Section of Obstetrics and Gynæcology

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[*October* 26, 1956]

Some Clinical Aspects of Developmental Anomalies of the Female Genito-urinary Tract

PRESIDENT'S ADDRESS

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THIS address is based upon case records for the past sixty years and autopsy reports for the past forty years at the London Hospital.

Gynatresia with cryptomenorrhœa	83 cases
Incomplete vaginal septa	17 cases
Duplication of genital tract without cryptomenorrhœa:	
Symmetrical	32 cases
Asymmetrical	12 cases
Other abnormalities of the genital tract	16 cases
Selected anomalies of the urinary tract	5 cases
Found at autopsy	35 reports
	200

In addition to commenting upon these 200 cases from the London Hospital, others are referred to which have come under my care in different hospitals during the recent half of this period.

GYNATRESIA WITH CRYPTOMENORRHŒA

83 cases of cryptomenorrhœa resulting from a developmental obstruction distal to menstruating endometrium are included in the series and in Table I they are grouped into clinical types:

TABLE I.

Occluding membrane at the vaginal orifice	
Hæmatocolpos. Simple 54, Double 1	55
Hæmatocolpos (H-C) and hæmatotrachelos (H-T)	1
H-C, H-T and hæmometra (H-M)	3
H-C, H-T, H-M and hæmatosalpinx (H-S)	3
Occlusion at a higher level	
In the vagina: vault H-C ±H-T, H-M and H-S	2
In the cervix: H-T ±H-M and H-S	5
Unilateral occlusion in a double genital tract	
In the vagina: vault H-C ±H-T, H-M and H-S	7
In the cervix: H-T ±H-M and H-S	1
In the corpus: H-M ±H-S (menstruating accessory horn)	6
(*Infection of retained menstrual debris*—5)	83

The clinical features of simple hæmatocolpos are well known but a few points have emerged from a study of the 54 cases in this series. About half of them came under medical care because of difficulty in micturition or retention of urine. One-third complained of pain, in many cases typical of dysmenorrhœa, but in others, of a dull aching character above the pubes or in the sacro-perineal region, aggravated by sitting or by defæcation and probably due to vaginal distension. The remainder presented in a variety of ways, complaining of such things as abdominal swelling, hæmorrhoids, or anxiety because of delayed onset of periods, and initial diagnosis included appendicitis and ruptured ectopic pregnancy. One girl of 15 years fell on her perineum and, in doing so, ruptured a hæmatocolpos with embarrassing social consequences. The age incidence ranged from 12 to 24 years and 5 of these girls were 18 or older.

The only case of double hæmatocolpos was admitted under Dr. A. H. N. Lewers in 1907. A single girl of 17 years, she had never menstruated and a sudden retention of urine brought her to hospital. After catheterization a tense abdomino-pelvic swelling reached from the perineum to just above the pubes. The external genitalia were well developed but there was no vaginal opening. Dissection at its normal site opened two vaginæ distended with tarry fluid and with a separate cervix at each vault.

In 7 further cases of hæmatocolpos due to a low vaginal atresia distension also involved the genital passages at a higher level. In 1 the cervix alone was affected (hæmatotrachelos), in 3 the uterine body as well (hæmometra) and in the remaining 3 cases the fallopian tubes were also affected (hæmatosalpinx). Involvement of the uterus and fallopian tubes does not depend upon the size of the hæmatocolpos. The largest in the series contained 4½ pints and in this case the uterus and fallopian tubes were not distended, whereas both were grossly distended in an instance where the hæmatocolpos contained only 10 oz. Apart from palpable enlargement of the tubes, there must be many cases where a little fluid finds its way back along them to the peritoneal cavity. Again, dilatation may have involved the upper genital tract even when symptoms are of very short duration. One girl of 13 years with pain of one month's duration had already developed a hæmatotrachelos and a hæmometra. Another girl of 12 years with pain of less than twenty-four hours' duration in the right iliac fossa had her abdomen opened through a grid-iron incision, the pre-operative diagnosis being acute appendicitis. She proved to have a hæmatocolpos, hæmometra and a ruptured right hæmatosalpinx with free chocolate fluid in the peritoneal cavity. The occurrence of cases of this sort make it imperative that the drainage of a hæmatocolpos should be regarded as a surgical emergency. This drainage, by crucial incision or circular excision of the membrane, would seem a minor surgical procedure; nevertheless, mishaps may occur. The first patient in this series from 1896 died under the anæsthetic before the operation could be started. In 1907 excision of an unusually thick membrane was followed by a vesico-vaginal fistula which had to be secondarily repaired. In two instances, referred to later, post-operative infection involved the genital tract.

The occluding membrane varies considerably in thickness, in its precise situation and, possibly, in embryological origin. Many conformed to the clinical description in that they bulged at the vaginal orifice and were sufficiently thin and translucent to show the dark colour of the retained, altered menstrual fluid. In other cases the membrane was flat, up to half an inch in thickness and of the same colour and appearance as the surrounding vulval tissue. The hymen was frequently to be seen below the obstructing membrane but sometimes it could not be demonstrated as a separate entity, even when carefully looked for. In one case (1929) biopsies of both the hymen and the occluding membrane were taken for histological examination. The hymen was lined on both surfaces by thick, stratified epithelium. The membrane was lined on its outer surface by similar epithelium but on the inner surface the epithelium was much thinner and of a more transitional type. Between the epithelial layers many membranes contained muscle as well as collagen fibres and in some the inner lining was a high columnar epithelium.

In 7 cases the gynatresia was at a higher level than the vaginal orifice at varying levels in the vagina and cervix. 2 of these cases, in which the vagina was completely absent, are of particular interest. In one (1895) a girl of 19 was under observation for a year for recurrent monthly attacks of severe hypogastric and low back pain. At first the uterus, on rectal bimanual examination, appeared to be of normal size, but, later, it enlarged to the size and consistency of a 10 weeks' pregnancy. There was no vaginal orifice and, with a sound in the urethra and a finger in the rectum, no vagina could be felt. After dissecting about 3 in. upwards in the cellular plane between the urethra and the bladder in front and the anal canal and rectum behind, two bulges in the depths of the wound appeared to represent distended cervices. Each was penetrated separately with sinus forceps by Hilton's method and each drained a considerable quantity of typical retained menstrual fluid. Convalescence

was mildly febrile for five weeks, during which time the cavity was first packed with iodoform gauze and then regularly dilated. A follow-up note stated that a vagina 2½ in. deep resulted, menstruation was normal and the uterus now felt quite small. This case would appear to have been one of double hæmometra in a septate bicollis uterus with a complete atresia of the vagina.

In the other case (1909) a girl of 17 years had had monthly attacks of pain in the lower abdomen and thighs for two and a half years. Two abdominal swellings were felt, one central and sub-umbilical, the size of a fœtal head at term, the other a fixed mass in the right iliac fossa. On rectal examination a thin fibrous cord could be felt where the vagina should have been. Laparotomy disclosed a small hæmometra (2 oz.) and large bilateral hæmatosalpinges (each 10 oz.). There were many adhesions. Subtotal hysterectomy was difficult; the right ureter crossed behind the cervix to the left side. The patient developed ileus and died on the eighth post-operative day.

Simple hæmatocolpos complicated by infection.—Three examples of this condition occurred in this series. In 1933 a patient of 25 years was sent to hospital with a six days' history of abdominal pain and difficulty in micturition. A tender swelling reached to the umbilicus. Excision of a low occluding vaginal membrane released a large quantity of foul-smelling blood-stained fluid which, on culture, grew an anaerobic Gram-positive coccus. In this case the infection of the hæmatocolpos preceded surgical intervention. In 1907 another patient attended hospital with a minute opening in an occluding low vaginal membrane and the vagina filled with foul pus. The membrane had been perforated and a hæmatocolpos drained with a trochar and cannula twelve months previously. A third case in 1911 was the girl who ruptured her hæmatocolpos by falling on her perineum. The rupture closed down and there was inadequate drainage of offensive, infected menstrual debris.

Unilateral Gynatresia with Unilateral Cryptomenorrhœa

There are 14 examples of this anomaly occurring with equal frequency on either side. In every case unimpeded menstruation occurred from the unaffected side. The atresia was at varying levels but in no instance was it very low down. In 5 cases a shorter vagina was intimately related to one side of the upper part of the fully formed vagina. In 4 cases this anomaly was on the right side and in 1 case on the left. Lower abdominal and pelvic pain led to the discovery of an abdomino-pelvic swelling in each case. In 3 the initial diagnosis was broad ligament cyst and in another it was tubercular salpingo-oophoritis. In 2 cases the retained menstrual fluid amounted to 2 pints; one of these patients died of post-operative peritonitis; the other has since had 6 children. In 1 patient, aged 15 years, there was no vagina on the affected side and the cervix was occluded at the level of the os externum. She developed a large right-sided hæmatotrachelos which was drained by vaginal trachelotomy. She has since had one successful pregnancy and is again 4 months pregnant at the present time. Both these pregnancies relate to the unaffected left genital tract.

In 6 cases there was a single vagina and cervix. The unilateral atresia consisted of occlusion of a rudimentary or accessory horn. The age range of these patients was wide and the majority were, perhaps, unexpectedly old. The ages at the time they received surgical treatment were 15, 17, 20, 28, 33 and 39 years. Initial diagnosis included ruptured ectopic pregnancy, Dietl's crises, intractable dysmenorrhœa and degenerating fibroid. All had abnormal pelvic physical signs, usually a tender, irregular uterine enlargement or a tubo-ovarian swelling. In 5 cases the abnormal horn was excised. In the patient aged 39 years a total hysterectomy was done.

Imperfect drainage of one side of a double genital tract with consequent infection.—In addition to the case that developed post-operative fatal peritonitis there were 2 cases of infection consequent upon imperfect drainage of one side of a double genital tract.

(1) A single girl of 21 years gave a history of a post-menstrual, very offensive, fæcal smelling, pale green discharge since her periods began at the age of 14 years. Repeated tests at a Venereal Disease Clinic were negative for such types of infection. Careful examination under anæsthesia defined a soft swelling adjacent to the right anterior part of the vaginal vault. Pressure in this region caused fæco-purulent pus to exude from the cervical canal. It was then discovered that an antero-posterior septum divided the cervix and that ¾ in. above the lower extremity of the right-sided canal a fistulous track led into an infected sac related to the right vaginal fornix. Through an incision in the right fornix around the side of the cervix the fistulous track was excised and the infected sac laid open and marsupialized into the right fornix. The discharge subsequently cleared up. Because of the resemblance

of many features of this case to those of the following one, the sac was probably produced by infection of an incompletely developed right-sided vagina.

(2) A girl of 14 years was referred to me because of an offensive intermenstrual discharge so overpowering that on several occasions she was sent home from school on account of it. She was placed on the waiting list for admission to hospital for examination under anæsthesia and other investigations, but pain in the right iliac fossa associated with pyrexia developed and admission to the general surgical side of another hospital was arranged. The abdomen was explored for what was now a subacute lower abdominal infection and a right-sided purulent salpingitis was found. The appendix was removed and the wound was drained. The pus grew *Bact. coli* on culture and appropriate chemotherapy was instituted. The infection subsided but two months later she was admitted to hospital with a tender mass in the right iliac fossa and complaining of some foul green vaginal discharge. Vaginal examination under anæsthesia now identified a very small sinus to the right of the portio vaginalis of the cervix. The mass in the right iliac fossa felt bimanually was larger than the uterus and pressure on it caused pus to exude from the sinus in the right vaginal fornix. A further, more extensive laparotomy now revealed a right-sided pyosalpinx and pyometra which were removed at the level of the cervix. A left-sided uterine body with the left fallopian tube and ovary appeared healthy. A ureteric catheter was introduced through the cervical canal of the stump remaining after the right uterus had been removed and a subsequent X-ray showed it to be coiled up in a cavity related to the upper half of the right side of the vagina. Dissection into this from below opened a right-sided pyocolpos which was widely drained. This girl had no kidney on the right side. She has had a satisfactory convalescence and is now menstruating normally from the left uterus.

Before leaving the subject of simple hæmatocolpos I shall refer to one case of hydrocolpos which I encountered at another hospital. A girl of 15 was referred to me on the same day that she developed acute retention of urine as the first symptom of what appeared to be a classical fairly large hæmatocolpos. There was nothing suggestive of infection or toxæmia. On incising the occluding membrane, which bulged at the vaginal orifice, 40 oz. of inoffensive creamy-white fluid escaped. This fluid was sterile and contained cellular debris, many squamous epithelial cells and a small number of leucocytes. She made a straightforward, afebrile convalescence and started to menstruate normally six months later. Maliphant (1948) published a report of a very similar case He pointed out that of the small number of cases reported, more have occurred in the neonatal than the pubertal age group. Such remarkable cases give rise to conjecture. Does this fluid represent a form of so-called "white menstruation" where the endometrium is not being subjected to, or does not respond to the influence of a hæmorrhagic factor, or does it represent an accumulation of non-menstrual secretion? Perhaps, in many cases of gynatresia, a quantity of such fluid has accumulated before true menstruation begins. If this is so, then there is a case for the excision of an occluding membrane without delay, should it be discovered before puberty.

There still remain the many anomalies of the genital tract where there is no cryptomenorrhœa. In these there is no gynatresia distal to menstruating endometrium. Their importance lies, perhaps, more in their effect on child-bearing and in their not infrequent association with anomalies of the urinary tract than in their symptomatology.

Incomplete transverse or longitudinal septa may modify the internal contour of the vaginal canal. Eleven transverse and six longitudinal septa of this incomplete type found in nulliparous patients are included in this series. In some instances they were identified as the cause of dyspareunia or post-coital bleeding. In the remainder they were discovered only when a vaginal examination was made antenatally or in the investigation of unrelated complaints. Some were dilated or divided and others were obliterated or disrupted in labour. In no instance did a septum materially modify the course of labour or occasion troublesome intrapartum or postpartum hæmorrhage or, in splitting, initiate serious laceration. There is no doubt that many septa of this type escape recognition before a first confinement and are largely obliterated by it. In one of these cases a patient in labour at term had a septum across the vaginal orifice, complete except for an opening near its centre which would just give passage to a medium-sized catheter.

Duplications of the genital tract represent failures or defects in the union between the bilateral components of the utero-vaginal canal. A median septum between the two sides is a transient feature of normal evolution but it may persist in varying degrees. Fusion between the uterine parts of the Müllerian ducts may have failed, again in varying degrees, from above downwards. Many terms have been coined in the literature to describe all these variants and the classification suggested by Monie and Sigurdson in 1950 has much to com-

mend it. "Didelphian" is defined by the Shorter Oxford English Dictionary as belonging to the subclass Didelphia of the class Mammalia, characterized by a double uterus and vagina and comprising the single order of Marsupials. Actually the formation of the genital tract varies in different species of marsupials; in some there is a medial vagina with two lateral canals.

In this series there are 20 instances of double vagina and uterus found in nulliparous patients. The anomaly was found once by the patient herself and in the remainder during pelvic examination. A few of the patients had complained of dyspareunia but the majority had no symptoms referable to the condition. 11 were under hospital supervision for a total of 20 pregnancies. 4 of these pregnancies ended in spontaneous miscarriage (20%), 6 were terminated by elective Cæsarean section near term (4 vertex and 2 breech presentations) and in the remaining 10 satisfactory vaginal delivery took place. In 6 the fœtus presented by the vertex and in 4 by the breech. All the infants were healthy and survived, the largest weighing 7½ lb.

In only one instance did the intervaginal septum persist after a first vaginal delivery and in this case the infant weighed only 4½ lb. In all the other cases the septum was either divided with scissors or disrupted itself in the second stage. In one case the upper half of the septum disrupted itself during breech delivery and a double footling presentation ensued, one leg coming down through each vaginal orifice. Progress was delayed until the lower part of the septum, on which the fœtus was seated astride, was divided with blunt-ended scissors.

The patient who discovered the anomaly herself was a generally trained nurse and midwife. When trying to insert a Tampax she found she had a double vagina. She was in the Far East at the time of her first pregnancy and was delivered by Cæsarean section partly because of the anomaly and partly because the presentation was a breech and several attempts to perform external version had failed. When home on furlough she sought advice as to whether it would be possible for her to have a natural labour. The situation was assessed and the vaginal septum was divided by cutting diathermy. Subsequently she had a successful vertex delivery and on the fifth day of the puerperium passed a decidual cast from the non-pregnant uterus.

One of my own cases, not included in this series, presented in her second pregnancy with a double vagina with the cervices fused medially. Her first delivery was by Cæsarean section because of a breech presentation. This pregnancy was in the left uterus. In her second pregnancy palpation and Lipiodol hysterogram confirmed it as being in the right uterus and delivery was by a further Cæsarean section.

The lesson to be learned from these cases is that vaginal delivery presented no serious difficulty or complication and, therefore, resort to Cæsarean section in such cases should not be made too readily.

Partial or complete duplication of the corpus uteri in association with a primarily single cervix and vagina constitutes a somewhat different clinical problem. The condition gives rise to no symptoms and the diagnosis is much more easily overlooked than when the vagina and cervix are double. Of the 11 cases in this series 6 were recognized in association with pregnancy. 2 of these were diagnosed antenatally and in both the presentation of the fœtus and labour were normal. In 2 the diagnosis was made after delivery, in 1 during manual removal of the placenta and in the other by abdominal palpation. The remaining 2 were diagnosed at laparotomy, in 1 for a tubal ectopic pregnancy and in the other for termination of a fifth pregnancy in a woman with severe morbus cordis.

I have had one case elsewhere, a young primigravida, with a persistent transverse lie which could not be corrected by external version. Delivery by Cæsarean section revealed a markedly bicornuate uterus with the fœtal head in one cornu and the breech and placenta in the other. A postnatal hysterogram confirmed the bicornuate shape of the uterine cavity.

In the absence of pregnancy the discovery of this anomaly has been very largely fortuitous as in (1) a grand multipara with procidentia, (2) a patient with carcinoma of the body of the uterus, and (3) a patient who sustained a separation of the symphysis pubis in labour. In the first and third of these cases a Lipiodol hysterogram was done and in the second it was recognized at laparotomy.

Many minor degrees of bicornuate uterus not included in this series have been revealed by Lipiodol hysterogram carried out in the investigation of infertility, spontaneous miscarriage and other gynæcological conditions. One, exceptionally pronounced, was found in a woman who had had four normal confinements without the condition having been suspected.

, In reviewing this material I have been impressed by the infrequency of any association between recurrent abortion and a degree of septate or bicornuate uterus that might justify a plastic operation designed to create a uterus simplex. This was considered in one patient who had had three spontaneous miscarriages, but she was not anxious to submit to such an operation and was not pressed to do so.

Asymmetrical Duplications of the Genital Tract

My attention was directed particularly to these anomalies when I made a survey of the autopsy material accumulated by the Bernhard Baron Institute of Pathology at the London Hospital, where records are available since 1907.

Autopsies on female subjects (1907 to 1955)	11,362
Anomalies found:	
(1) Asymmetrical	
Unilateral uterus	13
Accessory horn	2
Rudimentary horn	2
(2) Symmetrical	
Bicornuate uterus	9
Arcuate septate uterus	1
Double uterus and vagina	2
(3) Agenesis	
Complete	1
Uterine	1
Incidence—1 in 366 autopsies.	31

These figures suggest that asymmetrical uterine anomalies are at least as common as the grosser symmetrical ones and, as they appear to be diagnosed less frequently, it is probable that they more often escape recognition.

Of 12 cases in the clinical series, 7 were associated with pregnancy. Five pregnancies were in the well-developed uterus. Two of these had breech presentations and were diagnosed at Cæsarean section, one had a laparotomy when an ovarian tumour was diagnosed obstructing the descent of the head into the pelvis, one had an abdominal hysterotomy and another had a laparotomy for an ovarian tumour which proved to be an ectopic pelvic kidney. The other two pregnancies were in the imperfectly developed side, one in a ruptured accessory horn and the other in a ruptured fallopian tube.

Of the 5 cases unassociated with pregnancy 4 were diagnosed at laparotomy carried out when lower abdominal or pelvic pain led to the discovery of an irregular uterine enlargement attributed in 3 cases to the presence of fibromyoma. In 1 case there was no lump but at laparotomy a cornu solidarius was found. The remaining case was diagnosed when a Lipiodol utero-salpingogram was carried out during the investigation of infertility. The diagnosis was confirmed when an intravenous pyelogram revealed only one secreting kidney on the same side as the unilateral uterus.

One of the Cæsarean sections was carried out in rather unusual circumstances. The patient, a doctor's wife, was found to have a breech presentation at 32 weeks but all attempts at version failed. She was a primigravida aged 22 years. X-ray pelvimetry showed a gynæcoid pelvis at the lower limit of normal as regards size. The fœtus did not appear to be unduly large so breech labour at term was decided upon. Labour was slow, the membranes ruptured early and the two feet came down to the vulva through a rather thick, incompletely dilated cervix. Lower segment Cæsarean section at this point revealed a left unilateral uterus which had been unsuspected. Both kidneys were normal to palpation.

This and other cases raise the question of the relationship between asymmetrical development of the genital tract and asymmetry in the development of the urinary tract. In the 17 cases found at autopsy:

Kidney absent on side of Müllerian agenesis	8
Both kidneys present and normal with complete unilateral Müllerian agenesis	2
Kidneys not specifically recorded	3
Both kidneys present and normal in 1 case of accessory horn and 1 case of rudimentary horn	2
Kidneys not specifically recorded	2

Among the clinical cases there were 16 other developmental anomalies of the genital tract:

Complete absence of vagina with rudimentary uterus. (Additional to one case associated with bilateral hæmometra already described)	9
Two-inch vagina, no uterus, no left kidney	1
Upper two-thirds vagina absent, no left kidney	1
Absent vagina with small left non-functional unicornuate uterus	1
Vaginal anus (congenital recto-vaginal fistula)	4

Selected Anomalies of the Urinary Tract

I have included 5 cases in this series where the anomaly is dominantly one affecting the urinary tract but I think it will be agreed that in each instance there is a particular obstetrical or gynæcological associated interest.

2 of these cases had *unilateral pelvic kidneys.* In 1 a pelvic lump was discovered during labour below the presenting part and obstructing delivery. Its nature was only recognized following a Cæsarean section. The other case presented in 1954 and the relevant features are as follows:

At the age of 16 years the patient had a spinal fusion performed for the treatment of a severe scoliosis. At the age of 21 she married. At the age of 25 years she attended the Out-patient Department because of infertility and right-sided lower abdominal pain. A pelvic tumour was felt somewhat to the right of the mid-line and near the pelvic brim. It was rather tethered and was thought to be an ovarian neoplasm with, perhaps, some degree of torsion of its pedicle. Laparotomy revealed that it was, in fact, a right-sided pelvic kidney with renal arteries arising from the common iliac and internal iliac arteries. The pelvis, as is usual in such kidneys, was lateral in position. The right cornu of the uterus was rudimentary but the left was well developed.

At the age of 26 years she had a quick, straightforward breech delivery from her left unilateral uterus. The kidney was palpable below the presenting part early in labour but the extending breech came down past it and labour was, therefore, allowed to continue. The infant weighed 6 lb.

Two further cases were found at autopsy, being unrecognized during life. In an adolescent girl the right kidney was situated in the false pelvis and the left in the upper true pelvis. The right cornu of the uterus was accessory and did not communicate with the developed left side. She died thirteen months after a road accident as a result of sepsis engendered by extravasation from the injured pelvis of the right kidney. The other subject had a left kidney situated in the false pelvis. Death at the age of 22 years was due to congenital morbus cordis.

A fifth case is warded at the present time. Her first pregnancy in 1946 was complicated by antepartum hæmorrhage, an oblique lie and the presence of a cystic swelling the size of an orange in front of the promontory of the sacrum. She was delivered by Cæsarean section when the presence of a placenta prævia was confirmed. The presacral swelling was retroperitoneal and extended to the right with the common iliac vessels crossing it laterally. It was thought to be a broad ligament cyst and was not removed. The patient is now pregnant again—about 22 weeks—and a cystic swelling lies in front of the upper sacrum. An intravenous pyelogram shows no sign of a renal shadow in the right loin. Catheterization of the right ureter produced a rapid flow of 35 c.c. of urine, and the diagnosis of a right-sided pelvic kidney is now a near certainty.

I have had another case at a different hospital: A single girl of 22 years, an identical twin, with a long-standing rheumatic carditis causing mitral stenosis and aortic incompetence, developed a right-sided pyelitis complicating a first pregnancy of 28 weeks' duration. At 34 weeks she further developed a severe progressive pre-eclamptic toxæmia and heart failure. The blood pressure was 160/90, there were 10 parts of albumin in her urine and she had massive œdema including the vulva. The presentation was a breech. After a short period of treatment she was delivered by Cæsarean section with sterilization. The uterus was right unilateral with a rudimentary left cornu. The right kidney was large and the left kidney apparently absent. She made a satisfactory convalescence and it became possible to investigate her genito-urinary anomaly more fully. The left kidney was situated in front of the 5th lumbar and 1st sacral vertebræ on the left side and was completely overlooked when the abdomen was opened. Her twin sister was investigated and found to have a normal genito-urinary tract.

Thom (1928) collected from the literature 117 cases of partial urinary incontinence due to the uncontrolled drainage of an ectopic ureter which opened on to the vestibule in 45, into the urethra in 37, into the vagina in 32 and into the uterus in 3. The 2% to 3% of individuals with duplication of the ureter on one or both sides do not belong to this category unless one or more of the ureters has an extra-vesical outlet. 3 patients in this series had partial urinary incontinence from this cause.

(1) Two accessory ureters opened into the vaginal vault in addition to the two ureters that opened in normal position into the bladder.

(2) A left ureter opened into the vault of the left side of a double vagina. A single ureter, the right, opened into the bladder. Neither an intravenous pyelogram nor an aortogram revealed any evidence of the presence of a left kidney. Eventually exploration of the left loin exposed a hypoplastic left kidney which was removed with complete cure of the partial incontinence. Methylene-blue injected into the ureter came through to the left vaginal vault.

(3) A woman aged 60 years had had 6 children and was twenty years past the menopause. She had always dribbled urine since "her mother dropped her as a small child." She went to her doctor having noticed blood in her urine and a blood-stained discharge, but a full renal investigation and a uterine curettage were both negative. Hæmaturia continued, now having been present for five months. During a pelvic examination a bead of blood-stained urine was seen to exude from a small opening in the mid-line 1 cm. behind the external urinary meatus. Mr. G. C. Tresidder, one of our urologists at the London Hospital, removed a right kidney with two pelves; about the upper one-third of the kidney was largely replaced by a Grawitz tumour.

In conclusion, and to maintain a due sense of proportion, I would refer back to uterus and vagina simplex—the heritage of the vast majority of womankind. Thereby I would emphasize once again that the anomalies which I have discussed affect but a very small proportion of women.

I would like to thank my colleagues, past and present, for the use I have made of their cases.

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THOM, B. (1928) *Z. Urol.*, **22**, 417.

[*January* 25, 1957]

THE following cases and specimens were shown:

Imitation Patterns in Uterine Tumours.—Dr. HANS BETTINGER.

Uterine Chorion Epithelioma.—Dr. P. E. HUGHESDON and Mr. HERBERT REISS.

Four Cases of Mono-amniotic Twins.—Mr. ALISTAIR GUNN.

Giant Sections of Uterus.—Mr. ROBERT M. CORBET and Dr. A. A. MILLER.

Recurrence of Hydatidiform Mole, Presumed Second Mole, within Twelve Months.—Miss DOROTHY M. GRATTON.

Polycystic Disease of the Liver Presenting as a Gynæcological Problem.—Mr. MOSTYN P. EMBREY.

Primary Adenocarcinoma of the Vagina.—Miss JEAN MCFARLANE.

Post-abortal Tetanus.—Miss JEAN SHARPE.

Fibroid Causing Massive Ascites.—Mr. ANTHONY C. PEARSON.