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ORIGINAL ARTICLES.

DOUBLE UTERUS AND VAGINA.

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In a previous paper the writer presented a summary of facts and conclusions arrived at after studying the histories of 97 cases of malformation of the uterus and vagina due to defective development of the ducts of Müller. He has since collected and tabulated the histories of 224 more cases, all obtained from what he believes to be reliable sources. These, together with the 97 reported in the former article, comprise all the cases, except a very few not at the time obtainable, to be found in the library of the Surgeon-General's office at Washington, and the writer thinks will furnish us data for arriving at correct conclusions.

The tables were originally designed for publication, but are found too voluminous; but as they contain many points of interest to the general practitioner, and some of them are at variance with statements made by writers of acknowledged authority, the writer has thought a summary of some of the facts obtained might be of value to the profession. The tables just referred to are made up from reports of 224 cases and are four in number. Number 1 is a record of 100 cases of congenital malformation of the uterus in which pregnancy occurred. In twenty-nine of the cases the vagina was double.

Table No. 2 records 20 cases in which pregnancy occurred in women having double vaginae while the uteri were of normal development.

Table No. 3 relates to malformations of the uterus where pregnancy never occurred. There are 90 cases recorded thirty-five of which are associated with double vagina. Lastly table No. 4 is a record of 12 cases of non-pregnant normal uteri each one associated with a double vagina. In this paper, chiefly for the writers convenience, he will follow the line of study indicated by these tables.

The term double uterus, as in the former paper, is used to include all congenital malformations of the uterus described by Todd¹ as uterus

bipartitus, uterus unicornis, uterus bicornis, and uterus bilocularis. By accepting the anatomical description of this author all the various subdivisions may be easily included as these of our general classes.

The comprehensive term, double vagina, is intended to include all vaginae divided into two parts by an antero-posterior septum, whether complete or incomplete, whether the vaginae are of equal or unequal size, or one patulous and the other occluded.

Double vagina has heretofore received little consideration. It is hardly of less importance clinically than double uterus, and then the malformations of the uterus under discussion are more frequently associated with a double than a single vagina. Of the 270² cases the writer has studied, 144 or 53½ per cent. were associated with a duplex condition of the vagina, and furthermore, this duplex condition of the vagina sometimes gives rise to many distressing symptoms and in a few cases has been the cause of the death of the patient. Frequently it has interfered with coition, menstruation and labor so that operative procedures have been required.

The writer has purposely abstained from theoretical discussions, leaving that for some future occasion, and has confined himself to the historical, clinical and statistical study of the subject.

First, then following the line of study as indicated in his description of the tables above, he has to present some facts relative to 100 cases of pregnancy, gestation, and delivery. Tables A, B and C are sufficiently plain as to require no explanations.

The following facts regarding twin and triplet pregnancies are found, viz.: Fifteen women were pregnant of twins seventeen times. The forms of the uteri were as follows: Bicornis, vagina single, 10 women pregnant 11 times; bicornis, vagina double, 2 women pregnant 2 times; bilocularis, vagina single, 3 women pregnant 4 times.

One woman four twins twice and triplets twice. This woman had a bicornute uterus with double vagina, and died of rupture of the uterus in the last labor.

It is pertinent to enquire what are the dangers

¹Todd's Cyclopædia of Anatomy and Physiology, Vol. v, p. 678.
²Cases in the former article included.

TABLE A—Showing facts regarding pregnancy in the different forms of double uterus and vagina.

FORM OF MALFORMATION.	No. women pregnant.	No. pregnant.	No. Natural deliveries.	No. artificial deliveries.	No. not stated.	Abortions or miscarriages.	No. of deaths of mothers.	REMARKS.
Uterus double, vagina single.	71	161	122, or 75.5 %	22, or 13.6 %	3	22, or 13.6 %	20, or 28.1 %	
Uterus double, vagina double.	29	85	36, or 40 %	17, or 26 %	22	10, or 16 %	8, or 27.5 %	
			Details as to	classes under		the same heads	as above.	
Uterus bipartitus, vagina single.	3	7	4	2	..	I	1, or 33 1/3 %	
Uterus bipartitus, vagina double.	1	1	1	..	..	..	..	
Uterus unicornis, vagina single.	3	6	4	..	..	..	3, or 100 %	
Uterus bicornis, vagina single.	42	120	80	11	4	23	11, or 26.1 %	26 women had natural deliveries, 10 women had artificial deliveries, 1 missed labor, 10 women miscarried.
Uterus bicornis, vagina double.	19	50	24	10	1	13	6, or 31.5 %	Number of women who miscarried, 8.
Uterus didelphys.	4	4	..	2	..	2	..	These cases were included in the class immediately above.
Uterus bilocularis, vagina single.	18	39	34	4	..	..	5, or 27.6 %	Number of women having natural deliveries, 14.
Uterus bilocularis, vagina double.	8	19	14	3	..	1	2, or 25 %	Number of women having natural deliveries, 3; pregnant when seen, 1.

TABLE B—Showing the number of deaths, and the cause thereof, as a result of pregnancy and delivery in double uterus and vagina.

FORM OF MALFORMATION.	No. of Deaths.	Septicæmia.	Puerperal Fever.	Peritonitis.	Hæmorrhage, Post-partum.	Hæmorrhage from vicious resection of the Placenta.	Collapse.	Hæmorrhage, Placenta prævia.	Rupture of the Uterus.	REMARKS.
Uterus bipartitus, vagina single.	1	..	..	..	..	..	..	..	1	
Uterus unicornis, vagina single.	3	..	..	1	..	..	..	..	2	The death from peritonitis followed a normal delivery.
Uterus bicornis, vagina single.	11	..	1	1	1	..	..	..	4	Puerperal endometritis, 1; pneumonia, 1; eclampsia, 1; arterial embolism, 1.
Uterus bicornis, vagina double.	6	1	..	2	..	..	1	..	..	Rupture splenic abscess, 1; not stated, 1.
Uterus bilocularis, vagina single.	5	..	..	..	1	1	..	1	1	1 from metro-peritonitis, and 1 polypus of the heart.
Uterus bilocularis, vagina double.	2	..	..	1	..	..	..	..	..	1, eclampsia during labor.

TABLE C—Showing the means employed to effect delivery where artificial means were employed.

FORM OF MALFORMATION.	Number of Cases.	Forceps.	Turning.	Laparotomy.	Cæsarean Section.	Incision of Septum.	Cephalotripter.	Manual Delivery.	REMARKS.
Uterus bipartitus, vagina single.	2	2	..	..	..	..	..	..	
Uterus bicornis, vagina single.	11	4	2	1	..	..	..	..	Fœtus removed piecemeal, 1; not stated, 3.
Uterus bicornis, vagina double.	10	1	2	..	..	..	1	1	Fœtus removed piecemeal, 1; accouchement force, 1; not stated, 3.
Uterus bilocularis, vagina single.	4	1	1	..	1	..	..	..	Croche, 1; 1 on account of abnormal position of uterus.
Uterus bilocularis, vagina double.	3	..	..	..	1	2	..	..	Cæsarean section was done after death of mother from eclampsia.

to be feared from pregnancy occurring in those forms of malformation of the uterus? In the first two forms, viz.: bipartitus and unicornis, rupture of the uterus. In the first on account of the defective development of uterine tissue, its walls may not develop as the period of gestation advances. They are prone rather to dilate as the embryo grows and finally reach a point where they

are not sufficiently strong to resist the pressure from within and rupture. In the second form we have three elements of danger either one of which may lead to rupture of the uterus.

1. The rudimentary horn may become pregnant and rupture from the same cause as mentioned in the preceding paragraph, or the fœtus attaining full growth may find no way of escape

from the uterus and a rupture of the organ occur as a result of labor-pains.

2. The unsymmetrical development of the uterine corna predisposes it to rupture sometime during the period of gestation or in labor.

3. The oblique position in the pelvis in which the horn develops may remove the axis of the uterus from that of the vagina and thus render labor not only difficult but natural labor impossible, and here rupture may result from long continued pressure of some portion of the fœtus upon the uterine wall conjoined with the violent contractions of the uterus in its efforts to effect delivery. The last mentioned element of danger is probably more theoretical than real, for the writer has been unable to find any reported cure of rupture of the single horned uterus where the pregnancy occurred in the developed horn, while he has the histories of two cases where rupture resulted from impregnation of the rudimentary horn.

In uterus bicornis troubles following delivery are the most prolific causes of the death of the mother. This may be accounted as due to the large number of difficult labors and the imperfect drainage of the uterus following labor on account of its unfavorable position in the pelvis. Rupture of the uterus is next in frequency as a cause of death. One case occurred because of the impaction of the head of the fœtus and the prolonged effort of nature to expel it, and in three cases where each fœtus developed in a rudimentary horn.

Hæmorrhage was the chief cause of death in patients having uterus bilocularis. Vicious attachment of the placenta and irregular uterine contractions subsequent to labor are mentioned as the predisposing causes of the hæmorrhage.

As a second division of our subject we may consider those cases having a vaginal septum with the uterus normal and all the subjects pregnant. Here we have the histories of 22 cases. The vaginal septa presented various forms and shapes and are described by reporters as crescentic, pyramidal and complete antero-posterior vertical septa. When complete they extend from the introitus vaginæ to the cervix uteri or to the upper extremity of the vaginal tube to one side of the cervix. The septum is covered by mucous membrane upon either side and continuous with the mucous membrane of the vagina. Between the two layers of mucous membrane are submucous and cellular tissue, the latter of which serves to fasten it in its position antero-posteriorly in the vagina. Considerable muscular tissue is sometimes present between the layers of mucous membrane, and at times fibrous tissue predominates. Any part of the septum from the vaginal entrance to the cervix of the uterus may be deficient, so that the forms and shapes already mentioned may be assumed. In this class we have twenty-two

women pregnant twenty-eight times. One woman was pregnant several times, with every labor normal. The septum interfered with labor in 12 instances. Of these the septum was torn through in labor in 4, incised in 7, and severed by a thread in 1. In 3 cases considerable hæmorrhage followed the incision. There were no deaths. Seven patients had normal deliveries. In the artificial deliveries the following means were used, viz.: Crochet, 1; delivered through the rectum after incision, 1; forceps, 4; and manual change of position of the child in 1 case.

Our third division relates to congenital malformations of the uterus where the vagina is single or double and pregnancy has never occurred. Here we have the histories of 90 cases. The chief interest the writer has found in the study of this class of cases has been in the percentage of each form of malformation found, the departures from the normal in the anatomical condition, the anomalies of menstruation incident to them, and lastly, the diseased conditions found to exist. There were of the various forms reported: Of uterus bipartitus, vagina single, 7 cases, vagina double, 1 case; of uterus unicornis, vagina single, 11 cases, vagina double, no case; of uterus bicornis, vagina single, 32 cases, vagina double, 28 cases; of uterus bilocularis, vagina single, 5 cases, vagina double, 6 cases. Total—vagina single, 55 cases; vagina double, 35 cases. In uterus bipartitus the vagina was found to be normal in but a single case and double in one. In all others it was either short, a cul-de-sac, or entirely absent. The adnexa were found normal in 3 cases, and either rudimentary or imperfectly developed in others. The uteri varied in size, shape and development. In some cases they were simply rudimentary without a canal, in others without any communication with the ovaries through the Fallopian tubes. In one case the uterus was sufficiently well developed to admit of normal menstruation, and in this instance the reporter states there were three ora, and that the menstrual fluid escaped from all of them simultaneously.

Concomitant to an imperfectly developed condition of the uterus and vagina was a like condition of the adnexa. Sometimes the imperfections were found in the tubes and at other times in the ovaries. The anomalies of menstruation were dependent upon those of the organs already described. The nearer approach to perfect development of all the organs involved the more nearly normal was the performance of the function. Menstruation was absent in three cases, vicarious in one where there was no uterine mucosa, but normal tubes and ovaries. In one in which there was no normal flow, but distressing molimina, the latter entirely disappeared on removal of the ovaries.

There does not seem to have been any record of a special proneness to any one disease.

In uterus unicornis we find no instances where

this malformation was associated with a double vagina. The most marked feature to be found in this class is an occasional rudimentary horn, also a rudimentary condition of the tube and ovary upon the side in which the cornus is absent. A number of cases of entire absence of the tube, ovary and kidney upon the imperfect side are found. A marked deflection of the one-horned uterus toward the side in which it develops frequently exists. But few details are given respecting menstruation, but what are, show that this important function is performed irregularly or is entirely absent.

Of the 90 cases of women who have never conceived and who had malformations of the uterus of the forms under discussion, 60 of them were of uterus bicornis. Here is the middle ground between the normal and the greatest deviation from the normal, and here will centre the chief interest of the practitioner. In the 28 cases in which the duplex vagina occurs will be found nearly every variation incident to this anatomical abnormality. In some instances the vagina is divided into two parts, equal or unequal, by a complete septum. Atresia of one side occurs in one instance, and in several instances a partial septum incompletely divides the tube.

There are 15 instances of complete septum and 4 in which it is incomplete, 1 of atresia of one vagina, and 8 in which it is not stated, but is probably complete. As great a variation in the form of the uterus was noted. Todd's accuracy in his description of this form of malformation is here verified. No cases of uterus didelphys are recorded in this table. The histories from which the table was compiled are too meagre, in some instances, to enable the compiler to accurately state the number in each variety in this class; nor, indeed, is it important.

It was observed that sometimes the os was single and sometimes double, and that in quite a number of instances there was atresia of one os and a resultant hæmatometra. A rudimentary horn was not infrequently present, and when found it had usually as concomitant a rudimentary ovary and tube. The facts regarding menstruation are not sufficiently complete to be entirely satisfactory, yet there are some points of interest. Sometimes the flow proceeds from both sides of the bicornute uterus simultaneously, and at other times the uteri alternate in the performance of this function; when they do menstruation occurs either every two weeks or every four weeks. In the light of these facts who can question the possibility of the impregnation of one horn when the other horn contains an ovum in process of development.

Hæmatometra is met with more frequently in this class than in all others. Cystic degeneration of the ovary seems to be the only disease which occurs with more than usual frequency.

In uterus bilocularis there is the least departure from the normal development. The adnexa are less frequently rudimentary or absent, the external genitals more frequently well developed and the performance of the menstrual function is not so often imperfect or difficult.

There are recorded in this table 6 cases in which in this class the vagina is duplex. In all of them the septum was complete and no instance of atresia of any one of them found. There are 6 cases in which there are two ora, 3 having two cervixes, 2 of single os, 1 of atresia of the os, and 2 not stated. One case had two cervixes and a single os. Here a hæmatometra developed. There is quite a variation in the external form of the uterus. Sometimes no departure from the normal could be detected in the body of the uterus by conjoined manipulation, in others a groove marked the line of division of the organ, and in others there was a depression at the center of the fundus. The vaginal touch and uterine sound proved the most valuable means of diagnosis.

In but four instances are these details given of the state of the menstrual function. In three of these it was performed normally, and in one normally, except that it was painful. The following morbid conditions were found: 1 of cyst of Fallopian tube; 1 gonorrhœa with resulting parametritis; 1 cancer of the uterus.

The fourth table I have compiled and to which I wish to refer to here, is made up of the histories of 12 cases of non-pregnant normal uteri associated with double vagina. One vagina was a cul-de-sac in seven instances. Inflammatory disorders of the uterus and vagina existed in six instances. The septum was incised in three, and severed by the galvano-cautery in two, and all recovered. Disordered menstruation was present in 3 cases. The uterus was normal in all cases but one and in that one it was undeveloped.

The following is a statement of the number and per cent. in each form of malformation, including those reported in my former paper, viz.: Uterus bipartitus, 14 cases, or 5.2 per cent. of all cases; uterus unicornis, 18 cases, or 6.7 per cent. of all cases; uterus bicornis, 175 cases, or 65.3 per cent. of all cases; uterus bilocularis, 68 cases, or 22.7 per cent. of all cases; unclassified, 2 cases. Total number of cases 270. Number of cases of double uterus and vagina, 144, or 47.3 per cent.; number of cases of double uterus, 126, or 41.4 per cent.; number of cases of double vagina, 34, or 11.1 per cent. Total number of cases, 304.

Hæmatometra.—Twenty cases in all are recorded in the lists we are studying. One was found two weeks after delivery and 19 in cases in which pregnancy never occurred. In but a single instance do we find it associated with hæmatocolpus. In one instance nature after a time performed a cure, a perforation occurring in the septum between the cornua so that the retained fluid escaped

into the pervious uterus and thence found its way into the vagina. A perfect recovery took place.

No instances are recorded where hæmatometra or hæmatocolpus was discovered where there was double vagina alone, and but a single case occurred in a woman who had ever been pregnant. This woman had borne twelve children, the last one three weeks before admission into the hospital. Upon examination a hæmatometra was discovered, opened by the finger-nail and the patient recovered. One case of rupture of the uterus is recorded, resulting from hæmatometra. A hæmatometra had been discovered and punctured and part of the fluid evacuated. Five days later the patient died suddenly of rupture of the uterus. Of the cases of hæmatometra recorded 19 were of uterus unicornis, and 1 of uterus bilocularis. Seventeen of them were operated upon, 9 died and 8 recovered. The means employed, and results, are as follows: 6 cases of puncture with trocar, 5 deaths, 1 recovery; 2 cases trocar first and bistoury later, 1 recovery and 1 death; 5 cases incision with bistoury, 4 recoveries and 1 death; 1 opened with finger-nail, recovered; 1 opened with sound, died; 2, means not stated, 1 died, 1 probably recovered; 1 case nature cured. The causes of death in 6 cases is states as peritonitis; 1 empyæmia; and 2 not stated. In one case imperfect drainage resulted in suppuration, free drainage and irrigation effected a cure. In another puncture was followed by fever, which was quickly relieved by free incision.

Hæmatocolpus is found in three instances, once occurring with hæmatometra, the details of which I am unable to obtain. A second one is found with no details. The third case was one of acquired hæmatocolpus. It was tapped four times. After the last tapping a peritonitis developed and the patient died.

Rupture of the Uterus.—Nine cases of rupture of the uterus are recorded. Six were of uterus bicornis, two of uterus unicornis, and one of uterus bipartitus. All but one occurred as a result of pregnancy. The exceptional case was one of uterus bicornis, in which there was atresia of one horn and a hæmatometra developed. It was punctured and the menstrual fluid allowed to escape. Five days later the patient was suddenly seized of a violent pain, which lasted some time, when she had the feeling as of something giving way. Death soon followed and the autopsy revealed a rupture of the uterus of the horn in which the menstrual fluid had been retained.

Of the 8 cases pregnant in which rupture occurred, in 3 it was the first pregnancy; in 1 the twelfth pregnancy; but the first in the horn ruptured one previously referred to; 1 in the fifth pregnancy and first in the horn ruptured; 1 in the fourth pregnancy and first in the horn ruptured; 1 not stated; 1 in the fifth pregnancy, that of triplets.

In the last case the rupture occurred in the forty-first hour of labor, all the preceding labors having been difficult. The rupture in this case was doubtless due to the head having been in such a position that it could not advance.

The immediate cause of death was peritonitis in 4 cases; hæmorrhage in 3; not stated in 2.

No operative measures were employed in 6 cases. In 2 the children were delivered by forceps. Every patient in which the rupture occurred died. No operative procedures were resorted to to save the patients after the rupture occurred.

The records show a case in which laparotomy was done to remove a supposed tumor. A pregnant rudimentary horn was found. A month later the abdomen was opened, the horn extirpated and the patient made a good recovery. In another instance pregnancy occurred in a rudimentary horn, symptoms of labor appeared and passed away. Six months later the woman died of phthisis, when autopsy revealed the true condition. The fœtus had been dead some time and was partly absorbed.

These two cases furnish us a hint of the possibilities of cure in laparotomy, and in electricity to produce death of the fœtus. It is not surprising that the expectant treatment was adopted in the majority of the cases of rupture; for they occurred before the benefits of laparotomy were fully understood, and some of them, indeed, before this procedure had ever been employed for the relief of similar conditions. Then, too, it must be remembered, the true nature of some of the cases was only determined upon autopsy. The question will naturally arise as to the operative measures to be adopted when a pregnant rudimentary horn is discovered. The solution of this question will doubtless depend upon the anatomical condition present and the time in the period of gestation it is found. If the examiner can make out clearly a pregnant rudimentary horn with a long pedicle, and in the early months, laparotomy will doubtless be generally chosen. Should the rudimentary uterus be closely attached to its fellow then it may be necessary for the operator to choose between Porro's operation and the use of electricity to produce the death of the fœtus.

The highly favorable results shown by recent writers attending the use of electricity will strongly tend to popularize the procedure if indeed not to stamp it as the one above all others to be employed in all cases of pregnancy of the rudimentary horn and of extra-uterine pregnancy in the earlier and middle months. After the rupture of the uterus and the discharge of its contents into the abdominal cavity laparotomy affords the only hope of recovery. When the full period of gestation is reached without a rupture, and labor is attempted, the same rules must govern the treatment as in tubular pregnancy, and when rupture occurs during labor from obliquity of the uterus,

impaction of the foetal head, or from non-development of some portion of the uterus, and the os be pervious and in communication with the vagina, the same procedures should be adopted as in rupture of the uterus occurring where there is no malformation. Simon's case¹ shows one point of particular interest. A rudimentary uterus having no communication with its fellow became pregnant and ruptured. The autopsy revealed an absence of a corpus luteum in the ovary corresponding to the pregnant horn, but a fresh one in the ovary of the opposite side. This instance strongly supports the theory of the migration of the ovum, either before or after it has been pierced by the spermatozoa, to the mouth of the tube upon the opposite side and thence through the tube to the rudimentary horn.

of such associated maladies together with the polypi is the "key-note" to the proper and effective handling of the patient. Recognition of the exact points of origin of the neoplasms is essential to a clear understanding of their etiology and treatment. The outer wall of each nasal cavity is rendered especially uneven by the three turbinated bones, their margins of attachment being horizontal one above the other, which leaves intervening spaces, called respectively, the inferior meatus, between the inferior turbinated body and the nasal floor, the *middle meatus*, between the middle and inferior turbinated bodies and the superior meatus, between the superior and middle turbinated bodies. In the outer wall of the middle meatus is the ethmoidal fissure or *hiatus semilunaris*—a crescentic opening about two millimetres in width and two centimetres in length, its

NASAL MYXOMATA.

Read before the Chicago Medical Society, September, 1888.

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Nasal polypus is an ancient subject, but considering its frequency, the discomforts and dangers to which it subjects the sufferer, the difficulty

Fig. 1.—Representing the outer wall of the left naris with the middle turbinated body turned upward to show beneath the hiatus semilunaris, to the edges of which polyps are frequently attached.

of radical extirpation and the consequent liability to recurrence, it may well be reviewed in the light of modern methods.

The disease does not exist as a primary affection, but is always associated with some other nasal malady which stands to it in the relation of cause or as a complication. Indeed the removal

convexity being directed downward and forward. (Figure 1.) The antero-inferior boundary of the fissure is a sharp edged ridge which, from its hook-like curve, is termed the unciform process of the ethmoid bone. The postero-superior boundary is formed chiefly by the *bulia ethmoidalis* which is an ethmoidal cell with its wall bulged toward the septum and downward. The

¹ Zeitschrift für Geburtshilfe und Gynäkologie, 1877-78.