On Haemorrhage during Pregnancy, Labour, and after Delivery.

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The subject of Haemorrhage is most important to the obstetric physician, not only upon a scientific, but upon a practical point of view. Often occurring during any period of time of pregnancy, without warning in force of labor, quick death from shock and exhaustion may ensue, and if these be not immediately fatal, the infected system becomes ill-adapted to resist injurious influences and may succumb in a short time to some form of purpuric fever, pneumonia or other complication; or if these secondary dangers be escaped from then there are other effects to be encountered, resulting from the loss of blood such as pernicious anaemia, blindness, deafness, hemiplegia and other diseases.

It is therefore essential that the accoucheur should have an intimate knowledge, how to act in such cases, for delay is dangerous and no time is to be lost. The safety of the patient depending entirely upon the experience and promptitude of the physician in attendance.

In order therefore to clearly understand the principles of treatment of uterine haemorrhage an exact knowledge of the circulation in the increased growth of uterus during formation and of the formation and attachment of the placenta to the womb, is essential.
I will therefore commence by giving a short account of the formation of the placenta and will afterwards take into consideration the increase, growth, of the egg and tissues of the uterus.

Impregnation of the ovum with the spermatagona of the male may take place either in its immediate escaping from the ovary or close on its cervix down the fallopian tube to the uterus and when conception takes place wonderful changes occur both in the uterus and the ovum, leading in due time to the development of the fetus, the placenta and the membranes.

Immediately on contact with the oesmatergon these enter with great facility into the outer covering (Zona pellucida) of the ovum and shortly afterwards a space is formed between this and the yolk by the contraction of the latter.

A covering of a gelatinous or of an albuminous nature is now formed round the ovum, on its passage along the fallopian tube and is the representation of the albumen on white of the egg in birds.

The first process towards development is the cleavage or segmentation of the yolk. At first the segmentation is into two equal parts. Each of these again subdivides again and again until the whole mass is broken up and forms a mulberry-like mass, the morula, or body. When this subdivision of the yolk is completed its separate spheres become converted into cells.
consisting of a fine membrane with scattered contents. These cells unite by their edges to form a continuous membrane, which through the expansion of the mucous membrane of fluid which forms in its interior, is distended until it forms a lining to the zona spongiosa. This is the Mosaic membrane or Vehicle of Breschet & Loste and from which the future is developed. By this time the ovum has reached the uterine cavity. The Mosaic or membrane which forms a complete spherical lining to the ovum between the yolk and zona spongiosa soon divides into two layers: the external called the Epiblast and the internal layer the Hypoblast; and between them is subsequently developed a third, the Mesoblast. From these three layers are formed the entire fetus; the Epiblast giving origin to the bones muscles and enteronement; the nervous system; the serous membranes and the Ammon; the hypoblast forming the mucous membranes and the alimentary canal; and the mesoblast the circulating system. (Kayseri p 91. Vol 2) Almost immediately after the separation of the Mosaic membrane into layers, one portion of it becomes thickened by the aggregation of cells and is called the area premonstrative; in which the first trace of the fetus in the form of a long narrow line may be detected: the 'primitive trace'. Surrounding it are some cells more translucent than the others and on that account called area spongiosa. On each side of the primitive trace, soon
appear two elevated ridges, the cervical dermoids, which gradually unite posteriorly to form a cavity within which the cervical spinal column is subsequently developed. Anteriorly, they join to form the thoracic and abdominal cavities, enclosing portions of the arch of the aorta, from which the serous membranes are developed.

The umbilical folds thus formed soon curves upon itself with its convexity outwards and a distinct thickening occurs at each extremity on forming the cephalic extremity of the foetus. From these two points, two hollow processes form, from which gradually overlap the dorsal surface of the foetus until they meet each other and form a complete envelope to it. This is the Amnion and is the most internal of the membranes surrounding the foetus. It secretes a fluid, the liquor amnii which soon separates the amnion from the foetus.

During the period the Amnion is being formed, the innermost layer of the blastodermic membrane or hypoblast is also forming two projections from either extremity of the foetus and these unite anteriorly and enclose a greater portion of the yolk and form the vitelline vesicle upon which an artery and vein (the vitelline vessels) form and from which vesicle the foetus derives its nourishment during the early stage of development.

About the third week after conception a small vesicle called the allantois is formed towards the caudal extremity of the foetus. It rapidly grows until it reaches the most
EXTERNAL membrane, the chorion, of the placenta. On the inner surface of this membrane, it thins and the vessels appear, first consisting of two arteries and two veins, one of the latter subsequently disappearing. These, along with the pedicle of the Allantois and the Villonial duct from the umbilical cord.

As the ovum passes along the Fallopian tube, it receives an albuminous covering. This becomes detached at the zone palliata, and forms the chorion. At first it is smooth and shining, but soon becomes covered over its whole surface with small hollow projections or villi, which supply the fetus before the development of the placenta, nourishment by endothelium. The chorion is developed before the ovum reaches the cavity of the uterine.

Whilst these various changes have been taking place in the ovum, great changes have also been taking place in the uterus. The mucous membrane becomes greatly hypertrophied and congested, and consequently thrown into convolutions, whilst the tubular glands and the capillaries occupying the interstices between them become greatly enlarged. This membrane is thrown off either partially or entirely at the time of labor, and is called the Reichert Vera.

When the ovum surrounded by the mucous coat of the chorion first enters into the cavity of the uterus, it is unattached but soon becomes arrested in one of the sinuses between the convolutions into which the mucous membrane is thrown, at the point where the placenta
is subsequently formed.

On either side of it there now arise projections of the mucous membrane or decidua vera, which gradually coalesce and form the decidua reflexa. That portion of the mucous membrane upon which the ovum rests is the decidua basalis.

The villi of the chorion dip into the uterine glands and by means of which and for a time supply the ovum with nutriment from the circulation of the mother. The placenta of that portion of the mucous membrane called the decidua basalis are much more numerous, larger and deeper than in the other portions of mucous membrane. This marks the site of the placenta.

Up to the third month of pregnancy the decidua basalis and vera are not in close contact and there may even be a considerable interstice between them, which sometimes contains fluid called the hydatidines. This fact may account for occasional occurrence of menstruation after conception in the early months of pregnancy.

As the ovum joins these membranes become intimately blended and inseparable. As pregnancy advances the decidua altera in appearance and become firmer and firmer by a process of fatty degeneration, its vessels and glands are obliterated, and its adherence to the uterine walls become lessened so as to allow of separation at the birth of the child. The villi of the chorion are at first few, vascular, but when the allantochorion as forming described reaches the inner surface of the
Chorion, it gives off a branch of an artery and vein to each villus, which again gives off a branch to each subdivision of the villus. These vessels are encased in a fine sheet of the allantois which enters the villus along with them and forms a lining to it. The artery and vein lie side by side in the centre of the villus and anastomose at its extremity.

When the allantois has become in complete union with the chorion, the villi adjoining the decidua basalis become greatly enlarged and eventually develop into the placenta, whilst the villi on the other parts of the chorion, about the end of the second month of pregnancy, divide and away and disappear. Thus the chorion and decidua become into close contact and are united by small fibrous bands the remnants of the allantoic villi.

Having now described how the villi of the chorion become connected with the maternal portion of the decidua forming together the placenta, I will enter into a short description of that organ.

The Placenta

The ovum is as we have seen first supplied by nutrient directly from the umbilical vessels subsequently by the maternal mesentery circulation and at a still later period by the development of the allantois. By the villi of the chorion, by endosmosis or imbibition, when through the agency of the allantoic villi.
umbilical vessels are brought into contact with the chorion. The organ has more direct communication by means of the placenta, with the blood of the mother, from which it derives both nutriment and also secretion of the blood.

The most frequent site of the placenta is at the upper and back part of the uterus, and more often on the left than the right side; but it may be attached at any part of the uterus even over the os, thus forming an critical complication during labors.

On examining a placenta after removal, it will be seen to consist of a somewhat circular mass, varying in size; its diameter from six to eight inches, its weight from 10 to 14 oz. hut may even be more.

The placenta has two surfaces a foetal and a uterine; the former derived from the enlarped villi, receiving the insertion of the umbilical cord, and is slightly concave and is smooth and shining from being covered with the amnion, through which the vessels of the cord may be distinctly seen to divide and subdivide before entering into the tissue beneath.

It is formed from the enormously enlarged villi of the chorion, and receives the branches of the umbilical arteries and veins, which when they first reach the surface of the organ, divide into two and then subdivide again, and again and then plumpen into the substance of the placenta.

The maternal or uterine surface is very
different from the portal. It is convoluted, highly wrinkled, and is divided into numerous lobes, which may easily be torn or separated from each other. It is covered by a delicate membrane which dips down between each lobe. Numerous small valvular-like openings may be seen on the surface, which are the orifices of the veins torn off from the uterine, as also of the arteries, which taking several sharp turns open suddenly into the substance of the organ. These are the uterine vessels which convey the maternal blood to and from the interior of the placenta (Farre).

Before entering into the minute anatomy of the placenta, it would be as well here to examine what changes have been taking place in the uterus itself, so as to allow of the increased amount of blood now required for the full development of the foetus.

The cavity of the uterus, not only enlarges but its walls become greatly thickened and hypertrophied, whereby its weight is progressively increased up to the end of pregnancy. Helic has described the hypertrophied muscular tissue of the uterus as divided into three layers, an external, a middle chiefly longitudinal and an internal chiefly circular. The external layer he describes as arising posteriorly at the junction of the body and cervix and spreading upwards and over the fundus. The middle layer is made of strong fasciculi, which run upwards, but
descending and unite with each other in a remarkable manner, so that those which are at first superficial become most deeply placed and vice versa. The muscular fasciculi which form this coat curve in a circular manner round the large veins, so as to form a species of muscular canal, through which they pass.

This arrangement is of peculiar importance as it affords a satisfactory explanation of the mechanism by which haemorrhage after delivery is prevented.

The internal layer is mainly composed of circular rings of muscular fibres, beginning round the openings of the Fallopian tubes and forming wider and wider circles, which touch and interlace with each other. They surround the internal 03, to which they form a kind of circluina. In addition to these circular fibres on the internal uterine surface, both anteriorly and posteriorly, there is a well-marked triangular layer of longitudinal fibres in the base being above and the apex below, which sends muscular fasciculi into the mucous membrane. (Heyfar Jb: 37. Vol 1 3rd edit).

The blood vessels are also proportionately increased. The arterioles of the gravid uterus are greatly increased in size and calibre and they freely anastomose and are conducted in succession in their course. The veins are relatively larger than the arteries and are composed of large short trunks and are filled sinuses, communicating directly with each other. Their coats are single and they possess no valves. Their course is extremely
Aplique, running nearly parallel to the surface of the uterine; so that the veins may be described as forming layers or planes of veins, freely communicating with each other. The blood vessels at the site of the placenta become more developed than in the other portions of the uterus.

**Minute Anatomy of the Placenta**

As elsewhere described, the placenta consists of two distinct portions: the fetal and the maternal.

The fetal portion consists essentially of the terminal ramifications of the chorion villi, with their contained vessels, which on microscopic examination may be seen in the form of club-shaped aggregations. Within the transparent walls of the villi, the capillary vessels may be seen not unlike loops of small intestine. These capillaries are the terminal ramifications of the umbilical arteries and veins. Each terminal loop being contained in one of the objections of the chorion villi. Each arterial loop is accompanied by a vein, which unites with it to form the terminal loop.

The fetal blood is carried through these small arteries to the villi where it comes into intimate contact with the maternal blood, and then is carried back by the accompanying veins. These small veins subsequently unite and form the umbilical vein, which carries the blood back to the fetus.
The maternal portion is formed from the decidua basalis, mucous membrane, the decidua serosa, and the maternal blood vessels, which have been greatly increased in size at the point where the placenta forms. The maternal portion of the placenta consists of large cavities or of a large single cavity, which contains the maternal blood, and into which the villi of the fetal portion penetrate. The curving arteries of the uterus pour their blood into this cavity or cavities and it is returned by the uterine sinuses. The villi are therefore continually bathed in the maternal blood which flows around them, but is essentially distinct from it, though in intimate contact.

According to Dr. John Neil, only the internal lining of the maternal vessels enters the substance of the placenta, to form the sac into which the villi project, something before them the limiting wall of the placental sinuses, each of them in this way receiving an investment, just as the fingers of a hand are covered by a glove.

Schroeder van der Koll & Goodwin considered that not only were the maternal blood vessels continued into the substance of the placenta but also the processes of the decidua which accompanied the vessels and were prolonged over each villus, so as to separate it from the limiting membrane of the maternal sinuses, each villus would thus be covered by two layers of lining tissue, one from the internal lining membrane of the maternal blood vessels, the other from the epithelial cells of the decidua.
Pream, points out that the fetal portion consists of a smooth placenta, vascular membrane covered over with persistent epithelium, which is brought into contact with the maternal portion, consisting of a smooth placenta, vascular membrane covered with columnar epithelium.

In the human placenta the maternal vessels have lost their normal cylindrical form, and are dilated into a system of freely intercommunicating placental sinuses, which are in fact maternal capillaries enormously enlarged, with their walls so expanded and thinned out that they cannot be recognized as a distinct layer limiting the sinuses. Each fetal chorionic villus projecting into these sinuses, is covered with a layer of cells distinct from most of the epithelial layer of the villus, and readily stripped from it. These are maternal in their origin and are derived from the decidua, which sends prolongations of its tissue into the placenta. These cells, he believes, separate from a secreting epithelium, which separates from the maternal blood a secretion for the nourishment of the fetus, which is in the form absorbed by the villi of the chorion. Maxton Hills holds that the maternal blood is not poured into a cavity, in which the villi float, and he believes that the curving columns of the uterus instead of entering the so-called maternal portion of the placenta, terminate in the decidua of the chorion. The chorionic villi at the site of the placenta are firmly attached to the decidual surface, into which their tips are embedded. The villi are therefore
not surrounded by maternal blood, and the
change in the fetal blood is affected by
endomemo.
(From Stafjens p. 104 & 105).

The Umbilical Cord. is the channel of
communication between the foetus and placenta,
being attached to the foetus at the umbilicus
and to the latter generally in the centre.
It varies much in length, usually being from
18 to 24 inches long.
It consists of an external membrane formed
from the amnion, two umbilical arteries
and one vein, and also a quantity of
gelatinous matter surrounding the vessels,
called the 'Gelation of Wharton'.
In an early period of pregnancy the cord also
contains the umbilical vessels with the
umbilical mesentery, vessels and two umbilical
veins, one of which disappears and disappears.
The vessels have a spiral turn, the arteries
being longer, best wound the vein, generally
from left to right. As nerves or sympathies
have been discovered. The arteries give off
no branches and the vein has no valves.
Having now briefly described the development of the ovum, the formation and functions of the placenta and umbilical cord, I will proceed to the subject more closely connected with the heading of my thesis.

Haemorrhage may occur at any time during the period from conception until a few days or more after delivery and in order to facilitate a more exact account, I will divide the subject into separate headings and give a description of each.

For convenience, it may be classified under six different headings.

I. Menstruation during Pregnancy.
II. Abortion or premature expulsion of the ovum.
III. Accidental Haemorrhage or partial separation of the placenta.
IV. Placenta Praevia, or unavoidable Haemorrhage.
V. Post-partum Haemorrhage.
VI. Secondary Haemorrhage.

I. Haemorrhage from Menstruation.

As a rule, after conception has taken place, there is a cessation of the menstrual discharge; but cases occur where the catamenia does not cease for the first few months and the patient menstruates for several periods.

Generally speaking, the discharge does not occur later than the fourth month, but several
authors among whom I may mention [illegible] Churchill & Murphy. Rare reside cases when it
has continued throughout gestation. I myself attended
a lady in the year 1878 who menstruated regularly
during pregnancy and gave birth to a healthy
boy.

The source of this discharge is not decided upon,
by some it is considered to be derived from the
upper portion of the vagina or from the cervix,
but for the first three months or so it more
probably comes from the cavity of the uterus itself.
In the early months of pregnancy the ovum does
not entirely fill the uterine cavity and there is
sometimes a considerable space between the
decidua reflecta surrounding the ovum and
decidua vera lining the uterus. It is from
this surface of the decidua vera that the
discharge arises. After the third month
the two decidua reflecta and vera unite or
rather blend together and the space between
them disappears.

Menstruation after this period of pregnancy is
more difficult to account for, probably it may
arise from occasional looks of blood from polypi
or placenta previa, or partial separation of the
placenta, and thus be mistaken for menstruation.
Cases occur in which patients have menstruated
for the first time after conception has taken
place and also cases, according to Brandeburge
and other authorities, when menstruation only
took place when pregnancy existed. There are
rare cases and seldom meet with.

Treatment
Beyond recommending the recumbent position
Fruit decoction and cool drinks nothing further would be required, but if the leucorrhea did not at all subside, then medicated vaginal pessaries containing either salicylic acid or other astringent might be useful and treated with advantage, as well as cold intermittently applied over the external genitals and the lower portion of the abdomen, which would probably effect it. If not, the discharge continuing may lead to abortion, the treatment of which I will describe under the following heading.

II Abortion or premature expulsion of the ovum

Abortion or premature expulsion of the ovum may occur at almost any time during the nine months of intra-uterine life, and hence has been variously named according to the time at which it happens; thus if it occurs before the 7th month, when the child is non-viable, it is termed "abortion" and if between that time and the natural term of pregnancy "premature labour".

There are few multiparae who have not aborted at one time or another. Hegar estimates that about one abortion occurs in every 80-100 deliveries at term. Whitehead has calculated that at least 50 per cent of married women who lived to the 'chance of life' had aborted. Happily abortion rarely proves directly fatal to the mother, but it often produces great debility from the loss of blood accompanying it.
and is a very general cause of abortive disease in after life, because women do not usually take the same amount of care during convalescence as after delivery and the proper evacuation of the uterine is thus most frequently interfered with.

Abortion is more frequent in multiparae than in primiparae and in the higher ranks of life than in the lower classes. The liability to abortion is much greater in the early months of pregnancy, when the union between the chorion and decidua is of a less character so as to admit readily of haemorrhage into the space between them, with the result of casting off the temporary communications which exist between the mother and child before the formation of the placenta.

Between the third and fourth month is the time when the greatest number of abortions occur, and if it take place at this time, there is not usually much difficulty or danger, the ovum being cast off in masses, the decidua subsequently coming away in strips or as an entire membrane.

If it take place between the 4th and 6th month after the placenta is formed, the amnion is as a rule first ruptured by the uterine contractions and the fetus is expelled by itself. The placenta and membranes may then follow as in natural labour. It not infrequently happens that on account of the placental adhesion at that period, the secondaries are retained for a greater or less time. This subject the patient to great risks, not only from profluse haemorrhage but also from septicaemia. Consequently
Abortions occurring between the 4th and 6th month are attended with greater harm than either at an earlier or later date. The risk of abortion after the sixth and seventh month is not different from that attending ordinary labour.

Causes

The causes of abortion are very numerous and for the sake of simplicity may be divided into those belonging to the mother — maternal — and then pertaining to the ovum — foetal.

I. Maternal.

1. Reflex causes. From the various affections of the contiguous organs, or from diseases of the uterus itself.

2. Diseases of the nervous system. Shock, anxiety, irritation from toothache, excess of sexual intercourse.

3. Extended lactation during pregnancy.

4. Constitutional causes. Anaemia, diseases of the lungs, or from the various toxæmics, more especially scarlet fever, small pox, carbuncle and fever, lead poisoning, albuminuria, syphilis. Various acute affections of the abdominal visceræ.

5. Special causes. Accidents from falls or blows. The administration of certain drugs as opium, morphia, and drastic cathartics.

6. Habit of Abortion.

II. Foetal

Death of the fetussetting up irritation in the
Symptoms

One of the earliest indications of impending abortion is more or less haemorrhage. This may be at first slight and intermittent or it may commence with a sudden and profuse discharge and may place the patient in imminent peril from excessive loss of blood. The source of this discharge may be from separation of the membranes and consequent rupture of the blood-vessels. After a lapse of time, it may be hours or days, more or less pain from uterine contraction comes on, recurring at regular intervals and eventually leads to the expulsion of the embryo.

Certain other premonitory symptoms may also be detected such as flushes, shivering or a sense of coldness, pain in the lumber region and vesical tenesmus. The mammae may become large and painful - all of these symptoms are obscure and hardly to be depended upon. The chief and only symptoms to be relied upon are haemorrhage continued with pain recurring at regular intervals.

Diagnosis

If the abortion be occurring before the third month there may be some little difficulty in determining whether pregnancy exists, or whether it is simply a case of delayed menstruation. A vaginal examination will of course be necessary and according to Madame La Chapelle, the following
points are of importance in establishing a distinction between the two.

If the case is one of abortion, the os is more or less open. Haemorrhage precedes the pains and gives them no relief, but on the contrary they become more severe as the case advances.

If on the other hand, the case is one of delayed menstruation, the os is nearly closed or only slightly open, the pains precede the discharge and are diminished upon its occurrence or may entirely cease when it is thoroughly established.

**Prognosis.**

The prognosis must depend upon the period of pregnancy, the condition of the patient and the amount of haemorrhage, and also to some extent upon the cause of the abortion. As a rule the earlier it occurs the less risk, though this is not without exception. Ordinarily it is the haemorrhage that occasions the anxiety and it must be remembered that until the whole of the coiled membranes are expelled, the continuance of the haemorrhage is almost certain. If the abortion is not passed satisfactorily there still remain other dangers, especially in cases where there have been frequent abortions, for they often lead to disease of the uterine, which may undermine the patient's constitution and cause life long trouble.

**Treatment.**

This may be divided into two separate headings, one in which the object is to promote the expulsion of the fetus and its membranes and the other in
whilst every effort is made to save the embryo.

**Foetal Expulsion**

If there is sufficient evidence that the foetus is dead, then there would be no object in trying to prevent its discharge, but every effort should be made to effect its speedy removal.

If there has been a great amount of haemorrhage and pain and the os can be felt quite open with the membranes protruding or even portion of the foetus itself, then all conservative treatment will be hopeless and we must use every means to promote expulsion.

Should the os be open and the cervix within reach of the finger, it should be detached and scooped out by the finger. If it is out of reach and yet appears detached, then chloroform should be administered and the whole hand introduced into the vagina and the finger into the uterus. The complete detachment of the cervix can in this way be more readily effected than by any other means and with less risk of injury to the parts.

Should however the os be undilated and the cervix not sufficiently detached then means must be taken to control the haemorrhage until the latter can be removed or expelled.

A full dose of opium of morphine should be given and if this does not stop the haemorrhage, then applying the vagina is essential. This is itself, more especially when opium has been administered, is a strong excitant to uterine contraction and often may effect complete detachment, so that on removal of the plug, the cervix may be felt lying loose in the os uteri.
If there is no dilatation and the cervix out of reach, then it would be advisable to insert into the os, sponge or laminaria tents and the vagina plugged as before. This effectively controls haemorrhage and in a few hours opens the os sufficiently to admit the finger. Normally in the early months of pregnancy when abortion takes place, the fetus and its membranes are expelled together; if however the placental membranes are retained after expulsion of the fetus, the patient is liable to a return of the haemorrhage and to the occurrence of septicæmia. It should therefore be our first endeavour to promote the removal of the decidua as speedily as possible.

If there is much haemorrhage and the os contracted, packing of the vagina or sponge plugs should be resorted to until the placenta becomes detached, which usually occurs in a few hours or at most a day or two. Should there be any foetid from decomposition of the decidua, the vagina should be sprayed out frequently with a solution of kaolin fluid. The placenta may come away in small fragments or it may become partially absorbed or organized, thus forming the placenta spongiosa. This may produce secondary haemorrhage and its removal according to Dr. Rains must be effected by the wine forceps.

Fetal Conservative.

If there has been little discharge and no pain on the one hand little pain or no discharge and the
as not obstetrical. Then there is a reasonable amount of hope of avoiding the abortion. As the discharge generally precedes the pain we must endeavor to arrest. The haemorrhage as this leads to the pain. With this object in view we must ensure perfect rest of mind and body. The patient should be placed on a hard bed, not overburdened with clothes and in a cool temperature, and she should have a light and easily assimilated diet. All movements of the body must be absolutely forbidden. To avoid if possible the uterine contractions, Opium should be freely given and she should be kept under its influence for several days or until all symptoms of the impending miscarriage have passed away. Cold drenches may be allowed and also must the food be given cold. Ice might be intermittently applied over the perineum, but it must not be kept too long applied as this might through reflex action produce pain. The very thing we wish to avoid. Astringents such as salt and sulphuric acid and acetate of lead may be employed and from with advantage. If these means do not succeed and the haemorrhage becomes profuse, bleeding accompanied by pain or not, then all attempts at saving the child must be futile as the haemorrhage cannot be checked until the uterus is emptied of its contents. Cold should then be applied both to the external genitals and to the hypogastric area. An ice bag should be administered. When the haemorrhage is of very profuse it shows there is free separation of the embryonic structures from the uterus and all hopes of
accidents. The abortion will be useless and we must therefore proceed to the foetal expulsion treatment, as already described—

III Accidental Haemorrhage or Partial Separation of the Placenta.

Haemorrhage occurring before the birth of the child presents two varieties, depending entirely upon the position of the placenta: if this is inserted over the cervix or os uteri, every succeeding pain gives rise to flooding and this is called 'Unavoidable Haemorrhage', whereas in accidental haemorrhage, the placenta is situated in its normal site and the flooding is caused by a partial separation of the after-birth, from the fundus or body of the uterus

when from any cause separation of a normally situated placenta occurs before delivery, more or less blood is opposed from the uterine placental vessels and may give rise to two subsequent courses: first the blood may find its way between the membranes and decidua and escape externally by the os uteri. Secondly, the blood may not find its way externally, but may either accumulate between the placenta and uterine and if it does escape from beneath the placenta it may be retained within the cavity of the uterus and thus forms the Variety of Concealed Intimal Haemorrhage.

Causes.

Accidental haemorrhage rarely occurs in the young and robust, while in those who have borne many children
and those who are debilitated and in bad health, it is relatively more frequent occurring, consequently in these cases it renders the patient more liable to be greatly affected by it, not only in its immediate effects but also in the remote, for it may leave her greatly weakened and more prone to become attacked by the various disorders to be dreaded in the lying-in chamber.

The cause of this form of haemorrhage is generally attributed to some accident, such as slipping down stairs, stretching, lifting heavy weights or from drops or from railway travel etc. At other times it has occurred without any appreciable cause and then it has been regarded as due to irregular contracture of the uterus or some accidental dilatation of blood causing a slight extravasation of blood between the placenta and uterus, the irritation of which gives rise to contraction and further detachment. Certain constitutional causes may predispose towards it such as mental shock, too excited circulation or the reverse exaggerated anaemia or albuminuria or Still more diseases of the placenta itself.

Symptoms and Diagnosis.

These are usually sufficiently plain, pain in the site of separation, followed by a general sense of uneasiness and distension with possibly, tinges and fainting and the general symptoms of loss of blood, pallor, quick feeble pulse, coldness of the surface, dimness of vision, and noises in the ears, and if the haemorrhage is not arrested
A sense of suffocation, restlessnes, syncope, convulsions and death.

All these symptoms may take place and not a sign of blood appearing externally, thus forming the condition of concealed internal haemorrhage.

The placenta has been detached in some part of it and the blood at first is forced out between the uterus and placenta and if there be no marginal separation a large blood clot may form and be retained there.

More often the margin of the placenta separates and the blood collects between the membranes and uterine walls, either towards the cervix where the presenting part of the child may prevent its escape or near the fundus. The blood may (but rarely does) find its way into the amniotic cavity.

It is not however always that the blood does not escape externally, for the foetid may be small in quantity or so exceedingly profuse as to lead to a rapidly fatal issue of labour pains are present then it will be noticed that during a pain the discharge usually ceases, coming on again during the intervals of uterine contraction.

**Differential Diagnosis.**

This form of haemorrhage may be distinguished from unavoidable by the discharge ceasing during a pain whilst in placenta praevia it is increased. On a vaginal examination the membranes or presenting part of the child will be felt, whereas in placenta praevia a soft substance the placenta will be found.
sitter can be near to the os.
The os in the former is thin and dilatable according to the amount of discharge, in the latter very thick and strongly marked with peristalsis. There is also the history of the attack, discharge following accident, in the latter the discharge came on of itself from ordinary causes. For the severity of the symptoms, from rupture of the uteri. This latter rarely happens until after the labour has been some time in progress and after the escape of the big liquor, whereas haemorrhage usually occurs either before labour has actually commenced or at an early stage. The recession of the presentation and the escape of the foul in the abdominal cavity and in cases of rupture will further aid the diagnosis.

**Prognosis.**

When there is an external show of blood the prognosis is not so unfavorable, as means can be taken early to check the discharge. In the concealed haemorrhage it is more fatal, owing partly to the fact that extreme prostration may occur before the existence of haemorrhage is made out, and partly owing to the accident happening in weakly and debilitated women. The prognosis of the child is still more grave, owing to the fact, that when blood collects between the uterine and placenta, the placental portion of the latter is purely external, and the child then also dies from haemorrhage, or else is deprived from nutrition from the maternal circulation.
Treatment

Treatment must necessarily depend according to circumstances. If the haemorrhage is slight, knowing that the detachment of the placenta is also only slight, pregnancy not having advanced to full term, we may be able to subdue it by rest in the recumbent position, cool drinks and astringent medicines, such as pellite acid, acetate of lead, or sulphuric acid with syrup of rose. Grætals should at the same time also be administered to arrest of possible uterine contraction.

If this treatment fail and the discharge is profuse, the vagina should be plugged and a firm abdominal binder applied. This may give time for coagulation to occur and thus close the bleeding orifices.

The vagina should not be plugged if the patient has not advanced to full term of pregnancy as by reflex action it is likely to bring on labour; but if the haemorrhage is at all profuse, the prospect of saving the child is greatly diminished or even impossible so that this consideration may be of little value and therefore the former expedience can be effected the better.

Should however the discharge have been very profuse from the first and the patient advanced to full term of pregnancy, our object must be not to attempt to control the bleeding, but above all to bring on uterine action and safe its delivery. So long as the membranes remain intact the liquor amnii, prevents the uterus from contracting firmly about the body of the child.
In order therefore to control flooding, the
uterus should be made to contract as much as
possible and evacuation should be permitted in
the placenta; both of these objects are accomplished
by rupturing the membranes, because the uterus
more firmly grasps the child and the placenta
being compressed between both, the blood is
prevented from escaping so freely from the
uterine surface, and coagulation more likely
attains place. A dose of digi- made now
administered to increase the tone by means
of the uterus, or puerperium with the same
difficulties in view, may be useful. Usually
of these has been much discharge, the os is
dilatable but if not and the flooding
continues, Barnes has found it useful for
admitting the os and the vagina should be
plugged and an abdominal binder firmly
applied to prevent the blood collecting
internally. This usually controls the haemorrhage.
When the os is sufficiently dilated and
the patient is not too exhausted, turning
by the episiotomy preparatory, or by the ordinary
methods should now be resorted to; or if
the head can be felt low down in the
pelvis, it may be easier to complete
delivery by means of the forceps or to perform
craniotomy.
After the child is expelled, there is usually
no difficulty in removing the placenta &
the haemorrhage ceases.
Placenta Praevia or Unavoidable Haemorrhage.

Normally, the placenta is situated at the fundus of the uterus, but occasionally it is misplaced and occupies a site in the cervical portion of the uterus, either completely covering the internal os, the so-called "complete placenta praevia" or "placenta centralis", or else occupying more or less of the side of the cervix, then termed "partial placenta praevia" or "placenta lateralis". Such peculiar situation of the placenta necessarily involves its detachment from the subjacent uterine tissues with which it is in contact. This may take place gradually as the latter months of pregnancy advance or more suddenly when the first stage of labour comes on, in which the os becomes dilated, tearing asunder the attachments in the course of the uterine contractions. In either of these cases it causes haemorrhage from the retro placental vessels, and it is in its strictest sense unavoidable as it is impossible for the child to be born without more or less haemorrhage. Sometimes of the most alarming description and as Haefeli well puts it "There is no error in nature to be compared with this, for the very act, which the uses to bring the child into the world, is that by which she destroys both it and the mother."

Causes

The causes of placental praevia are but little
The most likely cause of placenta previa is that suggested by Tyler Smith, in which he supposes that the cord is not implanted until it reaches the lower part of the uterine cavity.
understand, but various theories have been advanced by the following gentlemen, viz. Tyler, Smith, Czerny, Bernard, Leishman &c. &c. but they are all more or less speculative and into which I need not enter. Lastly, Placenta Praevia occurs more frequently in multipara than in primipara and is met with about once in every 480-500 cases.

**Symptoms.**

Although the placenta occupies an abnormal sit throughout the entire pregnancy, it rarely gives rise to any symptoms before the last three months of intra-uterine life. It is not at all improbable that many abortions are caused in the early months by this complication, the fact of the placental attachment being unnoticed.

The earliest symptom likely to cause any suspicion is a sudden haemorrhage, more or less profuse, coming on without any appreciable cause. May be the patient is in bed and she says the discharge comes of itself. The nearer the end of the pregnancy, the discharge is generally the greater. It may become checked for a time again to come on either in a few hours, days, or even weeks may elapse before a repetition of the haemorrhage. Flooding rarely occurs before the end of the sixth month, but often nearer the end of pregnancy, and sometimes not until labour has actually commenced. It frequently takes place at a time, which coincides with what would have been a menstrual period, doubtless many
The congestion of the uterine organs at that time. The first attack frequently happens at about the middle or end of the eighth month. The suddenness of the attack, the profuseness of the discharge, and its coming on without any evident cause are peculiarly suspicious (Meadows 2nd Ed. p. 345).

If labour has actually commenced, whether premature or at full time, the discharge is increased during uterine contraction, owing to fresh portions of the placenta being detached and fresh vessels being torn and left open under these circumstances during each succession pain blood escapes in increased quantity and diminishes in the intervals.

A vaginal examination of the os is sufficiently open, which is generally the case, an account of the relaxation produced by the loss of blood; we shall usually find some portion of the placenta presenting. The os is found to be thicker, often and more spongy and the pulsation in its substance more strongly marked than in an ordinary case where the placenta is normally situated. If it is a case of central presentation we shall come across the characteristic spongy tissue of the placenta sticking up the whole cervix and feeling somewhat like a large blood-clot, but firmer and less fragile. In other presenting part will be detected. Should it be a case of partial or lateral implantation, the mass just described will be felt on one side only of the circle of the os, its edge being clearly distinguishable, and on the
other side, riven. The bag of membranes in some portion of the child will be detected. In some cases where there is only slight maternal presentation and the cervix is high up or if the station is not advanced to full term, some difficulty may be encountered in thoroughly making out the diagnosis. In such cases it is essential to introduce the finger or two fingers or even the whole hand, so as to thoroughly explore the condition of the parts. The stethoscope may prove useful in determining the accuracy of the diagnosis, by examining over the lower portion of the uterine specimen or the placental material that is absent from the normal site.

Source of the Haemorrhage.

The source of the bleeding is a disputed point, according to Hamilton & Simpson. The chief source is from the placenta itself. The supply of blood being maintained by the vessels still connected with the attached portion of the placenta. According to Brailsford, the first detachment of placenta arises from an excess of growth of the placenta over that of the cervix, a structure which was not formed nor designed for placental attachment, and which is not fitted to keep pace with the placenta. Hence loss of relation; hence placenta which goes beyond its site and haemorrhage results.

Where there is no haemorrhage until labour commences, the first effect of pain is to arrest uterine vessels. The feeding arteries of the uterus are closed by coagula formed in their horn coats; they may therefore not burst out much blood. Such is not the case.
However with the veins, one portion is connected with the large net work of uterine veins, the other leads directly into the cavernous structure of the placenta. Through both these orifices, blood may be discharged, and consequently the haemorrhage arises both from the expanded uterine sinuses and the placenta itself.

Diagnosis:

Unavoidable Haemorrhage

It may be distinguished from accidental by its increase during a pain. By its occurring without appreciable cause. By vaginal examination, when some portion of the placental mass will be detected. From a large blood clot, by this being more easily broken down and not offering the firm resistance of the placenta, also by the increased pulsation in the region of the cervix.

Treatment:

The treatment of this dangerous complication in midwifery practice has been much controverted. I shall therefor give an epitome of the treatment recommended by several eminent practitioners.

It may be divided into two sections.

I Temporising

II Action

I Temporising Treatment

If the haemorrhage occurs before the child is viable that is before the end of the seventh month, and the discharge has not been great, then some effort may be made to sustain the flow and allow time
To escape so that we might have a reasonable hope of saving the child. In order to attain this desirable result, perfect rest of body and mind should be enjoined. The patient should be placed upon a hard bed, with the pelvis raised and cold water clothes should be intermittently applied over the external genitals and the lower portion of the abdomen. Cold drinks may be allowed; and no unconditioned fluids should be allowed from the supine position, until all discharge has completely ceased. Medicines by the mouth will be of little avail, but astringent vaginal pessaries of matico, perchloride of iron, might be used with advantage as local hemorrhostatics.

Should however the discharge be excessive and be accompanied by pains in the child, then reached a viable age, then temporary means should be in use in order if the discharge were for the mean time stopped, it will come again at some future time without warning and may place the patient's life in jeopardy, and hence in these cases more active treatment must be adopted to prevent the patient from being subjected to such imminent risk.

II Active Treatment.

Several methods have been professed for more active treatment, our chief endeavour is to stop the haemorrhage and empty the uterine cavity as speedily as possible. Our first treatment then would be to bring on labour pains, if these be absent, and no method is generally so
Office occurs in rupturing the membranes. This allows the liquor amnii to escape and the uterus to pass the child more quickly and thus bring down more quickly the descending presenting part. There is usually not much difficulty in rupturing the membranes, by a prick or some suitable instrument, especially in cases of partial presentation; but if it be a case of complete placenta previa it would be well to pass the instrument along the side of the placenta, after attaching the part where it is least attached to the cervix.

If the bleeding is increased or uncontrolled, it can frequently be arrested by plugging the vagina or better still the cervix itself, and if the os be undilated Barnes' dilating bag should be used until the os is sufficiently open to permit of either the natural passage of the child, childbirth, or separation of the placenta.

By plugging the vagina and cervix after the evacuation of the liquor amnii, the presenting part of the child pressing down upon the firm vaginal ring compresses the placenta between them and hence greatly diminishes the flow of blood from the ruptured vessels. When the plug is in place, other means may be adopted to excite uterine contraction. Repeated doses of ergot should be given, a firm abdominal binder applied and occasional friction used over the uterus, or salvation might be employed to bring on the pains.

On the removal of the plug, in a few hours' time it will generally be found that the os is sufficiently dilated to admit of labour being terminated by the natural means. In that case
The haemorrhage usually ceases, although the pains continue. If, however, it does not do so, then further means must be adopted. Turning has always been considered as the remedy to placental retention, when the natural means have been insufficient to cause the birth of the child, but this operation should only be performed, when the haemorrhage has not been too excessive, and when the patient has not become much infected and the os is perfectly dilatable either naturally or by means of the forcipe. In all cases of possible the bi-polar method should be adopted, but if the bi-ceramic has long been discharged and the uterus, in a state of spasm, it will be almost impossible to turn by this method, then the ordinary way will have to be used.

In cases of partial presentation there will not usually be much difficulty for the introduction of the hand will pass along the side of the placenta and will act as an efficient plug, and when a sort is caught hold of, on withdrawing the hand, this will act in the same manner and completely control haemorrhage by pressing down the ruptured utero-placental vessels.

When the placental attachment is complete, it will be more difficult to perform the operation of turning for you must either pass right through the substance of the after-birth or else detach some portion and pass the hand along the side. In this case also the hand and arm act as efficient plugs. After the delivery of the child the haemorrhage usually ceases and the after-birth is expelled in the natural way.

In cases where the discharge has ceased and the
had present labour might be terminated more easily by means of the forceps or by cesareotomy than by turning.

Should the patient be much enfeebled from loss of blood or otherwise unfit for the operation of turning, then the treatment proposed by Simpson and Barnes should be adopted, viz: the entire or partial separation of the placenta. Simpson recommends the entire separation of the placenta in the following cases:

1. When the child is dead.
2. When the child is not yet viable.
3. When the haemorrhage is great and the os uteri is not yet sufficiently dilated for safe turning.
4. When the pelvic passages are too small for safe and easy turning.
5. When the mother is too exhausted to bear turning.
6. When the evacuation of the baby commences fails.
7. When the uterus is too firmly contracted for turning (Selected Obstet. Works p. 68).

The entire separation of the placenta is not a feasible operation and the thrill to the mother is quite as great as that of turning. Therefore the modified plan of Barnes is more preferable. Barnes describes his operation as follows:

Pass one or two fingers as far as they will go through the os uteri. The hand being passed into the vagina, if necessary, feeling the placenta, instimately the finger between it and the uterine wall; sweep the finger round in a circle so as to separate the placenta as far as possible.
finger can reach; if you feel the edge of the placenta, where the membranes begin, tear open the membranes carefully, especially if these have not been previously ruptured; ascertain if you can, what is the presentation of the child without withdrawing your hand. Commonly some amount of retraction of the cervix takes place after the operation and often the haemorrhage ceases.

Barnes divides the uterus into three zones or divisions, by two latitudinal circles, thus there will be three divisions, the fundal zone, safe placental sit, the middle were called the meridional zone, or safe placental sit. Often in this zone is protracted labour and frequently post-partum haemorrhage.

The lower or cervical zone is the dangerous placental sit. The lower polar circle is therefore the line of demarcation between maternal and lateral placenta. Below which line you have spontaneous placental detachment and haemorrhage; above which spontaneous placental detachment and haemorrhage cease.

Hence Barnes advised is to separate the placenta above this line of demarcation where the haemorrhage ceases, by partial separation of the placenta when the labour then becomes in all respects a natural labour.
V Post-partum Haemorrhage.

Post-partum haemorrhage is one of the most frequent and dangerous complications attending delivery and as it generally occurs without warning, it may place in a few moments time the patient's life in the greatest jeopardy, and hence the obstetric physician should have an intimate and extensive knowledge how to act in such an emergency. For the patient's life depends upon the readiness of action and the skill of the surgeon in attendance.

Haemorrhage after delivery is of much more occurrence in patients of the higher ranks of life than in those of the lower classes. Whether the artificial style of living amongst the upper class, leads to a more or less lax condition of body, which tends to cause uterine inertia, the chief cause of post-partum haemorrhage, or a question which has not yet been definitely answered in the affirmative. Post-partum haemorrhage may occur either (1) before or (2) after the separation of the placenta.

Causes.

During the completion of the second stage of a normal labour, the placenta is partly separated entirely during the last pains, and after the birth of the child the uterus contracts firmly and the placenta is expelled. The result of this firm contraction is that all the vascular trunks which ramify in the uterine walls are compressed and thus the flow of blood through them is prevented. If we refer to what Philerus already...
written about the anatomy of the muscular fibres of the uterine and the arrangement of the uterine arteries and sinuses. It will be seen that this arrangement itself favours the haemostatic action of the uterine contraction. If however, the uterine contraction is abortive or irregular, it will be equally understood why blood at a greater or less extent should still flow from the large vesicular sinuses.

Sometimes however the uterus does not contract sufficently firmly to effect the placenta and control the haemorrhage. This retention of the placenta may be caused by some anatomical peculiarity of the organ, such as when it is divided into or has detached septa, or when it may be due to atony of the uterus or to irregular contraction of the same organ or to recent adhesion of the after-birth to the uterus. Uterine inertia may then be regarded as the great cause of post-partum haemorrhage.

There are also other secondary causes which may produce this ineffectiveness of the contraction following the birth of the child. The womb finds itself unaided and after the birth of the child, it remains relaxed and haemorrhage results. Our obstetricians of the uterine from excess of uterine tonus or multiple pregnancy may act in the same way, it also may depend simply upon the condition of the uterine cavity either by natural precipitate labour, or by the use of instruments, tend to the same result. The patients who are already debilitated from some constitutional disease, may also be pre-disposed to it. Some patients also may be termed habitual bleeders, for they have an
Ordinary tendency to haemorrhage after delivery. Perhaps they may belong to the so-called haematuria of pregnancy.

Another important cause of post-partum haemorrhage is irregular contraction of the uterus. Part of this organ is firmly contracted, whilst the rest is relaxed. The latter very often being the placental site. This irregular contraction can often be made out, by placing the hand over the abdomen, when parts of the uterus can be felt hard and firm whilst the remainder is soft and flabby.

One particular variety of this irregular contraction is known as the "hour-glass" contraction, which undoubtedly depends upon a spasmodic contraction of the es internum, by means of which the placenta becomes encysted in the upper portion of the uterus, which is relaxed. This form of irregular contraction is of rare occurrence and is generally caused by defective management in the third stage of labour.

Adhesion of the placenta to the uterine walls may also cause haemorrhage, more especially as it generally the case in the attachment of only partial, and that the remainder of the placenta detaches. The cause of this adhesion may be some inflammatory disease of the placenta or of the mucus membrane of the uterus.

Mortal adhesion may generally be made out by observing the effect of pressure upon the fundus uteri. If feels hard and firmly contracted, nevertheless the placenta is removed. If while pressure is made, the penis is drawn down, it may be brought out of the vagina some distance, just as when the placenta is following it, but
Another symptom likely to be of value in determining whether the placenta is detached, is the condition of the umbilical cord. Should the afterbirth be detached, then the cord will be more or less soft and flaccid, but if the placenta still remains attached to the uterus, it will feel hard and tense from the blood not having escaped from it, and may be there will be a little amount of pulsation.
The instant the hand is removed from the uterine ascends the penis is drawn up again into the vagina. (Gray's Midwifery 2nd Ed. p. 483).

According to James the following symptoms are diagnostic:

You may detect supravaginal adhesion, if there have been immoral difficulties in removing the placenta in previous labour; if during the third stage the uterus contracts at intervals firmly, each contraction being accompanied by blood, and yet no following up the cord can feel the placenta in utero; if on pulling at the cord two fingers being pressed into the placenta at the root, you feel the placenta and uterine descend in one mass, a sense of dragging pain being elicited; if during a pain the uterine lever does not present a globular form, but is more prominent than usual at the place of placental attachment.

(Th. operations p. 440).

**Symptoms.**

The haemorrhage may commence immediately after the birth of the child, or last for some considerable time afterwards, either before or after separation of the placenta. It may begin gradually or suddenly. In the latter case the blood literally rushes away in torrents, placing the patient in imminent peril. The pulse becomes rapidly affected and may be reduced to a mere thread or become imperceptible. Syncope often comes on, or a feeling of intense dizziness or faintness. Extreme restlessness the patient throwing herself wildly about. The respirations become laboured and sighing and
The calls loudly for air; the skin becomes paler, cold and covered with purpuriform perspiration and of the haemorrhage commence on the side, loss of sight and hearing, palpitation, convulsions and death.

If when the haemorrhage commences the hand is blotted over the abdomen, it will miss the hand round ball of the contracted uterine, but will feel it indurated, soft and flabby, or else not be able to make it out at all.

In some cases when the cervix becomes contracted there may be all the symptoms of haemorrhage, and yet no blood escape externally. The blood collects in the cavity of the uterus and distends that organ until it may reach the size of when it was filled with the child and before delivery. These are cases of concealed internal haemorrhage. The same also may come about in cases of 'fire-plant' contractions.

**Preventive Treatment.**

The best means of preventing post-partum haemorrhage is the careful management of the third stage of labour. The hand should be placed over the uterus and firmly compressed during the birth of the child and the compression by an attendant should be kept up until the umbilical cord has been kept and cut and the after-birth expelled. After a while a firm abdominal binder should be applied, and all movements of the patient absolutely forbidden. On no account should the after-birth be removed by pulling upon the cord, for this causes the placenta to act as a kind of 'sucker' and
Cold should not be applied too long, so as to avoid the system generally from being too much depressed and thereby unable to bring about reaction. If therefore, as soon as the patient becomes at all chilled, heat should be applied to the part of body so as to bring about reaction and then if cold has again to be used it will bring about shock which we require.
pump up fluid from the uterine sinuses, to be expelled during uterine contraction. The placenta should be expelled by applying pressure over the fundus uteri. If the afterbirth is not expelled naturally in a few minutes time.

Should the patient be at all liable to post-partum haemorrhage, she should have a full dose of laudanum administered before the birth of the child, of service, by causing a slow contraction of the uterus, and then, after the expulsion of the placenta, patting the vulva and inside of the thighs with cold water, which by reflex action will further aids the uterine to contract.

**Treatment.**

In cases of haemorrhage due to retention of the placenta, the treatment to be adopted must of necessity be dependent upon the cause of the retention.

Our first object in all cases is to cause the speedy removal of the placenta, along with firm contraction of the uterine.

When retention is due to atony of the uterine, firm pressure should be applied over the uterine, whilst cold water or iced cloths should be applied over the external parts, and they should also be intermittently applied over the abdomen, whilst a full dose of laudanum should be administered. If these means fail, the hand should be carefully introduced into the vagina and uterine and should pass over the upper margin of the placenta and press it firmly. The introduction of the hand will usually cause active contraction and during
This contraction, the hand should be slowly removed or allowed to be expelled, bringing along with it the afterbirth. At the same time, the other hand should follow down externally, the uterus, as it expels both the hand and placenta. Pressure should be kept up over the uterus for some time, until all haemorrhage has ceased, and then the binder with pads should be carefully and firmly applied.

When the retention of the placenta is caused by irregular contraction of the womb, the hand should be carefully introduced into the vagina and inserted in the form of a cone, and by careful sustained pressure it will cause the spasm to relax, and we should then proceed to remove the placenta, as already described above. This irregular contracted state of the uterus is a rare complication and is chiefly caused by irritation of the womb by pulling upon the umbilical cord in endeavoring to remove the after-birth.

Placing the patient under the influence of an anaesthetic might be of service in loosening the spasm.

Should the placenta be made out to be adherent or partially adherent, then the complication is much more grave, as it is not always easy to remove the whole mass of the placenta, without leaving some portion behind, which may cause secondary haemorrhage or lead to asphyxiation, or by endeavoring to remove the whole mass the uterine structures may be injured in the attempt.

The afterbirth will of necessity have to be removed artificially, and in order to accomplish this, the
left hand should be placed externally over the
uterus to steady it, whilst the right—guided by
means of the umbilical cord to its attachment.

With the placenta: the lower margin of this organ
should now be brought forward, and the fingers carefully
inserted under it and gradually feel it off
lying the patient can possibly to avoid
injury of the uterine walls—It is not
always easy to remove the whole mass and
it is therefore better to do too little than too
much, for fear of injuring the maternal structure
whilst it is not uncommon for small portions of
the placenta to be expelled some time after the
greater bulk of the after-birth has been
removed.

After the after-birth has been expelled the
case should be treated by intra-uterine
injections of antispasmodics, so that if possible
we may lessen any evil effects from abortion.

Post-partum haemorrhage, after expulsion
of the placenta.

Sometimes after the labour has terminated
quite happily and all seems to be going on well
the patient complains of some slight excess of
discharge which may as suddenly cease or from
until it becomes most profuse, literally coming
away in torrents, saturating the bed and bed-
clothes, and running through on the floor and
placing the patient in a few minutes nearly
at the brink of death or in a state of profound
Syncope or cell after.
Causes.

A certain number of cases are no doubt due to mismanagement of the third stage, but there are other cases where the causes upon which the bleeding depends are comparatively little and sometimes not at all within our control. The most important and at the same time most common cause is uterine inertia. This may depend upon simple exhaustion of the uterine fibres from prolonged labour or from some cause which has tended to weaken the constitution of the patient, such as severe wasting diseases, Bright's disease, and the exhaustion consequent upon rapidly succeeding pregnancies. It has been observed when labour has been remarkably rapid, either from violent expulsive effort or deficient resistance, there is a tendency to post-partum haemorrhage. It is therefore preferable to have a partial emptying of the uterine cavity in this way. The fibres have time to contract sufficiently for the efficient closure of the uterine vessels; whereas sudden contraction, although perfect enough to ensure delivery, cannot maintain itself and is often followed by unremitting contraction, during which bleeding is almost certain to occur. In all cases then, if instrumental interference, the uterus should be emptied of its contents gradually.

Sumeurs, either fibroids or polypi, may also be the cause of post-partum haemorrhage by interfering with the perfect closure of the uterine vessels during contraction. In the case of the polypus, the bleeding may come from
The surface of the placenta itself.
Lacerations of the cervix may also cause bleeding, or also other injury of the maternal soft parts, as of the vagina, a Perineum. Invasion of the uterus may also be cause of bleeding.

Symptoms.
The symptoms of post-partum haemorrhage are bleeding and the general symptoms to which it gives rise or to which is continued.
The uterus will be found flabby and soft or we may feel it contracting irregularly, with profuse discharge between the intervals of contraction.
There may be no escape of blood externally whilst bleeding may be going on to an enormous extent internally. In this case some distention of the fluidic uterus may have arisen which has closed the external orifice mechanically and thus at first prevented the flow of blood externally, but subsequently a clot of blood may form and still more effectively close the orifice more especially if the os or cervix be at all contracted.
In these cases the womb will be found enormously distended and may reach the soj, before the evacuation of the placenta and late, and the woman will complain of great pain, not from contraction, but from over-distension. Along with these symptoms, there will also be the ordinary symptoms of excessive loss of blood. If the hand be introduced into the vagina and uterus, the fingers will become entangled with an enormous...
Mass of blood, clots, and fluid blood, with which
the uterine is distended.

Treatment.

The third stage of labour should always be carefully
attended to and if there is any history of
previous flooding, a dose of ephedrine should be
administered and the external perineum bathed
with cold water to elicit uterine contraction
through reflex action.

The patient should be carefully and frequently
examined, for if it remain 100 or above
after a few minutes from delivery, it frequently
precedes haemorrhage.

If the patient has been well attended to
and should haemorrhage arise, our first
endeavour is to obtain firm contraction of
the uterus. The patient should be placed
upon her back, ephedrine administered, and
firm pressure given by the hand or by
kneading it applied over the fundus uteri,
cold water or ice intermittently applied over
the abdomen & external perineum, or a lump
of ice should be inserted into the uterine
cavity, the effort of which frequently causes
efficient and firm contraction. If these means
fail the hand should be introduced into the
vagina and all clots removed. The hand should
then be made to enter into the uterine cavity.

The irritation set up by the hand in the
uterus, combined with external pressure, often
stimulates contraction, and the flooding ceases.
Should however this desirable result be not
attained, intra-uterine injections would have to be resorted to. First it would be desirable to try alternate injections of hot and cold water, and if these are not successful the Barnes method of hypertonic injections must be tried, or perhaps transfusion.

If a faradic battery be near at hand certainly should be tried, and in the mean time whilst preparations are being made for the intra-uterine injections, compression of the abdominal vessels might be of service.

According to Barnes, if the simplest remedies have failed to produce contraction, and before the patient is thoroughly exhausted, then all force must be made to stop the bleeding by means of leeches.

The following method of using leeches is recommended by Barnes.

"You have the Hamman's syringe adapted with an uterus tube eight or nine inches long. Put a deep basin or marked jug from a mixture of four ounces of the big, three ounces of nitric acid, 1/2 lb. of sal ammoniac, and 12 ounces of water. The suction tube of the syringe should reach to the bottom of the vessel. Pump through. The delivery tube two or three times to expel air, and insert gently of the apparatus with the fluid before passing the uterine tube into the uterus. Then, provided by the fingers of the left hand in the os uteri, it should be passed quite up to the fundus. Then inject slowly and steadily. You will find the fluid come back into the vagina mixed with coagulated caused by the hypertonic action of the fluid. The hypertonic action of the iron is
produced in three ways; first, there is its direct action in constricting the blood in the minute vessels; secondly, it acts as a powerful astringent on the inner membranes of the ulcers, strongly corrugating the surface and thus constricting the minute vessels; thirdly, it often produces some amount of contractile action of the muscular wall.

In cases where there is a state of collapse and the vital spark seems to be slipping away, then we must determine whether we shall afford the last chance of restoring vitality by means of transfusion. If this is determined upon, then the operation must be performed according to the method advised by Dr. Allen so briefly and best.

In the course of any treatment, which is adopted, the general condition of the patient must be attended to. The tendency to perspiration must be combated by free stimulation with balsamic and small doses of opium. Perfect rest in the recumbent position should be enjoined and the patient had better be raised and the head kept low. On no account for some considerable time after the hemorrhage has ceased, should the patient be allowed to move so as to prevent if possible any recurrence of the discharge.

In the after treatment, general principles must be adopted so as to counteract any tendency to re-cess. Small portions of good easily assimilated food should be allowed, gradually returning to a more precious diet. In a short while
Primary, more especially combined with some preparation of iron will be needed to restore the patient from the great depression into which she has been thrown.

VI. Secondary Haemorrhage

Usually after several hours have elapsed after the birth of the child and the separation of the placenta, there is little fear of haemorrhage arising, but cases sometimes occur after everything has gone on satisfactorily, it may be for hours or days or even for weeks, haemorrhage of a more or less profuse character sets in; such haemorrhage is termed "Secondary Haemorrhage."

This bleeding must be distinguished from a mere excess of the lochial discharge, for in some women, this continues more or less profuse during the fourth or fifth month or longer and if it should happen to be a point in quantity, all the treatment necessary will be keeping the patient in the recumbent position and a few doses of Nux should occasionally be administered and after a lapse of a few weeks, some uterine vaginal injections such as of Tanine or sulphate of zinc should be used for a few times.

Causes.
The causes of Secondary Haemorrhage may be
Either constitutional or from some local condition of the uterus itself.

Among the constitutional causes are such as
produce disturbance of the vascular system of the body generally or of the uterine vessels in particular, from sudden assumption of the erect position, stimulants, or from a broken condition of the rectum,

Causes that produce a dilatatory effect upon the patient, such as Bright's disease, Miasmatic poison &c.

Local conditions however cause more frequently the haemorrhage under consideration and these may be divided according to Mayfair under the following headings.

1. Inflammation & insufficient contraction of the uterus.
2. Clots in the uterine cavity.
3. Portions of retained placenta or membranes.
4. Retropulsion of the uterus.
5. Laceration or inflammatory state of cervix.
6. Thrombosis or hematoma of the cervix or vagina.
7. Inversion of the uterus.
8. Fibroid tumours or polypi of the uterus.

The first four of these conditions are the most common and the symptoms will be more or less according to the cause.

Treatment.

In every case in which secondary haemorrhage occurs, care must be taken to diagnose the cause and a vaginal examination will of course be necessary. Should the bleeding be slight and dependent upon general constitutional causes, then rest in
in the recumbent position, upon a hard bed, should be advised, and all causes of excitement absolutely forbidden, and doses of sleep combined with a small quantity of opium, or Indian hemp should be administered and repeated every four hours. Astringent vaginal poultices may be of advantage and attention should be paid to the condition of the bowels. In more chronic cases a mixture containing beef, sulphate of iron and small doses of magnesia sulphur will be serviceable.

If however the haemorrhage be excessive then more active treatment will have to be adopted. The abdominal binder should be reapplied very firmly and cold should be used; and if this be ineffectual then we should resort to washing out the cavity of the uterus with hypophos or perchloride of iron.

Should the haemorrhage arise from local cause and the diagnosis be made out accurately, then the treatment must be accordingly. In cases of retained portions of placenta or membranes or blood clots, the cavity of the uterus must be emptied as speedily as possible by introducing the hand into the vagina and uterus and forcibly aways its contents.

After removal, the uterus should be washed out with some antisepthic liquid to avert the risk of septicemia.

In cases of retention, the uterus must be replaced in position and kept in situ by means of a pessary.

In all other causes of this kind of haemorrhage it must be treated according to the cause, es
Having now described the symptoms, causes, prognosis and treatment of the various forms of Haemorrhage, during Pregnancy, Labour and after Delivery, I will state from what authorities I have joined the information, and also say, that during midwifery practice for a period of seven years, in which I have attended several hundred cases, it is the treatment that invariably adopted when occasion required and which I would strongly recommend — The authors whom I have consulted are — Mayfair, Barnes, Leishman, Simpson, Macleod, Milne, Lloyd Roberts, also several authors on diseases of Women, and Sunday papers published in the various journals.