

Staff Meeting Bulletin
Hospitals of the . . .
University of Minnesota

Hemorrhage
Late in Pregnancy

STAFF MEETING BULLETIN
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INDEX

	<u>PAGE</u>
I. LAST WEEK.	142
II. MOVIE.	142
III. GUEST	142
IV. ABSTRACT & CASE REPORTS.	142-153

Published for the General Staff Meeting each week
during the school year, October to May, inclusive.

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William A. O'Brien, M.D.

I. LAST WEEK

Date: January 7, 1937

Place: Nurses' Hall
Recreation Room

Time: 12:15 to 1:20 P.M.

Program: Movie: Steel

Abstract: Rheumatic Fever

Present: 99

Discussion: R. M. Amberg
P. F. Dwan
M. J. Shapiro
L. G. Rigler
I. McQuarrie

II. MOVIE:

Title: The Solar Family

Released by: Erpi Film Corporation

III. Guest: Alfred Washington Adson
from Mayo Clinic will be
here next week.

IV. ABSTRACT AND CASE REPORTS:HEMORRHAGE LATE IN PREGNANCY

Charles E. McLennan

With an analysis of 96 consecutive cases from the University of Minnesota Hospitals during the three-year period, January 1, 1934 to January 1, 1937.

With rare exceptions, hemorrhage late in pregnancy is attributable either to ablatio placentae praevia. Davis states that placenta praevia and ablatio placentae are responsible for the hemorrhage in over 53% of the fatal cases of obstetrical hemorrhage; the

latter, of course, is one of the three major causes of maternal mortality.

Herewith is presented a summary of the present knowledge of gestational hemorrhage as revealed in recent periodicals and current standard obstetrical works. Information gained from local experience is interspersed throughout the discourse. For obvious reasons, the data on ablatio placentae and placenta praevia are treated separately.

Out of 1,290 mothers delivered in the University of Minnesota Hospitals from January 1, 1934 to January 1, 1937, 96 or 7.44% had a final diagnosis of either ablatio placentae or placenta praevia. In other words, 1 in every 13 cases had at least a history of bleeding in pregnancy. Of these 96 cases, 75 were called ablatio placentae and 21 placenta praevia.

Close scrutiny of the records, however, disclosed that nearly 40% of the bleeding diagnoses were unjustified in the light of any information appearing in the records; i.e., there has been a tendency to attach the term ablatio placentae to every case with a history of vaginal spotting in the third trimester, without adequate observation of the patient before and during labor and of the placenta after delivery. At least, if these observations were made, there is now no record of them. For this reason, it was thought advisable to exclude the so-called unconfirmed cases from this study. Thus, the true incidence of hemorrhage late in pregnancy becomes 4.65% or 1 in 21 cases.

A. ABLATIO PLACENTAEUsual definition:

Uterine hemorrhage from premature separation of a normally implanted placenta. Rudolph, however, has reported a case with anatomic evidence of ablatio placentae and placenta praevia marginalis in the same uterus, and suggests that ablatio placentae be defined merely as "premature separation of the placenta" without reference to its situation in the uterus.

Synonyms:

Accidental hemorrhage (Rigby, 1776), placental apoplexy (Lee, 1848), abruptio placentae (DeLee, 1902), uteroplacental apoplexy (Couvelaire, 1911), and premature detachment of the placenta. Holmes (1901) is credited with introduction of the term ablatio placentae. Implication of trauma as an etiologic factor is an objection to the term "accidental hemorrhage". Similarly, abruptio placentae suggests sudden and violent detachment, whereas in many cases the detachment and its symptoms develop insidiously.

Frequency:

All cases of premature separation of the placenta do not present symptoms. It is only by routine inspection of the placenta postpartum that one will find evidence of slight placental separation, with the typical retroplacental hemorrhages. Holmes thinks that clinically important cases of ablatio placentae occur only once in about 500 deliveries. Schumann finds separation of the lower pole of the placenta, particularly if the placental site is abnormally low, occurring about once in 200 labors, whereas severe cases occur in a ratio of less than one to 800 pregnancies. Many writers feel that statistics covering the frequency of ablatio placentae are so variable that little importance can be attached to this point in practice. Davis and McGee, in reviewing 19 papers, found frequencies varying from 1 in 94 to 1 in 555. Note the following figures:

Incidence of Ablatio Placentae

<u>Reported by</u>	<u>Total Cases</u>	<u>% of Total</u>	<u>Once in</u>
University of Minnesota Hospitals (1937)	1,290	3.17	32
Irving (1936)	28,391	1.04	96
Dorman (1913)		0.87	115
Montgomery (1934)	4,246	0.75	130
McCord (1936)	4,972	0.56	178
Colclough (1902)		0.48	207
Essen-Moller (1913)		0.46	216
Smith, P. H. (1935)	7,981	0.43	233
Davis, M. E. (1931)	40,000	0.41	244
Dieckmann (1936)	11,922	0.37	270

Etiology:

The primary cause of ablatio placentae, if there be a single one, is imperfectly understood. Some of the numerous suggested causes are listed herewith.

I. Predisposing causes:

1. Full-term pregnancy.
2. Multiparity.
3. Placental changes (inflammatory or degenerative).

II. Direct causes:

1. Traumatic:

- a. Direct external trauma (rare).
- b. Traction on short umbilical cord.
- c. Injury by version.
- d. Sudden uterine collapse in rupture of hydramnion, birth of first child of twins.
- e. Interference with hemostatic contraction of uterus:
 - (1) Tumor.
 - (2) Dense adhesions.
 - (3) Second Twin.
- f. Torsion of uterus (Polak, 1924).
- g. Maternal hypertension (Dieckmann)

2. Structural:

Developmental weakness of decidua or of fastening villi.

3. Psychoneurotic:

Extreme emotional strain.

4. Toxic:

Davis and McGee report that 57% of their cases showed evidence of toxemia of pregnancy. Reports by other investigators range from 24 to 100%. Tenney recently has studied the syncytium of placentae from cases of toxemia and ablatio placentae. He found definite syncytial degeneration in all of the toxemias, but a normal picture in cases of ablation uncomplicated by signs or symptoms or toxemia. He presents this as evidence for the existence of non-toxic, non-traumatic placental separation.

5. Other less popular suggestions:

- a. Histamine intoxication (Hofbauer). Bartholomew believes that histamine is elaborated during autolysis of acute infarcts on the maternal placental surface.
- b. Endometritis.
- c. Increased venous pressure (relative obstruction of venous return) causing rupture of placental sinuses (Harvey).
- d. Abscess of placenta (Rosenfeld).

Pathologic anatomy:

Separation may be complete or incomplete. In the latter the central portion of the placenta may be separated, the periphery adherent, or the margin alone detached. The higher the placental site upon the uterine wall, the more characteristic the symptoms of ablatio. Hemorrhage is dependent not so much upon the amount of placental tissue separated as upon the size and number of the uterine sinuses exposed. Extensive thrombosis of uterine sinuses may pave the way for a wide separation with minimal hemorrhage.

Hemorrhage may be absolutely concealed (internal) or relatively concealed (external). In each case of true ablatio, there is a primary absolute concealment of the blood, but after a short time (minutes to hours) the blood serum or blood itself escapes. The one unvarying pathognomonic sign of ablatio is expulsion of old clots and free blood with the placenta.

As the subplacental hematoma spreads, it may: (1) be confined to the limits of the placenta; (2) cleave the membranes almost wholly away from the uterine wall; (3) rarely rupture the membranes and hemorrhage into the amniotic cavity; (4) cleave membranes down to internal os, through which blood escapes into the vagina. Once the cavity with blood under

arterial pressure is established, tearing of the spongy layer continues (1) until bleeding ceases through coagulation, (2) until internal pressure falls to a point insufficient to cause further tearing, (3) until the entire placenta is detached, or (4) until blood makes its escape through the cervical canal or into the amniotic cavity.

In true toxic apoplexy (Couvelaire uterus) occurs a peculiar alteration of the uterine wall with mottling of the peritoneum and hemorrhagic infiltration of the muscle bundles which makes a lifeless wall imparting the sensation of soaked sole leather. This process may involve broad ligaments, tubes, ovaries. Fortunately, the true Couvelaire uterus occurs infrequently. In 52 complete separations, Davis and McGee found only 15 uteri of the Couvelaire type.

Symptomatology:

This varies markedly from those cases with violent onset and course to those with such slight evidences of pathology that placental separation is not even suspected and is recognizable only by postpartum inspection of the placenta. The latter group includes most of those women who, during pregnancy, have repeated, inconsequential bleedings, occurring after unusual physical strain, coitus, fatigue, etc., but ceasing after a few hours.

For descriptive purposes, cases are designated as mild, moderate, and severe, or a mild and fulminating. Each of these may be differentiated into those with absolutely concealed hemorrhage and those with relatively concealed bleeding.

The signs are maternal and fetal:

I. Maternal:

1. Acute anemia.
2. Vertigo, syncope.
3. Escape of serum, old clots, dark blood.
4. Shock (perhaps out of proportion to blood loss).
5. In uterus:
 - a. Local pain and tenderness.
 - b. Distention, diffuse or local.

- c. Firm consistency - wide variations.
- d. Loss of alternation between contraction and relaxation.

II. Fetal:

1. Sudden, violent fetal movements, followed by arrest of same.
2. Changes in heart rate and quality. Richardson points out that fetal heart tones present the earliest indication of premature separation and are always altered in so definite a manner as to direct suspicion positively toward placental detachment. Fetal embarrassment first brings on compensatory acceleration of the heart rate to the point of maximum tolerance, then follows asphyxia with decreasing rate when some three-fourths of the placenta has separated.

Rudolph recently has suggested a rather academic classification of ablatio placentae as: (1) contractive type, characterized by sudden abruption with compensatory contraction to arrest bleeding from placental site, ligneous uterus, sudden pain; (2) retractive type, in which abruption is followed by rapid retraction of the upper and lower uterine segments, doughy uterus, less sudden onset of pain, no shock.

Dieckmann(U. of Chicago Clinics) separates his cases of ablation into (1) a vascular, hypertensive or toxemic type, and (2) a non-toxemic type. In either group the separation may be partial or complete, the hemorrhage internal, external or combined, and the symptoms and signs mild or severe.

Laboratory: (from Dieckmann, 58 cases)

1. Hemoglobin, hematocrit and serum protein concentrations are lowered proportionately to the hemorrhage. Determination on admission is not an exact index of the patient's hemoglobin because, following hemorrhage, there is first a blood concentration and later a dilution.

2. Blood fibrin may be reduced to a

concentration which predisposes to bleeding from mucous surfaces, incisions, and the uterus. A striking number of patients have subnormal concentrations of fibrin.

3. Renal function is impaired in many cases, as shown by a N.P.N. of more than 40 mg./100 c.c. and urea clearance of less than 50%, but it returns to normal after an interval of several months.

4. Plasma cholesterol determinations are within normal limits.

Prognosis:

For the mother - good; for the infant - poor. Davis and McGee's 19 authors ranged from 2.6 to 66% maternal mortality, 59 to 100% fetal mortality. Other representative figures follow:

	Mat. Mort.%	Fetal Mort.%
Dieckmann		
Non-toxemic group	0	44
Toxemic group	0	70
Richardson	0	50
Smith, P. H.	3	62
Greenhill	4	
<u>Univ. of Minn. Hospitals</u>	4.9	30 (approx)
Rotunda Hospital (Dublin)	7	
McCord	7.1	64
Davis, M.E. (40,000 deliveries)	7.3	60
Williams	8	
Holmes, (200 cases, 1901)	32	86
Portes	36	81
Goodell (106 cases, 1870)	51	94

Treatment:

The initial step in the treatment of any hemorrhage late in pregnancy is the immediate provision of compatible blood donors. Blood matching is started with or even before the examination and preparation of the patient. Equipment and personnel should be made immediately available and kept so for several hours after delivery.

In cases of minor severity before the 36th week, the patient is kept in bed and given sufficient morphine to control pain and uterine irritability.

In severe cases at any stage, preg-

nancy must be terminated promptly. It is essential that common sense judgment be employed rather than adherence to any set of fixed rules. Choice of management hinges on 6 main points:

1. Stage of labor (dilation of cervix).
2. Expulsive efficiency of uterine contractions.
3. Stage of pregnancy.
4. Fetomaternal disproportion.
5. Infection, actual or potential.
6. Obstetric skull of accoucheur.

Available methods of treatment are:

1. Watchful expectancy:

To be considered only when symptoms are extremely mild.

2. Rupture of membranes:

To expedite labor in mild cases.

3. Abdominal compression and vaginal tamponade:

The so-called Rotunda method, recommended by DeNormandie, Hefferman and others. Spanish windlass to abdomen, vaginal packing and perineal T-binder. Holmes believes this method is irrational and mentions it only to condemn it. Reported results are not favorable.

4. Rubber bag:

Usually not advisable since it may mask the hemorrhage. Reserved for borderline cases where diagnosis lies between placenta praevia lateralis and low implantation with premature separation.

5. Manual dilation:

Always dangerous in itself, but occasionally an invaluable aid. To be followed by immediate delivery by easiest method available (version or forceps).

6. Braxton Hicks version:

Dangerous, since empty fundus may fill with blood. Nearly always means

death of fetus.

7. Cesarean section:

The choice for all severe cases with uneffaced, undilated cervixes. Follow with hysterectomy if true Couvelaire uterus is found. However, it must be remembered that, even after section, approximately 75% of uteri contract rigorously enough to justify their retention (Stander).

Following delivery from below, hesitancy in contraction of the uterus is an indication for packing. Rarely, it is necessary to do a postpartum hysterectomy if bleeding continues through the pack.

Fortunately, placental separation frequently inaugurates immediate labor, and sufficient cervical obliteration obtains for rapid vaginal delivery - either spontaneously, or with the aid of forceps or version and extraction. In 41 cases from this hospital, only two were delivered by Cesarean section, and one of these was done primarily for contracted pelvis.

Case Reports on Ablatio Placentae:

I. Ablatio placentae, complete; cesarean section; uterus saved.

, age 25, gravida i, para 0, 8 months gestation

Admitted 10-23-33: Vaginal spotting with cramps.

10-25-33: Cystogram diagnosed "placenta praevia marginalis" (L.R.).

10-27-33: Cystogram repeated; now no praevia apparent. No bleeding.

10-29-33: Abdominal cramps; passing old blood.

10-30 to 11-4: No bleeding. Sent home.

Readmitted 11-13-33: Backache, cramps, minimal bleeding (25 c.c.). Bruit over fundus. Fetal heart good. Uterus well relaxed, not tender. No placenta palpable by rectal. Cervix 1 cm. dilated, at 11 A.M.

Two hours later: 1 P.M. - No change in condition.

1:30 P.M.: Sudden continuous abdominal pain, tetanic uterus, no fetal heart audible, blood pressure 100/60.

2:00 P.M.: Passed 500 c.c. dark blood from vagina; ligneous uterus, pallor, severe abdominal pain. Cervix still only 1 cm. dilated.

3:00 P.M.: Classical cesarean section. Found Couvelaire type of uterus with complete separation of placenta. Fetus dead. 1500 c.c. of blood in uterine cavity. Uterus contracted well after pituitrin, so was closed in layers. Transfusion given.

Uneventful recovery. Discharged in good condition on 16th postpartum day.

II. Ablatio placentae, complete; hysterectomy.
 1, age 40, gravida i, para 0, 6 months gestation, achondroplastic dwarf, myomatous uterus.

5-18-35: Lower abdominal pains; not reported to physician.

5-19-35: Severe, crampy lower abdominal pain after auto ride. No bleeding. Uterus firm and irregular. Fetal heart good. Rectal examination - no information. Blood pressure 110/60. Sent to hospital. Original impressions: (1) threatened premature labor, (2) ablatio placentae with concealed hemorrhage, (3) torsion of myoma pedicle.

5-20-35: 1:30 A.M. - No fetal heart heard; less pain but very tender abdomen.

9:00 AM. - Uterus board-like, abdomen very tender, upper abdominal distention, moderate cyanosis of abdominal wall; patient pallid, pulse up from 80 to 120. Impression: Couvelaire uterus.

9:30 A.M. - Supravaginal hysterectomy. Findings: cyanotic peritoneum, 1,000 c.c. blood in abdominal cavity; uterus soft, blue, friable, with muscle bundles destroyed by hemorrhage. 1200 gm. stillborn fetus.

Uneventful recovery. Discharged in good condition on 16th postpartum day.

Analysis of Minnesota Cases of Ablatio Placenta, 1934 to 1937.

All cases diagnosed ablatio:
 75 in 1,290, 6% or 1 in 17

Unconfirmed in records:
 1934- 16 out of 30 or 53.4%
 1935- 14 " " 26 or 53.8%
 1936- 4 " " 19 or 21.1%

Reportable cases of ablatio:
 41 in 1,290, 3.2% or 1 in 32
 1934- 14 in 425, 3.3% or 1 in 30
 1935- 12 " 430, 2.8% or 1 in 36
 1936- 15 " 435, 3.5% or 1 in 29

Average age 26.8

Average no. deliveries prior to ablatio 1.8

Average duration of pregnancy, weeks 35.2

Average length of labor, hours 6.3

Only 4 of 41 patients had previous abortion.

Cystogram: Done in 17 of 41 cases. Only 2 diagnosed as placenta praevia. Error - 12%.

Infants: 22 males, 21 females.
 5 stillborn, 9 died within 24 hours; mortality 32.5%
 23 premature
 13 of the 14 deaths were in premature group

Type of delivery:
 Spontaneous 33
 Forceps extraction 4
 Version and extraction 2
 Cesarean section 2

Maternal deaths: 2 (1 puerperal sepsis, 1 postpartum hemorrhage).

B. Placenta Praevia

Synonym: Unavoidable hemorrhage
(Rigby, 1776).

Definition: A condition in which the placenta is attached to the dilating zone of the uterus, i.e., in which the placental site is more or less in the lower uterine segment.

Varieties:

1. Simple low implantation: Lower border less than 10 cm. above the internal os, while bulk of the organ is above the isthmus uteri.

2. Lateral: Placental rim encroaches into the dilating zone but does not reach the periphery of the internal os.

3. Marginal: Placental border approximately at edge of internal os.

4. Partial: Placental edge overlapping portion of dilated internal os.

5. Complete: Internal os completely covered by placenta. Central placenta praevia implies that center of placenta and internal os coincide; this occurs so infrequently that it is needless to employ the term.

Frequency: Materially greater in a hospital service. Holmes thinks placenta praevia is seen about once in 1,000 labors in general practice, while Schumann estimates it at once in 700 pregnancies. Frequency statistics given by various authors are:

	Cases	% of all	1 in
Univ. of Minnesota Hospitals	1,290	1.47	68
Irving (1936)	28,391	1.08	92
Binder (1934)	9,000	.93	108
Cragin	25,000	.89	112
Daily (1934)		.87	115
Smith (1935)	7,981	.75	133
Wilson (1934)	16,310	.63	159
Marr (1935)		.36	278
Ude & Urner (1935)	5,856	.29	346
Muller (1877)		.09	1078

Etiology:

I. Indirect or contributing causes:

1. Multiparity.
2. Age of mother.
3. Twin pregnancies (two placentae).
4. Previous uterine infection (postabortal, postpartum endometritis, etc.)

II. Direct causes:

1. Gravity: Ovum not arrested until it reaches dependent zone.

2. Overgrowth of placenta: When nidation occurs in the lower segment, cotyledons cannot obtain sufficient nutriment from vessels at the site, so spread out to acquire necessary blood supply (large, thin placenta praevia is common).

3. Reflexal placenta (Hofmeier and Kaltenbach, 1888, and Jolly, 1911): Part of chorion laeve continues to grow instead of undergoing involution early in pregnancy, with result that part of the placenta develops in contact with decidua capsularis.

Pathology:

When the placenta is inserted centrally or partially so, it is evident that, as the formation of the lower uterine segment and dilation of the internal os progress, its attachments must inevitably be torn through, the rupture being followed by a hemorrhage from the maternal vessels. Bleeding is favored by the fact that it is impossible for the stretched fibers of the lower uterine segment to compress the torn vessels. When the placenta has developed in the capsularis, this thin tissue is devoid of all support where it bridges over the internal os, and consequently a slight trauma will open up the intervillous space.

Symptoms - objective signs:

1. Painless hemorrhage
a. Usually during the second half of pregnancy, commonly after the 7th month. Early praevia always confused with abortion.

b. First bleeding usually very slight. Initial hemorrhage followed by others at irregular intervals.

c. Trauma may precipitate the hemorrhage.

d. Usually spontaneous, at any hour.

2. Cervix succulent (edematous), patulous as a rule.
3. Bogginess in lower uterine segment.
4. Placental bruit heard above pubes.
5. Malposition of fetus common (transverse, breech, brow).

Diagnosis:

1. Absolute diagnosis is possible only through actual palpation of the placenta in the lower uterine segment.

2. Hemorrhage without pain, shock or clots is suggestive.

3. Postpartum: marginal rupture of the membranes is confirmatory evidence.

4. Amniography: Devised by Menees, Miller and Holly in 1930. Strontium iodide or uroselectan are injected into amniotic sac through abdominal wall; placenta then outlined in profile on roentgenogram. Unfortunately, this procedure is nearly always followed by the onset of labor. We have had no experience with the method in this clinic.

5. Pneumoperitoneum: Suggested by Spiedel and Turner in 1924. Apparently never used extensively.

6. Cystogram: Developed by Ude and Urner at the Minneapolis General Hospital. An iodide emulsion (25 to 40 c.c.) is used as contrast medium to outline upper border of bladder in relation to the fetal head. Limitations of the method must be adequately understood. Our experience with it has been fairly satisfactory, although the evidence gained from the procedure is

never considered absolutely diagnostic - merely confirmatory. (Note results of cystograms in our recent bleeding cases).

Prognosis:

The risk increases progressively as the placenta occupies a place near, at or over the internal os. Maternal mortality is increased by postpartum hemorrhage from adherent placenta and cervical lacerations (manual dilation and rapid extraction following version). Postpartum uterine inertia and postpartum infection are also common. The infants die from (1) prematurity and (2) intrauterine asphyxia. Placenta praevia does not tend to repeat itself in subsequent pregnancies (Irving). Some of the more reliable mortality figures range as follows:

	Total Cases	Cs.of Praevia	Mat. Mort. %	Fetal Mort. %
Adair (Chicago Lying-in)		111	0	
With caesarean section				12.3
With Braxton Hicks version				54.0
With rupture of membranes				33.3
With insertion of bag				50.0
Siegel (dely.by cesarean section)			0.99	24.8
Wilson (Brooklyn)	16,310	102	1.96	24.5
Binder (Jersey City)	9,000	84	2.40	
Full-term infants				18.0
Prematures				66.0
Marr (N.Y.Nurs.& Child's Hosp.)	40,588	146	4.70	53.0
Univ.of Minn. <u>Hospitals</u>	1,290	19	5.26	31.6
Irving (Boston Lying-in)	28,391	308	7.00	20.0 (net)
Kellogg (1895-1919)		218	13.50	

Treatment:

There is no one treatment for every patient. The diagnosis can be made, di-

rectly or through elimination, only by vaginal examination. This involves the serious risk of introduction of infection. Hence the time and place for such examination must be carefully chosen, with the utmost precaution as to asepsis. A suspected case of placenta praevia is never examined in the home if hospitalization is physically possible.

The diagnosis once made, termination of pregnancy should be insisted upon if the patient refuses continuous hospitalization and rest in bed.

Available evidence, however, justifies the attempt to carry a doubtfully viable fetus to a safer stage, basing the necessity for intervention upon the severity of the hemorrhage.

Before the vaginal examination is begun, everything must be ready for immediate blood transfusion, version, bag insertion, or cesarean section. Neglect of these precautions is often fatal.

Common methods of treatment are:

1. Watchful expectancy: Only until definite viability.
2. Vaginal tamponade: Merely a temporary expedient during transportation to hospital. Should be avoided wherever possible.
3. Rupture of membranes: Suitable for lateral placenta praevia if the fetal position is favorable. Head acts as tampon.
4. Bag insertion: Probably the most useful method for immediate control of bleeding. Inserted intra- or extraovularly, or directly through placenta if necessary. At full dilation, deliver by version or forceps, or allow spontaneous delivery to occur if bleeding is not marked.
5. Braxton Hicks version: Useful when bags are not available, particularly if child is not viable. Fetal

mortality rate definitely increased by this method.

6. Cesarean section: Reserved for complete placenta praevia with uneffaced cervix, live fetus and non-infected genital tract. Section is justifiable, of course, where other primary indications exist.

Irving recently has advocated cesarean section followed by hysterectomy with drainage on all potentially infected cases, whatever may be the condition of the fetus. We cannot support this opinion.

There is a considerable element of truth in Kellogg's statement: "The improvement in mortality statistics in placenta praevia . . . depends much more on the promptness with which the unpacked, unexamined, bleeding pregnant woman is hospitalized by the practitioner and delivered by an obstetrician, than on whether she is delivered through the natural passages conservatively or by cesarean section."

Case Report on Placenta Praevia:

I. ♀ age 33, para iii, gravida vi.

Last menstrual period 10-25-35, due 8-1-36.

First slight vaginal bleeding (10 - 20 c.c.) on 6-15-36. Patient advised by private physician to come to University of Minnesota Hospitals at once, but did not arrive until two weeks later.

7-1-36: First seen in Out-patient Department; recurrence of slight bleeding. Admitted to hospital.

7-2-36: Cystogram - very suggestive of placenta praevia.

On bed rest until 7-9-36. No bleeding, no contractions. Patient up and about, anxious to go home 7-10-36. J.C. Litzenberg advised vaginal examination before considering discharge of patient.

7-10-36: 1:45 P.M. - sterile vaginal examination revealed complete placenta praevia. Brisk bleeding began at once, lost 250 - 300 c.c. of blood on way to operating room.

2:00 P.M. - Classical cesarean section done; living male infant, 3120 grams, 50 cm. Uterus packed. Patient given intravenous glucose on operating table and transfusion immediately afterward.

Uneventful recovery. Discharged in good condition on 13th postpartum day.

Analysis of Minnesota Cases of Placenta Praevia, 1934 to 1937

All cases diagnosed

praevia: 21 in 1290, 1.63% or 1 in 61

Unconfirmed in records: 2

Reportable

incidence: 19 in 1290, 1.47% or 1 in 68

1934: 7 in 425, 1.64% or 1 in 61

1935: 6 in 430, 1.40% or 1 in 72

1936: 6 in 435, 1.37% or 1 in 73

Average age, years 30.7

Average number deliveries prior to praevia 3.2

Average duration of pregnancy, weeks 36.1

Average length of labor, hours 7.8

Number of patients having previous abortions 8

Type of placenta praevia;

Low implantation	4
Lateral	2
Marginal, partial	6
Complete	7

Cystogram: Done in 15 of 19 cases.

Diagnosed placenta praevia	10
No diagnosis possible	2
Negative for praevia	3
Error	20%

Type of delivery:

Bag followed by version and extraction	8
Cesarean section	4
Spontaneous	3
Outlet forceps	2
Bag followed by forceps	1
Version and extraction	1

Infants: 14 females, 9 males (4 multiple pregnancies)
4 Stillborn, 2 neonatal deaths; mortality 31.6%
11 premature
5 of the 6 deaths were in premature group; death of the one term fetus occurred after insertion of bag directly through placenta.

Maternal deaths: 1 - from bilateral bronchopneumonia on 3d postpartum day; marginal praevia with bag insertion, version, uterine packing.

Maternal mortality rate; 5.3%

SUMMARY:

1. Ablatio placentae and placenta praevia are major factors in maternal mortality.
2. The incidence of hemorrhage late in pregnancy appears to be from 4 to 15 times greater in this clinic than in similar institutions throughout the country.
3. The severe, fulminating, typical textbook picture of ablatio placentae is an infrequent occurrence.
4. Little has been added to the knowledge of the etiology, pathology, symptomatology of ablatio and placenta praevia in the past 30 years; considerable improvement has been effected in the maternal mortality, a lesser improvement in fetal mortality.
5. Certain principles of treatment are outlined herewith. The method of choice must be carefully considered for each and every case.

6. The cystogram is a valuable diagnostic aid in placenta praevia, when used merely as confirmatory evidence and with full knowledge of its limitations.

7. The campaign for hospitalization of all cases of bleeding late in pregnancy must be continued and extended.

8. This study has disclosed certain deficiencies in our case records and in the system of cataloging same. It is respectfully suggested that steps be taken to eliminate these sources of error in our statistics.

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