AN ANALYSIS OF 309 CASES OF ECTOPIC GESTATION IN THE WOMAN'S HOSPITAL IN THE STATE OF NEW YORK.*

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(With five illustrations.)

In order to make a correct diagnosis of any pathological condition, it is necessary to arrange facts in an orderly way and to tabulate the history obtained from the patient, the symptoms and the findings upon examination; to have a standard for comparison which should include not only the usual symptoms, but the symptoms which may or do occur less frequently in such conditions. In differential diagnosis it is necessary to have a perspective as it were, of the whole field, that one may know not only the devious paths that the disease may take but to know the other conditions which at times may approach or travel a similar course.

Attention should be given to careful history taking. Symptoms forgotten or not considered important are easily passed over unless the history sheet is printed and questions asked as a routine measure in all cases.

A pelvic examination should be made and due attention given to the pain elicited, but another examination should be made if the diagnosis is doubtful, when the patient is anesthetized in order that this pain element may be eliminated. Conditions may be judged differently at this time and much learned which may be of help in the diagnosis of similar conditions at some future time.

The text-books of gynecology record chiefly the symptoms of the classical case of ectopic gestation. This from its tragic nature is indelibly stamped upon one's mind, but the type, which fortunately is the one more often met with in surgical practice, easily escapes diagnosis until seen at operation.

It is to summarize a number of cases and find, if possible, any symptoms or conditions which are present in all or nearly all cases of ectopic gestation and have a standard for comparison in such conditions that this analysis was undertaken.

While working upon these histories a similar analysis on ectopic gestation was published by Wynne of Johns Hopkin's Hospital and I am indebted to it for many valuable points.

In the ten years beginning January 1, 1909 to January 1, 1919, there were recorded in the Woman's Hospital 320 cases of ectopic gestation. The clinical history and the operative findings bear out this diagnosis, but as the pathologists in eleven cases did not find fetal elements in the tissues, I have not included these cases for

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statistical study, believing with Cragin and Bovée that ovarian and tubal hemorrhage of nongestational origin cannot be differentiated from the hemorrhage caused by an ectopic gestation except by microscopical examination of the tissues.

During this same decade there were 19,674 patients in the Gynecological Service of the Woman's Hospital of which 309 were cases of ectopic gestation, an incidence of 1.5 per cent. The following statistical tables are based on this series of cases and serve for drawing certain conclusions presented at the end of this article.

Ages.—In a series of 262 cases the ages ranged from seventeen years to forty-two years, and 63 per cent. of the series were between the age of twenty-four to thirty-three years inclusive. Three patients were under twenty years and two were over forty years of age.

Social Status.—Of the 309 patients 123 were private patients and 186 were ward patients.

Marital State.—In a series of 196 patients 187 were married, four were unmarried, four were twice married, and one widowed.

Time of Admission after Marriage.

In a series of 136 cases.

	Cases
Under 6 months	3
Between 6 and 12 months	6
Between 12 and 18 months	2
After 2 years	10
After 3 years	14
After 4 years	10
After 5 years	16
After 6 years	10
After 7 years	10
After 8 years	4
After 9 years	5
After 10 years	8
After 11 years	5
After 12 years	8
After 13 years	5
After 14 years	3
After 15 years	4
After 16 years	2
After 17 years	7
After 19 years	3
After 22 years	1
Total	136

Cases Pregnant Previous to Ectopic Gestation.

In a series of 181 cases.

	Cases	Per cent.
Full-term children	121	66.8
Miscarriages only	32	17.0
Never been pregnant	28	15.0

Last Pregnancy (Full Term) before the Ectopic Gestation.

In a series of 100 cases.

	Cases		Case
7 months previously	1	13 months previously	1
8 months previously	1	14 months previously	1
10 months previously	1	15 months previously (twins)	1
11 months previously	1	17 months previously	2
12 months previously	3	18 months previously	1
	—	20 months previously	1
Total	7		—
		Total	7

	Cases
2 years previously	5
3 years previously (twins)	10
4 years previously	4
4½ years previously	2
5 years previously	3
6 years previously	5
7 years previously	2
9 years previously	2
10 years previously	3
11 years previously	2
12 years previously	1
13 years previously	2
15 years previously	2
16 years previously	1
Total	58

Last Pregnancy (Miscarriage) before Ectopic Gestation.

	Cases
12 weeks previously	1
15 weeks previously	1
5 months previously	3
8 months previously	1
9 months previously	1
12 months previously	10
15 months previously	1
18 months previously	1
2 years previously	4
3 years previously	5
4 years previously	2
5 years previously	4
6 years previously	1
7 years previously	2
8 years previously	1
9 years previously	1
10 years previously	1
11 years previously	2
Total	42

A history that the miscarriage had been induced was obtained in 19 of the above cases.

Absolute Sterility (Married Two Years or Over).

In a series of 186 cases.

	Cases
Married 2 years	2
Married 3 years	11
Married 4 years	2
Married 5 years	5
Married 6 years	5
Married 7 years	1
Married 9 years	1
Married 10 years	2
Married 12 years	1
Married 13 years	1
	31 (16.6 per cent.)

The occurrence of ectopic gestation as the first pregnancy (16.6 per cent.) almost tallies with the number reported by Frank, viz.: twelve out of every eighty cases or 15 per cent.

One Child Sterility (Two Years or More Elapsed Since Full-term Child).

In a series of 186 cases.

	Cases
2 years	9
3 years	6
4 years	4
5 years	4
6 years	5
7 years	1
8 years	1
9 years	2
10 years	2
11 years	1
12 years	4
13 years	2
15 years	3
16 years	3
Total	47

One Child Sterility (Two Years or More Elapsed Since Miscarriage).

	Cases
2 years	3
4 years	2
7 years	2
10 years	3
11 years	2
12 years	1
Total	13

	Cases
Full-term children	47
Miscarriages	13
Total	60 (32.2 per cent.)

	Per cent.
Absolute sterility	16.6
One child	32.2
Total	48.8

History of Infection.

In a series of 186 cases.

	Cases
Syphilis	2
Neisserian infection	3
Pelvic inflammation	3
History of leukorrhea beginning shortly after marriage	12
Total	20 (10.8 per cent.)

Previous Ecoptic Gestation.

In a series of 186 cases.

1. Married 7 years. 1 child 6 years. Neisserian infection 5 years ago. Tubal pregnancy 2 years ago and operated upon in the Woman's Hospital.
2: Age 27. Married 5 years. No pregnancies nor miscarriages. Ectopic gestation 3 years ago. Operated upon in the Woman's Hospital.
3: Age 24. Married 6 years. No children nor miscarriages. Ectopic gestation 13 months ago. Operated upon in the Woman's Hospital.
4: Age 27. Married 6 years. No children nor miscarriages. Ectopic gestation 9 months ago.

Incidence	2.1 per cent.

Other Operations Performed Previous to Ectopic Gestation.

In a series of 186 cases.

	Cases
Dilatation and curettage 1 to 10 years previously	7
Appendectomy (3 months before)	1
Appendectomy (11 months before)	1
Appendectomy (6 years before)	2
Appendectomy (8 years before)	2
Appendectomy (10 years before)	1
Appendectomy (not stated)	1
Total	15

	Cases
Shortening the round ligaments and Appendectomy (2 years)	1
Salpingo-oöphorectomy (9 months)	1
Oöphorectomy (8 years)	1
Oöphorectomy (10 years)	1
Total	19
Incidence	10.2 per cent.

Summary.

In a series of 186 cases.

	Per cent.
Sterility	48.8
History of infection	10.8
Previous ectopic	2.1
Other operations previous to ectopic	10.2
Total	71.9

While it is not possible, of course, to say dogmatically that sterility is evidence of previous infection or inflammation of the tube, still the fact of its existence in such a high percentage in a series of cases, calls for attention to that possibility. The percentage of infection seems low, but it is very difficult to obtain a history of gonorrheal infection and the symptoms are often so mild that the patient is ignorant of the disease. And too, when she does know it, is very reticent about telling the fact.

The presence of adhesions, following any pelvic operation, as Frank has recently stated, ought to be considered as a possible factor in the production of a tubal pregnancy.

In nearly three fourths then of the series was there a history pointing to a possible alteration of the tube of either inflammatory or mechanical origin.

Still another factor should, however, always be borne in mind and that is the malformation or supernumerary Fallopian tubes producing what Huffman has termed the "anomalous embedding area," and which may be a cause of tubal gestation.

Complaint on Entrance.

In a series of 186 cases.

	Cases	Per cent.
Pain without bleeding	58	31.1
Pain, bloody discharge or spotting	47	25.8
Pain and bleeding	74	39.7
Bleeding, no pain	4	
Bleeding, discomfort	1	
	5	2.6
"Tumor"	1	0.53
"Womb drops"	1	0.53
Total	186	

In 96.6 per cent. of the cases pain alone, or pain with spotting or bleeding was the chief complaint on entrance.

Bleeding alone or bleeding associated with pain was present in 67.4 per cent. of the cases on entrance. The blood comes from the endometrium of the uterus when the venous spaces are engorged and there is a partial destruction of the compact layer by the forcible contractions of the tube and uterus in their efforts to terminate the pregnancy. Bleeding may also occur through the uterus from the uterine end of the tube if this is not closed or if opened by the contractions of the tube in its effort to expel the ovum.

Bleeding occurred five times without pain, and it seems probable that the contractions of the tube are not sufficiently forceful to cause severe pain until the supreme effort to rupture the tubal wall, but that the pain complained of previous to rupture is due to bleeding into the peritoneum, or to the presence of blood clots in the pelvis with resulting adhesions to neighboring organs.

Sampson believes that as long as the products of conception are still in the tube that uterine bleeding and pain will continue. While this is probably true, generally speaking, a placental mole may exist in the tube for years without giving rise to such symptoms and the tube may even be the site of a second ectopic while the mole is still in the tube, as in Coe's case.

History of Attack.

In a series of 186 cases.

	Cases	Per cent.
Acute attacks of pain	51	27
Acute attacks of pain accompanied with fainting	34	18
Acute attacks of pain accompanied with dizziness	8	4
Total	93	49

	Cases	Per cent.
Vomiting preceding and during attack	43	23
Nausea preceding and during attack	8	4
Total	51	27
Painful micturition	8	4
Unable to void 2–4 days	4	2.6
Total	12	6.6
Painful defecation	10	5.3
Chills	6	3.2

Acute attacks were present in nearly one-half the cases, and gastrointestinal disturbances in more than one-fourth. In several instances an attack of vomiting was the first symptom of tubal rupture. Webster states that retention of urine is rare in ectopic gestation but it was present in four of these cases and eighteen patients complained of painful micturition or painful defecation. Murray considers the latter as pathognomonic of ectopic gestation but any inflammatory mass with adhesions binding it to the rectum would give similar symptoms.

Location of Pain.

In a series of 100 cases.

	Cases
Absolutely no pain	4
Right lower abdomen	17
Left lower abdomen	10
General abdominal and then right side	5
General abdominal and then left side	4
Lower abdomen	30
Lower abdomen and back	9
Backache only	6
Pain in rectum	3
Pain in epigastrium	4
Slight discomfort	1
Right iliac and kidney	1
Left leg	2
Inner groin left leg	1
Inner groin right leg	1
Left leg to lumbar region	1
Radiating over whole body	1
Total	100
The pain was described as piercing, stabbing, lancinating, shooting, gnawing, cutting, knife-like, terrible, dagger-like or in spasms	35
Severe or sharp	27
Cramp-like, ache, bearing down, labor pain, soreness, or backache	110
Not characterized	14
Total	186

In only 18.8 per cent. of the cases was the pain of the character considered peculiar to ectopic gestation and in the remaining cases it was not to be differentiated from that of any severe pelvic lesion. In seventy-five of the cases the pain was at once, or very shortly after the attack, located over the side affected or the lower abdomen, but in four cases the pain was epigastric, simulating gall-stones, and three of the four had severe attacks with persistent pain in this region and slight or no pain in the pelvis.

Onset of Symptoms in Relation to Menstrual Period.

In a series of 100 cases.

Period overdue 2 days	1
Period overdue 3 days	1
Period overdue 4 days	2
Period overdue 5 days	3
Period overdue 7 days	1
Period overdue 8 days	2
Period overdue 9 days	2
Period overdue 10 days	2
Period overdue 12 days	4
Period overdue 14 days	4
Period overdue 17 days	1
Period overdue 21 days	1
Period overdue 4 weeks	1
Period overdue 5 weeks	1
Period overdue 6 weeks	3
Period overdue 8 weeks	4
Period overdue 9 weeks	1
Total	34
No period since previous pregnancy (nursing)	1

Onset of symptoms at the time the menstrual period was due, 30 cases
Onset of symptoms after cessation of normal menstrual period:

	Cases
2 days after cessation	1
4 days after cessation	2
7 days after cessation	1
8 days after cessation	3
9 days after cessation	1
10 days after cessation	2
11 days after cessation	2
12 days after cessation	2
13 days after cessation	1
14 days after cessation	2
15 days after cessation	3
16 days after cessation	1
18 days after cessation	2
20 days after cessation	1
21 days after cessation	4
24 days after cessation	1
25 days after cessation	1
26 days after cessation	1
27 days after cessation	2
28 days after cessation	2
Total	35

	Per cent.
Period overdue in	34
Amenorrhea (nursing)	1
Onset at time of expected period	30
Onset after cessation of normal period	35
Total	100 cases

The onset of symptoms relative to the time of menstruation is very evenly divided in this series, notwithstanding the fact that in the so-called typical case the onset occurs after a period is one or more weeks overdue.

Physical Signs.

In a series of 100 cases.

	Cases
Breasts, tender	4
Breasts, colostrum	14
Abdomen: tenderness, general	5
Abdomen: tenderness in lower abdomen	30
Abdomen: tenderness in lower right quadrant	32
Abdomen: tenderness in left lower quadrant	29
Abdomen: tenderness in region of appendix	4
Pelvis: Vaginal cyanosis	4
Cervix softened	12
Fundus enlarged	32
Mass	42
Definite enlargement of one adnexum	54

Leukocyte Count.

In a series of 100 consecutive cases.

	Cases
5,000 to 10,000	48
10,000 to 15,000	36
15,000 to 20,000	13
20,000 to 25,000	2
25,000 to 30,000	1
Total	100

In 48 per cent. of these cases the leukocyte count was below 10,000 and in 49 per cent. it ranged between 10,000 to 20,000. In ten cases of another series made at a later time, whose count upon entrance was between 16,000 and 30,000 and who had two or more counts made prior to operation, the leukocytosis dropped in thirty-six to forty-eight hours to 8 to 12,000 except one case which was bleeding from a rupture near the horn of the uterus and no walling in and whose count was 23,800 and 21,000.

The high leukocyte count in ectopic gestation is not due to infection but to intraperitoneal bleeding and is a valuable aid to diagnosis of the conditions present and in making a differential diagnosis from suppurative conditions where it remains constantly high without any marked drop to normal or nearly normal.

Hemoglobin.

In the same series of 100 cases.

	Cases
90 to 100	16
80 to 90	26
70 to 80	18
60 to 70	15
50 to 60	11
40 to 50	7
30 to 40	6
24	1
Total	100

In 42 per cent. the hemoglobin was 80 per cent. or above and in 86 per cent. of the cases it was over 50 per cent. The hemoglobin count in ectopic gestation is of doubtful value, as in the acute anemia there is no immediate drop as shown by the findings of Dunn and Wynne and it is until forty-eight to seventy-two hours later that it reaches the lowest point, or not until the ectopic is of considerable duration that the count drops to 50 to 60 per cent.

In the ten cases whose leukocyte count was studied for several days the hemoglobin was found either not to vary in amount or to be increased only 2 or 3 degrees.

Temperature.

In the same series of 100 cases.

	Cases
96 to 98	2
98 to 99	31
99 to 100	43
100 to 101	21
101 to 102 inc.	3
Total	100

In 76 per cent. of the series the temperature was below 100 and in only one case reached 102; but 67 per cent. were 99 or above. It is interesting to note that in every case where the temperature was between 100 and 102 there had been symptoms for some time and considerable old blood and clots found at the time of operation.

Respiration and Pulse.

In the same series of 100 cases.

Respirations:

	Cases
16 to 20	7
20 to 24	81
24 to 28	3
28 to 30	2
30 to 34	2
40 to 50	3
60 to 70	2

In 87 per cent. of the cases the respirations were below 24 and only 5 per cent. were 40 or more. The majority therefore showed a moderate elevation of temperature, pulse and respiration.

Pulse.

	Cases
70 to 80	4
80 to 90	39
90 to 100	18 (61 per cent.)
100 to 110	24
110 to 120	7
120 to 130	5
140 to 150	3
Total	100

In 61 per cent. the pulse was below 100 and in only 8 per cent. did it reach 120 or over but 57 per cent. were 90 or above.

Blood Pressure.

Blood pressure was not taken in a sufficient number of cases to make the study of value. It is probable that pulse pressure taken preoperatively as done by Polak to estimate the risk before operation would be a valuable aid when operating during an acute attack as an index of the patient's cardiac strength.

Advanced Pregnancy.

In a series of 309 cases.

In a series of 309 cases. Fetuses were found forty-four times. Eleven were between 5 and 19 cm. Two were intact with placenta in the tube; five were of the tuboabdominal variety being still attached by the cord to the placenta in the tube and the remaining thirty-nine were free in the abdominal cavity, several being macerated, and in pieces.

Combined Pregnancy.—There was one case of combined tubal and intrauterine pregnancy. Rupture of the tube occurred near the uterus at the second month of pregnancy. The patient was operated upon while almost pulseless but made a good recovery and the intra-uterine pregnancy continued to term.

Interstitial pregnancy occurred three times, two were private patients and no history was obtained.

Hospital No. 8624. Patient thirty-eight years. Married twenty-two years. Five children, last three and one-half years ago. Miscarriage eleven years ago and one year ago (curettage). Last period (?) nine weeks before entering the hospital. Irregular bleeding for eight weeks and acute attacks two weeks before entrance. Pain severe and localized in the right hypochrondriac region, fainted, later constant pain in the pelvis. At operation a fetus of 9 mm. was found extruded through the rupture in the left horn of the uterus and the placenta was within the tube. Supravaginal hysterectomy, salpingectomy and appendectomy were performed. A cholecystostomy was done at the same time and 209 gall-stones removed.

Full-term Pregnancy.—There was one case of full-term pregnancy operated upon after death of the fetus.

1. Hospital No. 20942. The patient, aged thirty-two, had been married twelve years and had one child by instrumental delivery eleven years ago. No history of miscarriage or infection. Two years ago she was operated upon in the Woman's Hospital and the appendix was removed and the round ligaments shortened. When she entered the hospital she had had amenorrhea for eleven months with normal increase in the size of the abdomen and all the signs of pregnancy up to three months ago. Since that time the abdomen had decreased and no fetal movement had been felt. On operation the sac was found to be of the intraligamentous variety and contained a well-developed fetus at term. The placenta was removed without difficulty. There were two cases of full-term pregnancy one being within a week and one within twelve days of the normal duration of pregnancy and both were delivered of living children by abdominal operation.

Hospital No. 2132 A and 2895 A. One of the cases was a private patient and no history was obtained. The other gave the following history:

Age twenty-seven, married sixteen months. One miscarriage at the sixth week of pregnancy, occurring four months after marriage. The symptoms of the ectopic gestation began with spotting when the period was two weeks' overdue, associated with vomiting and abdominal pain. The spotting lasted for a month only but the pain and vomiting continued throughout pregnancy. The entire gestation sac was in the abdominal cavity, but there was a distinct decidual reaction of the tubal mucosa as strong evidence of its origin in the tube. As there were several fibroids in the uterus, a complete supravaginal hysterectomy was performed.

Both cases were of the intraligamentous variety and it was possible to remove the placenta in both instances at the time of operation.[1]

Diagnosis.

Stated in 88 cases; not given in 221 cases.

	Cases	
1. Ectopic gestation the first diagnosis in	49	
Ectopic gestation the only diagnosis in	46	
		55.6 per cent.
	Cases	
2. Other conditions or ectopic gestation:		
Appendicitis or ectopic gestation	2	
Salpingitis or ectopic gestation	2	
Threatened abortion or ectopic gestation	1	
Ovarian cyst or ectopic gestation	2	
Total	7	
1 and 2 combined		63.6 per cent.

Mistaken Diagnosis.

	Cases
Salpingitis	10
Hematosalpinx	1
Adnexal disease	4
Ruptured cyst	1
Tuboovarian cyst	2
Inflamed mass	1
Pus tubes	2
Pelvic abscess	2
Pregnancy and inflamed mass	1
Appendicitis	2
Endometritis	1
Retroversion	2
Myomata uteri	3
Total	32

[1]These cases will be reported in detail by Dr. Franklin A. Dorman, to whose care they were admitted.

Unruptured Tube and Diagnosis.

In a series of 309 cases.

.....	29 times
Incidence.....	9.3 per cent.

Ten of the patients were private patients, and no history or diagnosis was given. Of the remaining nineteen the diagnosis was made correctly in 12 cases.

Symptoms.

	Cases
Pain but no bleeding.....	2
Pain and backache.....	1
Pain and backache, bleeding.....	1
Sharp pain and slight bleeding.....	2
Bleeding but no pain.....	2
Bleeding and slight discomfort.....	2
Bleeding and cramps.....	2
Bleeding and sharp attacks of lancinating pain.....	7
Fainted.....	5
Total	29

In estimating the number of cases correctly diagnosed as ectopic gestation, one ought of course to know the number of cases diagnosed as such which upon operation proved to be some other condition. The more nearly the case borders upon the typical the more likely will it be that the diagnosis will be correctly made and the farther from this the more difficult or impossible. It will be practically impossible sometimes to differentiate an ectopic gestation from a one-sided pelvic inflammation of the tube, or an intrauterine pregnancy with ovarian cyst, or inflammatory mass, but watching the case for a few days, or an examination under ether, will often clear up the diagnosis. The history of pelvic trouble of not recent origin and sterility, may point the way to the condition. Unusual, one-sided pelvic pain associated with enlargement of the tube, or a mass on that side, whether accompanied or not by bleeding, especially if the pain occurs in attacks with fainting and evidence of peritoneal irritation as shown by vomiting, painful micturition or defecation, warrants the diagnosis of at least a possible ectopic gestation, and the patient should be carefully watched until this is proved or disproved. It is in such cases that a repeated, differential blood count and the character of the temperature curve will be of value.

The Diagnosis of Advanced Ectopic Gestation.

1. The previous history may be that of an ectopic or threatening miscarriage and then normal course of pregnancy.
2. The uterus is only slightly enlarged and empty.
3. The fetus lies apparently just under the skin and is unusually easy to palpate.

Time Elapsed Since the Beginning of the Termination of Ectopic Gestation (Reckoned from the Last Acute Attack) and Operation.

In a series of 86 cases.

	Cases
24 hours (or less)	5
2 days	5
3 days	9
4 days	4
5 days	1
6 days	1
7 days	7
	32 37%

	Cases
8 days	0
9 days	6
11 days	0
12 days	2
13 days	2
14 days	2
15 days	2
16 days	1
20 days	1
21 days	7
23 days	2
24 days	1
25 days	2
26 days	2
27 days	1
28 days	8
5 weeks	6
6 weeks	5
7 weeks	1
8 weeks	1
Total	86

No cases bleeding at the time of operation in a series of 100 cases, 72 per cent., and products of conception were found present in the tube.

Number of Operators.

40 operators performed 309 operations.

	Operations	Per cent.
1 operator performed	63	20
1 operator performed	34	11
2 operators performed	22	(each)
1 operator performed	21	
1 operator performed	20	
1 operator performed	15	
1 operator performed	14	
1 operator performed	10	
2 operators performed	9	(each)
2 operators performed	7	(each)
1 operator performed	5	
5 operators performed	4	(each)
3 operators performed	3	(each)
4 operators performed	2	(each)
14 operators performed	1	(each)
Total	309 cases	

Operations.

In series of 186 cases.

Curettage for bleeding, in ectopic gestation before entrance into the hospital was performed 16 times .....8.6 per cent.

In series of 309 cases.

Curettage was done in the hospital on 2 cases before the diagnosis was made; and as part of the operation 67 times, 21.6 per cent.

Route.

	Cases
Vaginal operation	2
Colpotomy combined with abdominal operation	12
Abdominal operation	295
Total	309

	Cases	Per cent.
Mass walled in 309 cases	82	26.5
Free blood in very large amount and no walling in	39	12.6

Location of Pregnancy.

	Times
4. Right tube pregnant	148
(Twin pregnancy—1 case)	
Left tube pregnant	140
Not stated	21
Total	309 cases

Condition of other Tube.

	Cases
5. Salpingitis	3
Hydrosalpinx	3
Pyosalpinx	2

Result of Gestation.

	Cases
6. Tubal abortion	81
Ruptured Tube	169
Not definitely stated	19
Unruptured	29
Hematocele	8
Full term (child dead)	2
Living child	2
Total	309

Pathological Findings.

1. Uterine cast series 186 cases, 9 times, 4.8 per cent.; the cast was found before entering the hospital in 2 cases; after the operation in 7 cases; the decidua compacta was necrotic in 2 cases.

The history is frequently obtained of flesh-like material passed with the bloody discharge but unfortunately this often escapes notice and no microscopical examination is made. As yet there seems no proof of the constant formation of a decidua uterina in ectopic cases but its absence means nothing as the decidua may have been in an early stage of formation and easily overlooked or it may have been expelled from the uterus previous to the curettage.

2. Curettage, in a series of 67 cases. Decidual reaction present 7 times on 10.4 per cent.
3. Inflammation in the Fallopian tubes. Series of 309 cases:

Chronic inflammation	13 times
Acute inflammation	2 cases
Subacute inflammation	2 cases
	17 times (5.5%)

	Times
1 tube only removed	143
1 tube resected	2
2 tubes	43
1 tube and 1 ovary	109
2 tubes and 1 ovary	6
2 tubes and 2 ovaries	6
Total	309 cases

Other Operations Performed at the Same Time.

	Times		Times
Appendectomy (2 acute)	66	Myomectomy	3
Ventral suspension	14	Supravaginal hysterectomy	7
Plicating round ligaments	3	Cholecystostomy	1
Gilliam operation	1	Repair of umbilical hernia	1
Ovary transplanted	1	Plastic	4

The treatment has been operative in all the cases, but the time of operation has varied with the practice of the individual operator and the case.

	Cases
Number of patients operated upon the day of admission	15
Number of patients operated upon the day after admission	167
2d and 3d days after	65
3d and 7th day after	41
7 to 14 days after	17
15th, 16th and 17th day after (2 cases, 1 at term)	4
Total	309

OPERATIVE TECHNIC.

Laparotomy was performed for all cases except where there was a pelvic hematocele or evidence of infection, with the sac bulging into the vagina. Blood transfusion was employed in three cases operated upon in shock and saline solution given intravenously in several others just previous to or during the operation to tide the patient over that time.

The abdomen and pelvic cavity were freed of blood and clots and the pregnant tube removed.

Effort was made in only two instances to do a partial resection of the affected tube—and other work found necessary was done if the patient's condition warranted the extra time.

Drainage was used in five cases only. Irrigation of the abdominal cavity was not employed.

TIME OF OPERATION.

Perhaps no point in ectopic gestation has given rise to more discussion than the question of operation in an acute attack. In every question so warmly debated and with adherents so fixed in their opinion of the merits on either side there must be something of value to be said for both. Certainly the ideal time of operating

on any patient is when that patient is on the upward trend, but with a break in the arterial circulation, with life blood ebbing out, no one can say if there is going to be any upward trend. If a patient has a secondary hemorrhage following an operation due to the slipping of a ligature, who would hesitate upon recognizing the condition to send that patient back to the operating room? It is true that the conditions favoring clotting are present to a greater degree in tubal pregnancy than in an abdominal hemorrhage. The oozing that probably occurs in all such cases previous to rupture and the frequent occurrence of tubal abortion rather than rupture, favor an exudative inflammation and adhesions, but in many instances there is no walling in by the intestines (12.6 per cent. in this series) and rupture may have occurred near the uterine end of the tube, or the case may be one of interstitial pregnancy and no time for clots or adhesions to form. Schauta's statistics show that of 241 cases of extrauterine pregnancy with spontaneous course, 166 died, a mortality of 68.8 per cent. and again 385 cases treated by operation, electricity or morphine injection 294 recovered and 91 died, a mortality of 23 per cent.

Hunter Robb stated recently that "patients, when they die, usually succumb not from loss of blood but mainly from shock." And again wrote "Why add shock to hemorrhage?" But shock is due to hemorrhage—then why add hemorrhage to hemorrhage?

Simpson has laid down as requisite for operation in such cases the following dictum:

1. Competent operator.
2. Skilled assistants and attendants.
3. Appropriate surroundings.
4. Adequate preparation.

For such difficult work a well-equipped operating room is essential and in no other operation does team-work count for more than in a ruptured ectopic. Light anesthesia, a quick, skilful operator and ready assistants, blood transfusion or saline intravenously to be given just before or as the operator begins and free hypodermic stimulation with camphorated oil, strychnin or adrenalin solution. An internal "hot-water bottle" of a quart and a half saline solution, or, better, soda solution, at 105° F. put into the colon at the completion of the operation, as in Dr. John Clark's technic—the rectal tube having been introduced high up into the rectum before beginning the operation—will aid greatly in the immediate recovery of the patient to combat shock and allay the thirst. It is only

when these cannot be obtained that other measures should be thought of.

If the pelvic examination which is so often the cause of increased bleeding by tearing away adhesions, were deferred in such cases until the patient had been transported to the hospital where such help would be at once available as soon as the diagnosis was established, more patients might be saved by operation and those who survived by the aid alone of restorative measures and must then undergo the operation, would have been saved the risk of another hemorrhage and also the longer convalescence due to increased morbidity following the delay.

DEATHS.

In a series of 309 cases there was three deaths, or .97 per cent.

1. Hospital No. 19117. Age twenty-three. Married six years, one child three years, five miscarriages (induced), the last one and one-half years ago. The history was obtained of an induced "miscarriage" and washing out the uterus four weeks before entering the hospital when the period was twelve days overdue. Colpotomy and laparotomy were performed two days after entrance and a ruptured tube removed but the patient died on the seventh day after operation of peritonitis.

2. Hospital No. 18318. Aged thirty-three. Married seven years. No children. One miscarriage thirteen months ago, curetted.

Acute attack six weeks after a normal period and curettage was done at home. Chills and vomiting followed and on admission the temperature was 101°, pulse 116 and respirations 26. Laparotomy was performed two days later and free blood and clots found and ruptured tube removed. The tubal wall was thickened and showed the exudate of an old inflammation. Death was due to peritonitis.

3. Hospital No. 4992. Aged thirty-two. Married; one child three and one-half years ago. No miscarriage. The history on admission was of pain in the region of the appendix for past five weeks and irregular bleeding beginning seven weeks after normal period. Upon opening the abdomen, six days after admission, a fetus of 12 cm. was found free in the abdominal cavity and the placenta densely adherent to the tube, omentum and intestine. It was freed with great difficulty and considerable hemorrhage took place, which was, however, controlled, but the patient died the same day.

FOLLOW-UP REPORT.

Eighty patients answered letters of inquiry. Of these, six had had both tubes removed leaving seventy-four on which to base the following report.

Number who had had since operation, either

Child	Miscarriage	Pregnant now	Operation	Cases
0	0	1	0	1
1	0		0	60
2	0		0	6
1	1		0 (each)	2
0	0		Carcinoma of ovary	1
0	1		Ectopic	1
			0	2
11	3	1	0	74

	Per cent.
Pregnant after operation for ectopic	16.2
Operation for second ectopic	1.3
Operation on the second Fallopian tube	No case

CONCLUSIONS.

1. Infection or mechanical alteration due to adhesions of the Fallopian tube predisposes to ectopic gestation.
2. The onset of symptoms or an acute attack occurs equally as often at the time of an expected period, or just after a normal period as it does when a period is overdue.
3. Pain with, or *without* bleeding is present in every case of ectopic gestation unless unruptured.
4. Tearing, lancinating pain is not as common in ectopic gestation as pain of a cramp-like or bearing-down character.
5. Unusual, one-sided pelvic pain when associated with evidences of peritoneal irritation and fainting warrant the diagnosis of ectopic gestation.
6. The treatment should be operative in every case as soon as suitable hospital arrangements can be made, deferring examination until in the hospital if the patient is in a serious condition.
7. The end-results justify leaving the other tube in the abdomen at the time of operation, unless positively diseased.

I wish to thank Dr. George Gray Ward, Jr., for permission to publish this report, and also to thank the Attending Surgeons for their kind help in looking up their cases.

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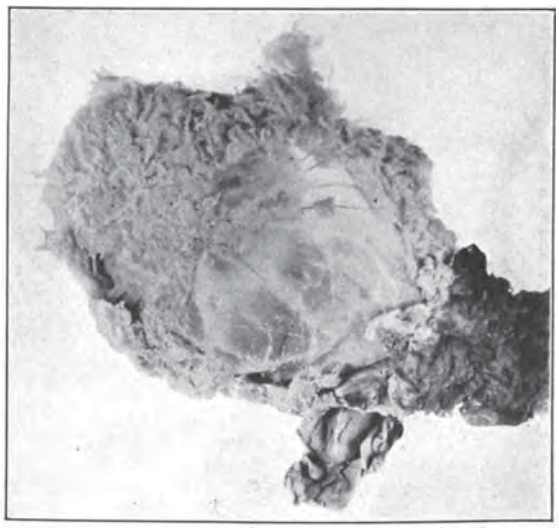

FIG. 1.—Ectopic pregnancy removed from tube intact, showing chorionic villi.

FIG. 2.—Ruptured interstitial pregnancy, specimen shows uterus incised and opened to disclose cavity.

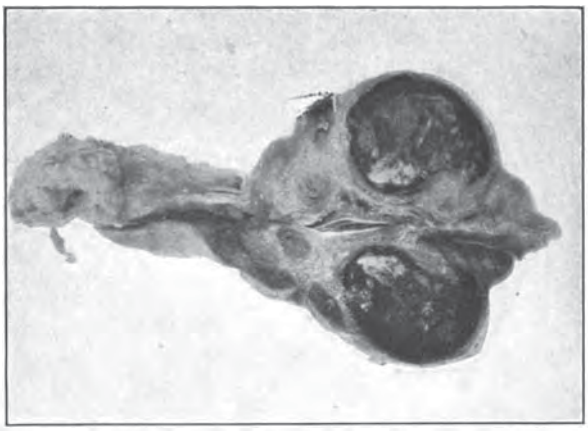

FIG. 3.—Very early ectopic unruptured, showing stunted fetus.

FIG. 4.—Ruptured interstitial pregnancy with visible fetus, uterus incised and cavity exposed.

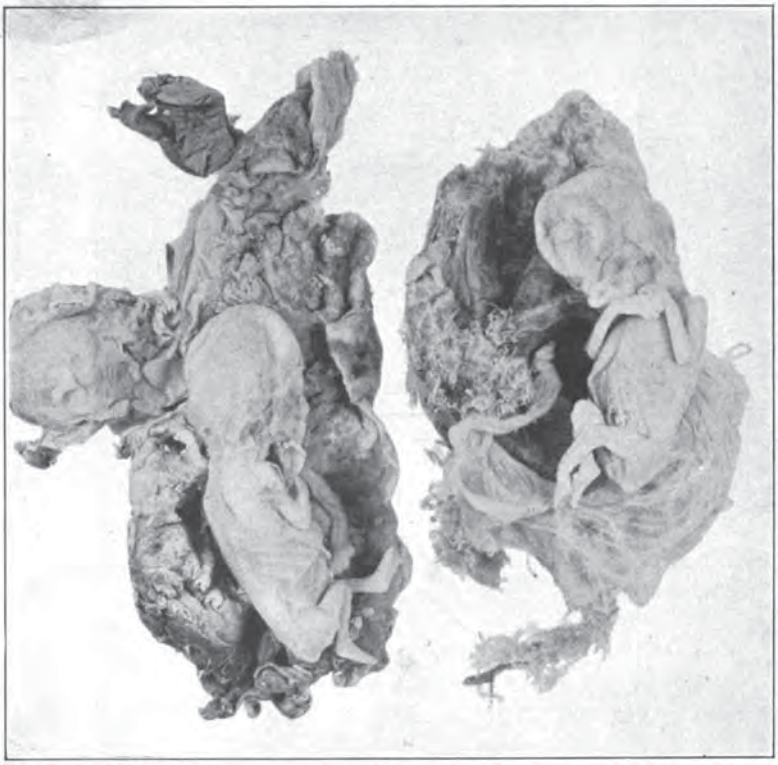

FIG. 5.—Twin ectopic pregnancy.