for if the cyst be not tense the capsule is loose enough to allow the uterus to slide. It is not possible to settle the question of capsulation by this symptom, which is so easy to detect when the uterus rises above the pubes. I find that I made a note in this case before operation, "the bases of the broad ligaments seem in front of the tumour" (on vaginal exploration). At the operation, in January, 1894, I was not surprised to find an ordinary ovarian cyst, with the right tube turning backwards and upwards from the uterus on to the cyst wall. After tapping, which brought away three pints of dark ovarian fluid, the tumour came out entirely, and there was a normal pedicle, easily secured and divided. The left appendages were free from disease. The patient recovered rapidly.

In this case I was glad that the cyst was not encapsuled, as deep enucleation would have involved some risk in so old a woman, though she would most probably have borne it well. What is the significance of these common ovarian

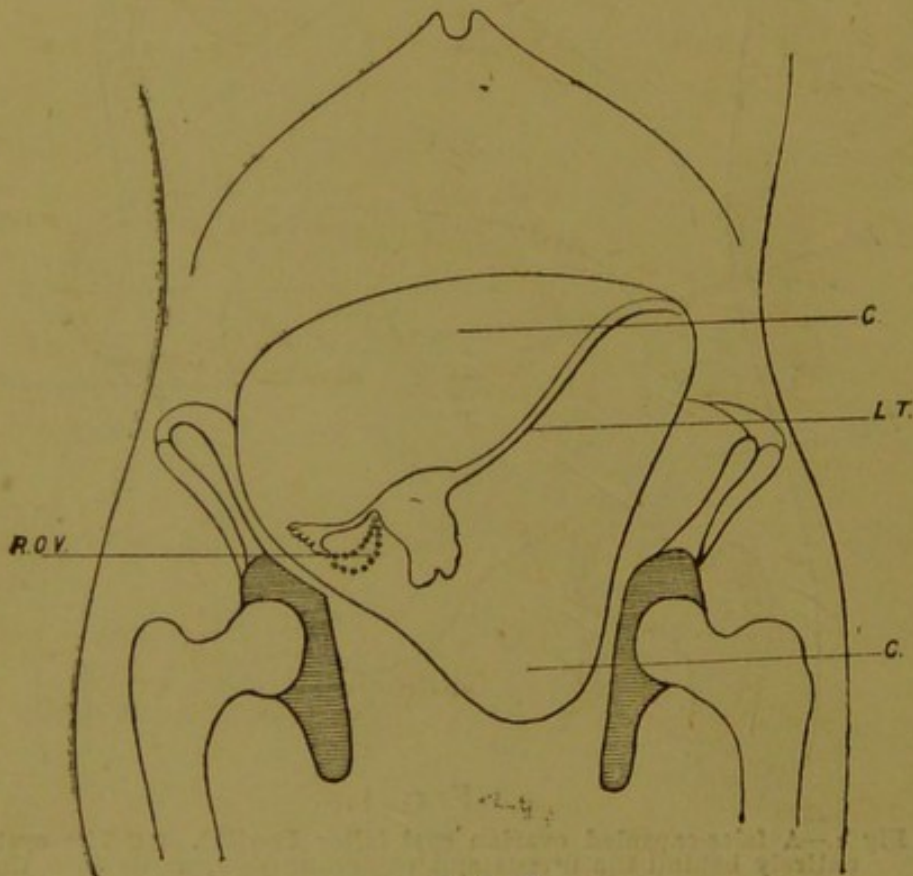


FIG 2.

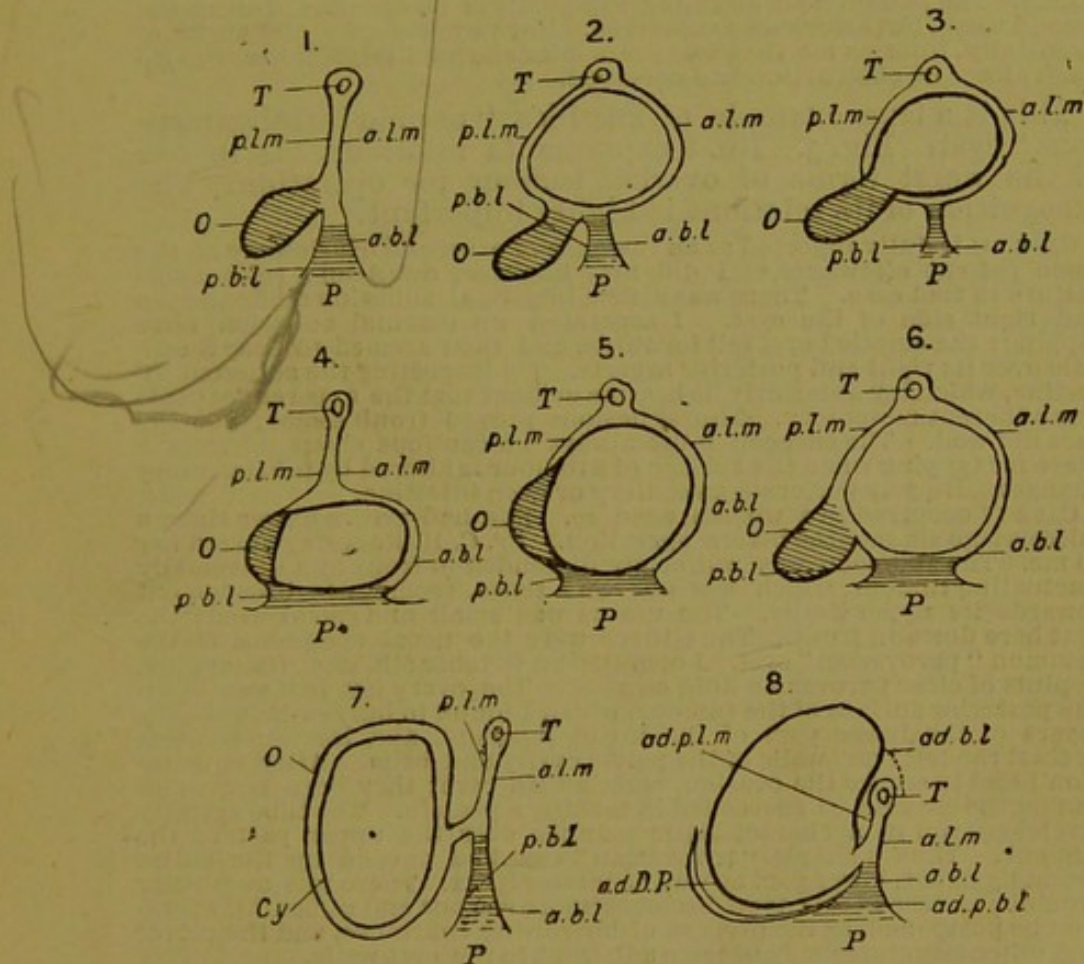
Fig. 2—A capsuled ovarian cyst. L.T. Left tube, mesosalpinx entirely opened up so that the tube is greatly stretched. See Fig. 3, No. 5.

tumours where the base remains in the pelvis after the fundus has risen high in the abdomen? Simply that the base is, from some cause, prevented from rising. As a rule it is kept down by being unusually heavy; thus in this case the pelvic portion consisted of a number of minute secondary cysts united to form an almost solid mass. Sometimes large tuberosities on the lower part of the tumour prevent it from rising above the brim; sometimes it is kept down by adhesions. Neither of these conditions was present in Case 1. Whatever may keep down the base of the cyst and force up the uterus in front of the tumour, the surgeon can never be sure before operation that such a tumour is not encapsuled.



CASE II was a very bad example of a cyst behind the uterus with a false capsule. The patient was 46 and single. The lower part of the abdomen was filled by an elastic tumour, reaching to 1 inch below the umbilicus. The cervix was short, and the sound entered  $2\frac{1}{2}$  inches rather to the left upwards, as though into the substance of the tumour. The base of the tumour occupied the right fornix and Douglas's pouch. A history of recent attacks of severe pain and rapid growth of the tumour was obtained. I operated in November, 1890. The uterus lay in front; the cyst

FIG 3.



Diagrams explaining relation of cysts to the broad ligament, tube, and pelvic connective tissue. T Fallopian tube. O Ovaries (ovarian tissue and cysts developed from ovary are indicated by a thick line). P Parametrium or pelvic connective tissue. a.l.m. Anterior layer of mesosalpinx, the part of the broad ligament above the level of the ovary. p.l.m. Posterior layer of mesosalpinx. a.b.l. Anterior layer of part of broad ligament which lies below the ovary. p.b.l. Posterior layer of same. The parametrium extends upwards between these layers.

No. 1. Normal relations of tube, ovary, and broad ligament. No. 2. Cyst ("parovarian") in mesosalpinx. No. 3. Cyst of ovarian origin in mesosalpinx (this type is usually papillomatous). No. 4. Cyst of ovarian origin burrowing in lower part of broad ligament, mesosalpinx intact. No. 5. Cyst of ovarian origin burrowing into both parts of the broad ligament. No. 6. Parovarian broad-ligament cyst burrowing into both parts of the broad ligament. No. 7. "Pseudo-intraligamentous" ovarian cyst (cy) in a capsule entirely composed of ovarian tissue. Adhesion of o to p.l.m. would simulate 3, to p.b.l. would simulate 4, and to p.l.m. and p.b.l. would simulate 5). No. 8. "Pseudo-intraligamentous" ovarian cyst, Pawlik's variety (see Fig. 1). Ad.p.l.m. Intimate adhesion to posterior layer of the mesosalpinx. Ad.p.b.l. Intimate adhesion to posterior layer of lower part of broad ligament. Ad.D.P. Ditto to Douglas's pouch. Ad.b.l. Band of adhesion passing from cyst wall on to the tube and mesosalpinx (see Fig. 1, Ad.)



had large veins on its shiny white walls, as often seen when the capsule is thin. Almost solid clot came away on tapping. The apparent capsule was inflammatory deposit. The cyst was universally adherent to small intestine behind and to the peritoneum of Douglas's pouch, where its separation proved very difficult, and some of the serous membrane, resembling a capsule, was stripped off. This is one of the chief troubles in operating on a doubtful case. When the tumour was fairly free, I found that it had a normal but strongly-twisted pedicle, which had been firmly plastered down on to the surface of the tumour and concealed in dense adhesions. Of course the tube was completely obstructed and reduced to a cord. The right ovary was cystic, so I removed it. The peritoneum was flushed and a drainage tube inserted into Douglas's pouch. The patient had alarming symptoms of obstruction during the second week, but afterwards recovered. Her physician, Dr. McLaurin, of Barnsbury, informs me that two years later she was in good health. No fresh attack of obstruction had occurred.

This is a true example of Pawlik's "pseudo-intraligamentous" cyst. Fig. 3. No. 8 explains its relations. It is one of the worst forms of ovarian tumour for operation. The recognition of its relations is highly important.

CASE III is fully reported as an instance of a second ovariectomy on the same patient elsewhere.<sup>4</sup> I did not, however, dwell on a remarkable feature in that case. There was a firm intestinal adhesion along the top and right side of the cyst. I separated an omental adhesion after tapping; the emptied cyst fell forwards, and then seemed to bear a capsule over its right and posterior aspects. On inspecting the adherent intestine, which lay anteriorly, it became evident that the apparent capsule was adherent mesentery. The adhesions proved troublesome, but the case did well. The surgeon must always be cautious about selecting a place for tapping when the surface of a tumour is altered by inflammatory changes. He may perforate mesentery or even intestine.

CASE IV occurred in a woman, aged 29. She had grown bigger since a miscarriage six months before operation. Dr. C. H. Roberts referred her to me. The abdomen was uniformly distended in front by a universally fluctuating tumour, which was not very tense, seeming to broaden out towards its upper limits. The uterus was small and retroverted; the cyst bore down in front. Thus there were the usual symptoms of the common "parovarian" cyst. I operated on October 6th, 1893. On tapping, 23 pints of clear parovarian fluid escaped. The ovary lay half way down the posterior surface of the tumour, which I found to burrow between the layers of the lower part of the broad ligament, and lay immediately against the left bony walls of the pelvic cavity and brim. After enucleation I had to secure the ovarian vessels with care; they were large, and ran on the capsule. I succeeded in making a pedicle. The tube (greatly stretched) ran in a characteristic manner over the upper part of the tumour. Thus a simple "parovarian" cyst had opened up the entire broad ligament, lower part as well as mesosalpinx. There was no further trouble. A case of this type becomes more serious and difficult if operation be postponed, as the process of burrowing continues, and the ureter and other structures may become adherent to the cyst walls.

CASE V quite recently came under my care; she was a healthy and well-nourished married woman, aged 25, a patient of Dr. Ferguson, of Hampstead, and of my colleague Dr. F. McCann. We found a cystic mass in the right fornix, tender to touch, the uterus was anteflexed and pushed far to the left. She had been married 2½ years, and was childless, and in the early part of the summer of 1895 she began to suffer from pelvic pains, which increased in severity. These symptoms indicated inflammatory disease of the appendages such as causes sterility. But there was no history of discharge, no disturbance of the catamenia, and a total absence of the constitutional sickness nearly always present in that too common form of disorder in young married women. Dr. McCann had carefully examined her under chloroform. He diagnosed a tumour in the broad ligament. I operated on January 23rd, 1896, with the assistance of Dr. McCann, whose diagnosis proved correct. The cyst rose a little above the brim of the pelvis. The colon was reflected on to its surface, which was completely encapsuled. The tube and the mesosalpinx with its layers unopened lay on the top of the cyst. I punctured with an exploratory trocar, and a pint of deep greenish-brown ovarian fluid escaped. Enucleation was troublesome, the capsule being very vascular, as is usually the case when it is formed out of the lower part of the broad ligament. The cyst was in close relation to the side of the uterus. Two large vessels had to be secured deep down, and I felt some structure in a state of calcareous degeneration in the opened up parametrium. I stuffed

<sup>4</sup> Two Cases of Ovariectomy performed Twice on the Same Patient: *Lancet*, Vol. ii, 1894, p. 1415



a large sponge into the capsule, sewed its edges together, and as on withdrawing the sponge I found that the oozing had ceased I tied the sutures and did not introduce a drainage tube. The capsule fell to the bottom of the pelvis. Convalescence was rapid. The tumour was a small cyst of the ovary bearing some secondary cysts. The left appendages were healthy. The pain was due in this case to the pressure of the tense cyst against its capsule, which is much less yielding than the layers of the mesosalpinx. Its tenseness allowed of diagnosis. In the preceding case, No. IV, the thin-walled parovarian cyst had burrowed downward, just as the ovarian cyst had in this case, No. V, but in IV there was no pain and the fornix seemed free. The cyst was rather flaccid, hence not so easy to detect by touch as in V, nor so likely to be painful. I suspect that it is easier for a parovarian cyst developed between the layers of the mesosalpinx to burrow lower in the broad ligament than for a true ovarian cyst to push itself downwards.

CASE VI presented a great peculiarity. The patient was a domestic servant, aged 25, and single. A small cyst filled the lower part of the abdomen and intestine lay in front; the fundus of the uterus could be felt in the right groin, its cavity measured  $3\frac{1}{2}$  inches, the cervix lying high. No part of the cyst came down into the pelvis. I operated on May 1st, 1895, assisted by Dr. Hubert Roberts. On tapping a pint and 6 ounces of ovarian fluid escaped. The surface of the tumour was white. On inspecting the tapping hole two distinct layers could be seen, as though there were a true capsule. I placed my hand down behind the supposed capsule and pushed out the entire cyst, with a normal pedicle, the mesosalpinx and the ovarian ligament running on to the "capsule." There were no adhesions, and the opposite (right) ovary was healthy. Convalescence was uninterrupted. The "capsule" was simply the ovary itself (Fig. 7) distended by the cyst within its substance. The true cyst wall was connected with the ovarian capsule by very loose connective tissue. Had the union been close and firm, that would have been the usual condition in ovarian cystoma, and no two separate layers would have been seen on inspecting the trocar wound. On the other hand, had the capsule of ovarian tissue been adherent to pelvic structures, the cyst might have been deliberately enucleated from the ovary itself; the appearance after enucleation would then have been puzzling.

Pawlik, in his instructive essay already quoted, writes of other conditions where capsulation is simulated to the confusion of the operator. He refers to cases (not very rare in my experience) where the lower part of the front of the cyst adheres firmly to the posterior layer of the broad ligament. In another instance a large pyosalpinx lay in front of an encysted peritoneal effusion or peritoneal cyst. He speaks also of a large hydrosalpinx. A cystic tube is encapsuled, as the mesosalpinx is of necessity opened up, till the tube touches the ovary. Unless the relations are much obscured by inflammation there is little difficulty in recognising a tumour of this kind. After tapping its relation to the uterus becomes manifest. The ovary is often flattened down and atrophied beneath the hydrosalpinx; hence the operator is apt to overlook it, and to take the cyst for a parovarian, or more likely a tubo-ovarian tumour, as a large hydrosalpinx is always constricted at a certain point. Fortunately this mistake is not of high gravity to the patient, who seems to suffer little if the ovary be left behind.

Such an error, however, is more serious to the operator if he fail to recognise the truth after the operation. In this communication, I trust, that I have clearly demonstrated how important it is that the operator should know something about the anatomy and pathology of capsules. All my six cases here related recovered, and out of a large number of ovariectomies where enucleation of parovarian or ovarian cysts was undertaken, only one patient succumbed. She had been long subject to bronchitis and emphysema, and was suffering at the time of the operation from a subacute attack of the pulmonary affection greatly aggravated by distension of the abdomen. As the abdominal swelling caused great dyspnoea, I operated. There was a parovarian cyst, which, as



in Case iv, burrowed downwards as well as between the folds of the mesosalpinx. Enucleation was troublesome; unfortunately there proved to be an ovarian tumour on the opposite side, with twisted pedicle, hæmorrhage into its cavity, and strong adhesions to the parietal peritoneum in the left loin, and to diseased omentum. The operation was of necessity prolonged. Unfortunately, in spite of all precautions, the pulmonary trouble increased, coughing became incessant, and the patient died on the fifth day. Death had little to do with the enucleation required in this case; the removal of the opposite tumour caused much more disturbance of parts and expenditure of time.

If the surgeon knows that he has to do with a capsule, he can proceed to enucleation freely, but deliberately, as inside the capsule he cannot damage pelvic structures. There is no space for me to discuss the correct treatment of a true capsule; as a rule, but not always, it may be treated as in Case v; but fixation to the lower angle of the wound and drainage of the cavity of the capsule is usually needed if the enucleated tumour is in a suppurating condition. If the surgeon persists in doing ovariectomy, without any pathological knowledge, he must not be surprised if he loses cases and finds after death that he has torn up the peritoneum of Douglas's pouch, lacerated a ureter or large vein in the wall of the pelvis, mistaken intestine adherent to and stretched on the cyst for the tube in a true capsule, or committed some other deplorable error.