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Thesis submitted for the degree of Doctor of Medicine by

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Title of Thesis.
"Some points in the management of the third Stage of labour and the puerperal State"

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Some points in the management of the third stage of labour and the puerperal state.

The following suggestions are based upon the Experience of upwards of 1000 cases of labour conducted by myself, & the consultation work of over 2000 cases conducted by the midwife to the Worcester Maternity Lying-in Society to which I have for the past ten years been the consulting accoucheur & I have been led by this Experience to an ever increasing belief in the immense importance of this subject and I am sure that carelessness in many of the details of management in this particular matter is the source of life long suffering & incapacity to many women as well as to an increase of the mortality of childbed.

The proper management of the third stage of labour is most Essential towards a safe puerperium and the complete Emptying of the Uterus is of prime importance towards the insurance of asepsis. The retention of small pieces of placenta shreds of membrane & to a less extent of clots

will often frustrate the most vigorous & well conducted use of antiseptics.

Every year I have been more & more convinced upon this points, and as I have taken increasing & more minute care to insure the complete removal of the secundines my cases have given me less & less anxiety, & the number of puerperal troubles has steadily diminished. If the uterus is emptied & care is taken that no septic germs are allowed to gain entrance to the genital tracts either at the time of the labour or afterwards the case will almost certainly go on satisfactorily to a safe & rapid recovery may be suspected - Secondary haemorrhage becomes a thing almost unknown and all septic troubles are avoided. This is the case in normal and easy labours and a fortiori in severe & instrumental labours, when there may have been lacerations of the cervix vagina or perineum, or of all, and where absolute asepsis is of still greater importance, what an immense danger is added to the case, if a piece of placenta or membrane is retained within the uterus & there

decomposing, gives rise to a septic discharge which bathes the raw surfaces as it drains away. and I am convinced that if a piece of membrane remains within the uterus for more than two or three days it will become septic in 3 cases out of 4 in spite of the most rigid employment of antiseptic precautions, and although it may be promptly washed away by a uterine douche yet by the time that symptoms occur indicating its presence the mischief may be done & the poison have got beyond reach. The complete emptying of the uterus is also the greatest safe guard against immediate post partum haemorrhage, and this trouble has been less & less frequent as I have strived increasing care upon this vital point.

Before proceeding to the first part of my thesis. "The management of the third stage of labour" I should like to glance for a moment ~~at~~ at the anatomy of the part involved & at the development of the placenta and membranes, and also at the mechanical problem involved in the third stage of labour - During the

process of growth of the ovum the
decidua reflexa and decidua vera
have become united thus obliterating
the cavity of the decidua & the two
together being blended also with
the foetal chorion are practically
but the greatly spread out edges
of the placenta, which latter has
been formed from the decidua
serotina & the villi of the chorion. During
the latter part of pregnancy the connexions
between the placenta & membranes on the
one hand & the uterus on the other become
less & less intimate & they should at
the time of birth be so slight that the
uterine contractions easily sever them.

The mechanical problem involved
in the third stage of labour is, That
the Uterus, a hollow muscle, has by
its own contractions to get rid. through
the OS uteri. of a membrane closely
lining its interior; the said membrane
being at one part, the placenta,
developed into a fleshy mass.

The manner in which the Uterus
accomplishes this is not always the
same. The usual and most favourable
way is when the placenta, which is
first detached, becomes rolled up

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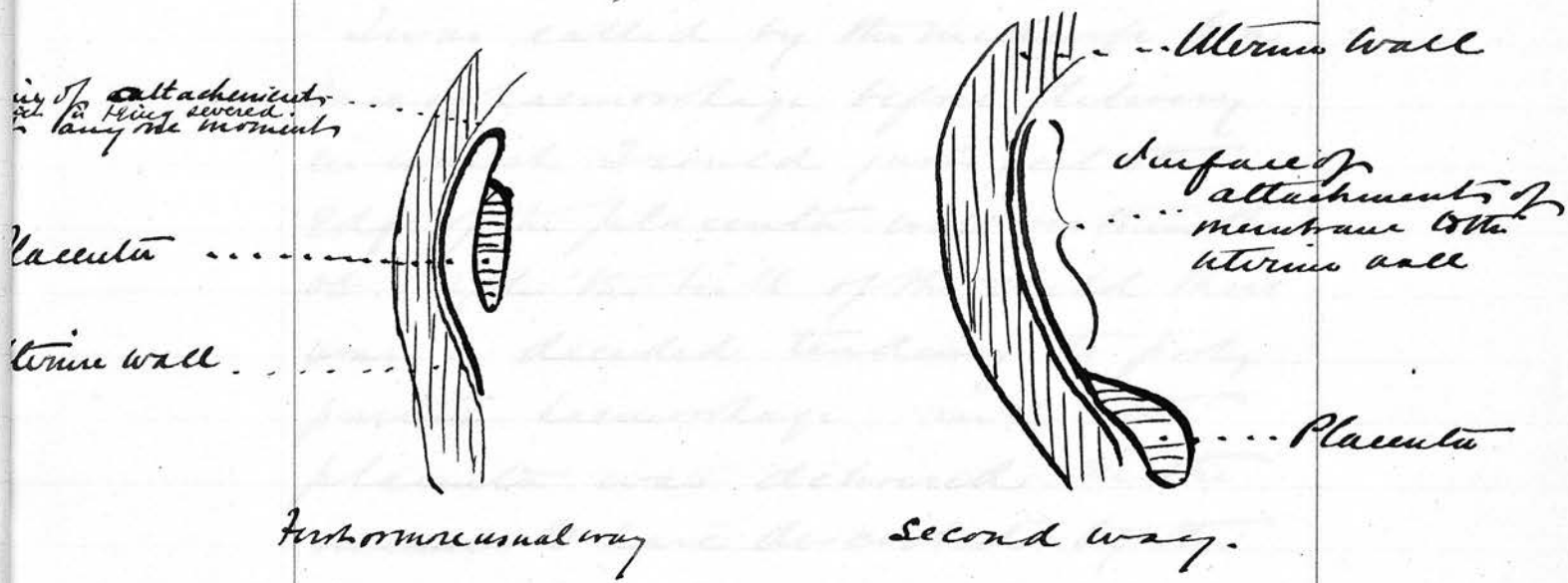
Edgewise and passes as it were through the membranes, peeling them off the uterine surface as it descends; that part of the membranes ~~first~~ nearest the placenta being first detached and that opposite to the placenta also being the last to come away. The placenta presents rolled up in the membranes which latter have their smooth internal surface now external. But the placenta is sometimes cast off in a different way presenting with its uterine surface downwards & uncovered by the membranes the latter following & with their uterine surface external. The reason why this occurs is often, I believe, as follows (1) That the placenta is in these cases attached lower down and nearer to the os than usual, so that when the uterus commences to cast it off the lower edge of the placenta is at once at the os, or very soon comes there, & there being no membrane attached to the uterus between the lower edge of the placenta & the os, or at most only a narrow zone which is at once stripped off: the placenta is free

to descend with its uterine surface in direct contact with the Uterine wall instead of passing down inside the membranes. After the lower edge of the placenta passes the vulva, the rest of it rolls out over the perineum, much as the childs head does in the act of extension, until the whole of the placenta is lying outside the vulva with its uterine surface downwards & the membranes trailing up into the Uterus with their uterine surface External. Greater gentleness than usual is now often required to remove the membranes entire, because there is a different mechanical process at work inside the uterus. Of course, if the membranes are very loosely attached, they often come away almost as easily thus one as the other; but this is not always the case and I believe for the following reason. In the first case the membranes are pulled off from above downwards & the strain on them is only ~~that~~ the tensile force required to overcome the resistance of each tiny line of attachment to the uterine wall as it is becoming detached whilst in the second case the force has to be

inserted against a considerable surface of attachment at one time - This point is perhaps more clearly shown in the diagram



First or unusual way. Second way.

In the second method probably as the Uterus contracts, & specially if very gentle traction be kept up upon the membranes the Uterine wall gradually tears itself away from them. But this second process is by no means so mechanically perfect, and usually takes much longer and is much more liable to result in tearing of the membranes.

Two other points bearing upon this question (q) that it is when the placenta is attached low down that this second process occurs; are 1st That the rent in the bag of membranes will be found near the Edge of the placenta. 2nd That

the liability to haemorrhage during the third stage is distinctly greater

Not long ago I had a case which threw much light on this point.

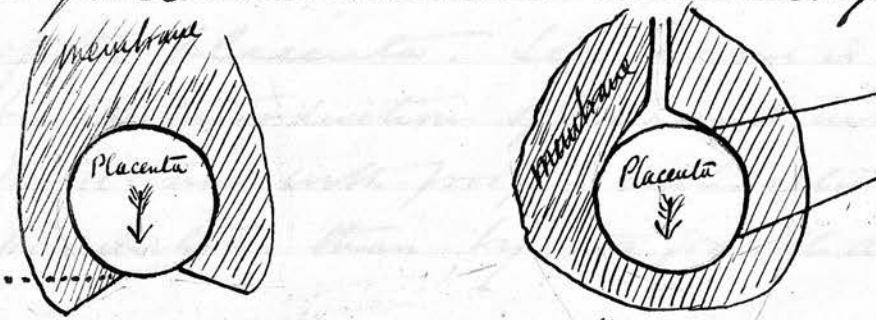
I was called by the midwife to a case of haemorrhage before delivery in which I could just feel the Edge of the placenta well within the os. After the birth of the child there was a decided tendency to post partum haemorrhage and the placenta was delivered in the manner I have described by the second process.

In the management of the third Stage of labour I am convinced that it is a mistake to be in too great a hurry to deliver the placenta.

As the child is being born the hand should be kept upon the uterus and follow it down keeping up gentle pressure & perhaps exerting very slight compression during the pains - The placental end of the cord should not be tied as by allowing it to bleed the bulk of the placenta is diminished. The cord should not be tied at all until pulsation in it has ceased otherwise the child will be deprived of blood which

which would naturally belong to it.
The hand should not be removed
from the fundus until the placenta
is delivered & firm contraction and
retraction obtained - From time
to time the fingers of the right hand
should be passed into the vagina
to ascertain the progress of the case.
No harm will arise from this
practice, which is deprecated by
many, provided care be taken
to cleanse both the vulva & the
scanning hand. I am convinced
that it is a great mistake to express
the placenta without first ascertaining
what nature is doing. If now
it is found that the placenta is
being gradually expelled nothing
in the way of interference is required
any undue haste in expressing
the placenta will very likely cause
irregular contraction of the uterus
leading to incarceration of the placenta
or what often happens the placenta
is torn away from the membranes
to a greater or less extent and
a lot of unnecessary difficulty is
caused to recover them - When the
placenta is lying in the cervix or

vagina a little gentle expression is often necessary to expel it and does no harm. As the placenta comes down the lower edge should be examined from time to time to ascertain whether the membranes are giving way for if they do tear it is generally at this point that the tear commences & if it is found that they are giving way it is good practice to desist from effort at expression & to pull gently upon the cord keeping at the same time two fingers of the left hand upon the placenta & by them rather retarding the descent of the lower edge. By this means it will be found that the the placenta is gradually rolled out the reverse way i.e. that its centre & then upper edge comes down & the rent is prevented from spreading round the edge of the placenta & when the strain finally comes upon the torn part it is at a greater mechanical advantage



placenta descends
chance to tearing
rent nothing. The
all is thus in process
e started it spreads
nd the edge of
Placenta

Surface of resistance
to further tearing
after the placenta
has been turned
round by method
described

Diagram illustrating the above

If the placenta is delivered by the method which I have described before as the second i.e with its uterine surface downward & have the membranes trailing up into the uterus with their uterine surface ~~exposed~~ external then gentle & continuous traction upon the placenta will usually safely bring them away entire but the traction must be very gentle steady & a period of ten minutes is sometimes required to effect our purpose. (of course it is understood that no traction must ever be made on the cord when the placenta is still in the uterus.)

But if hæmorrhage occurs either external or internal, more active treatment at once becomes necessary. The patient being upon her back the uterus should be compressed and an attempts made to express the placenta which can usually be accomplished; but if it cannot be easily done and any delay occurs, it is better at once to introduce the hand as it is probable that there is incarceration or adhesion of the placenta. Less harm is done by the introduction of the hand into the uterus with proper antiseptic precautions than by too prolonged attempts

ab Sepression. Sometimes it happens that the placenta is repelled into the vagina & that the membranes are tightly gripped by the OS uteri In this case the hand should be passed into the vagina & the OS dilated by 3 fingers after which there is usually no difficulty in extracting them entire.

If in spite of all care the placenta breaks away from the membranes, it is the best practice at once to remove them by passing the hand into the vagina & if necessary into the uterus.

If the placenta is found adherent it must of course be carefully peeled off. The fingers being insinuated beneath one edge, the separation is commenced at this spot & carried out systematically. The fingers carried to the cavity of the uterus & with their backs to the uterine wall should be moved backwards & forwards laterally with a sort of stroking movement. This will be found to separate the placenta much more easily & effectually than if they are pushed straight on - The placenta must

be freed right up to the Edge. In passing the hand into the Uterus it should if possible be kept outside the membranes but if this cannot be done it is well to make as small a rent as possible in them in passing the hand under the Edge of the placenta when all is free the whole mass together with the hand should be depressed.

One little point has seemed to me to be of some importance in introducing the hand into the Uterus (viz) that, when the hand has been passed into the vagina & the tips of the fingers inserted into the os the Uterus should be pressed down upon the internal hand by the External hand placed upon the fundus; care being taken that pressure is made in the right axis. After the ~~hand~~ Uterus has thus been forced somewhat into the internal hand, the latter should be advanced slightly & the process repeated, & soon, until the hand enters the uterine cavity. By this means there is not so much risk of doing harm as of straining the attachment of the Uterus as when the External hand is merely used to steady the fundus & make counter pressure, while the active force is imparted

to the internal hand. The two hands of course work together instinctively; but the point I want to bring out is, that the more active force should be rather in the external hand. Great gentleness of course must be employed in all these manipulations.

After all is completed, in this as in all cases where there has been more than the usual amount of interference the uterus should be douched thoroughly with ℞ an antiseptic solution such as tincture of Iodine ℥j to the pint of warm water & it is my practice to pass into the uterus afterwards a pessary containing 20 grains of Iodoform.

At the completion of the third stage a full dose of Ergot should be given as a matter of routine practice & during the first hour the uterus should be very frequently examined to ascertain whether proper retraction is maintained.

If it be found after careful examination of the placenta that any small portion of it or of the membranes has been left behind which it has been impossible to remove

without undue manipulation. I think that the best practice is to give an intra uterine douche about 36 hours after delivery, for by this time the adherent piece has probably become loosened & is easily washed away; & there has not been sufficient time for putrifaction to take place. If it is not removed by the first douche an Iodoform pessary should be introduced into the uterus & the douche repeated again next day & daily as long as necessary

Some accidents of the third stage of labour.
Retention of Placenta. This may be due to so called hour glass contraction Probably it is practically always contraction of the internal os Out of my 3000 cases I have never met with hour glass contraction in the body of the uterus. The treatment is to pass the hand in the manner already described when there will be no difficulty in removing the placenta.
Adherent placenta. The treatment of this has already been described. The delivery of the placenta may

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also to prevented or retarded arrested by adhesion of the membranes In this case the hand should be passed in and they should be gently separated.

Post Partum Haemorrhage. This when severe is one of the most alarming accidents which occur in midwifery A great deal can be done by careful management of the third stage of labour, in the manner already described to prevent its occurrence & I have with each year of experience had less & less trouble of this kind.

If the hand be kept on the uterus and gently pressing used, the uterus can generally be kept contracted but should it dilate instant warning is given to the practitioner.

I should like incidentally to state that in my experience Chloroform or any anaesthetic decidedly predisposes to Post Partum haemorrhage & this seen in simple easy cases & when any care has been taken to prevent it.

Post partum haemorrhage may occur either before the placenta is delivered or afterwards If it occur before the birth of the Placenta then the

latter should at once be expressed, or if this cannot easily be done the hand should be introduced into the uterus & the Placenta removed. If it occur after the birth of the placenta, then the uterus should at once be cleared of clots & firm pressure with the hand kept up upon it. The patient should in all cases be placed upon her back & the bladder emptied by a catheter. If haemorrhage continue in spite of this Hot water at 120° F should be used both by intra-uterine douche & hypodermically. This delightful to feel the uterus contract up instantly under the hot douche & I have scarcely ever found it fail; but should it do so recourse must be had to perchloride of Iron diluted & injected into the uterus; great care is necessary that the os uteri does not become blocked by clots & thereby prevent the ready escape of the fluid. It is necessary to keep the hand in the vagina all the time in order to ascertain that the fluid is escaping as it is pumped in. An assistant should have a hand on the fundus to make

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Sure that no undue distention of the Uterus is occurring. I have only once required to use the perchloride of Iron in my 3000 cases but this case it was entirely successful, instantly arresting the haemorrhage. No evil result followed beyond a somewhat severe puerperium.

The causes of haemorrhage before the expulsion of the placenta are. Implantation of the placenta low in the Uterus. partial adhesion of the placenta or membranes, Hour glass contraction (contraction of internal os) The presence of another child in utero is occasionally the cause of most alarming haemorrhage.

This occured to me once. The first child was born easily & naturally but its birth was followed by a most fearful rush of blood On placing the hand upon the Uterus I at once discovered that there was another child & this presenting by the feet was quickly extracted. I then immediately introduced my hand and removed the placenta (single placenta with two cords) Evidently it had been partially detached on the birth of the first child & the uterus being prevented

from contracting by the second child the haemorrhage had occurred all bleeding ceased as soon as the uterus was emptyed; but it was one of the most alarming cases I ever had to deal with.

Some patients are very prone to post partum haemorrhage. One lady whom I have attended 3 times has on each occasion had very severe haemorrhage, although on the second & third occasions it was considerably controlled by a full dose of Ergot just before the birth of the child. In this case there was no difficulty about the birth of the placenta which very quickly followed the child, & I was on the look out for haemorrhage, but just during the few minutes required for its separation the haemorrhage was tremendous.

The possibility of post partum haemorrhage coming from a laceration of the cervix or vagina or perineum should be borne in mind. In this case it is often associated with a firmly contracted uterus & this combination of contracted uterus with haemorrhage showed always

lead to the suspicion of this cause. Pressure will usually stop it or it may be necessary to scrub the surface with perchloride iron. I have never had any serious trouble from this cause in my 3000 cases.

After the completion of the third stage & as soon as firm contraction has been established an examination should always be made to ascertain whether any injury has been inflicted on the genital tract by the labour. Any laceration of the perineum should at once be stitched. There are two ways of doing this. The more usual way is to pass the stitches from the outside taking up all the tissues with the exception of the mucous membrane of the vagina - another and I think better way is, after temporarily plugging the vagina with some antiseptic material, to pass the stitches from the vagina taking up all the tissues except the skin. By excluding the skin from the suture a great deal of pain is saved to the patient & there is the additional advantage that there is no track along the suture from

the perineum, along which septic germs may travel. This method is a little more difficult to execute but the result is decidedly better; & a much more perfect repair of the Perineal body is Effected.

The propriety of stitching a ruptured cervix primarily has been suggested but has not found much favour so far I have never tried it neither have I ever found it necessary to suture a laceration of the vaginal wall. With great care in the antiseptic after treatment and absolute rest it is marvellous how much nature will Effect in this way I have known more than once an extensive laceration of the cervix combined with a tear in the posterior vaginal wall extending down to the muscular coat almost completely repaired by nature so that at the End of a month it was scarcely perceptible. As these accidents usually occur in a severe & exhausting labour I think it is not advisable to subject the patients to a tedious operation with only a doubtful prospect of success; with the parts obscured with blood it would be very difficult to accomplish.

The best routine antiseptic treatment during and after labour.

I have devoted much attention & thought to this point & have endeavored to arrive at the essentials for success.

They are as far as I have been able to ascertain as follows. Firstly. Early in the labour and before any vaginal examination is made the external part should be thoroughly cleansed and afterwards rendered aseptic with Corrosive sublimate solution (1 in 1000) They should be kept sterilized throughout the labour by the same means. The same solution should be used for the accoucheurs & the nurses hands; & for the instrument a (1 in 20) Carbolic Solution.

In making all vaginal examinations the rubber aperture should be employed however & the upper labium raised so that the examining fingers may be passed directly into the vagina without coming in contact unnecessarily with the external parts. I am quite sure that the greatest care in sterilizing ones own hands is often rendered negatory by the finger carrying in some septic matter from the perineum or external parts; & during labour the most constant

watchful care is required to prevent this & during the third stage the same careful cleansing is more than ever necessary during any manipulation in extracting the placenta. A basin of sublimate solution of course stands by the side of the practitioner into which the hand is immersed before each examination. No kind of lubricant should be used. It is quite unnecessary and only harmful. After the completion of the third stage the external parts are again sterilized & if the case has been a normal one, requiring no undue interference, an Iodoform pessary is passed into the vagina as far as possible during the first day or two the external parts are cleansed & then washed with the sublimate solution every 4 hours and later on less often. Sal alembroth pads are used from the first & the vagina is not interfered with in any way again.

Should any undue manipulation, instrumental or otherwise, have been necessary I give immediately after labour one intra uterine antiseptic douche & pass the Iodoform pessary into the

uterine cavity afterwards treating the case as just described. If any vaginal discharge gonorrheal or otherwise exists antiseptic douches should be used from the commencement of labour and immediately on its completion the intra uterine douche and iodoform pessary. During the puerperium in this latter case vaginal douches of sublimate solution should be used. After prolonged trial I have quite given up any vaginal douching in normal cases. After giving up vaginal douches I was in the habit of having pessaries of Iodoform passed into the vagina night & morning for several days, but my cases have done best since even this has been given up & the vagina kept dry & alone. Completely evacuate the uterus. Take care that no sepsis is introduced at the time of labour and afterwards keep the vulva disinfected & sealed up and scarcely ever with the case go wrong. The cases which do defy our best endeavours occasionally are those in which there is a pre existing purulent vaginal discharge.

If any membrane or a fragment of placenta has been unavoidably left in the uterus the best plan is, as I have stated before to give a uterine douche at the end of 36 hours & repeat it if necessary. Do not wait for a rise of temperature before giving it.

The temperature should be taken immediately after labour, when it will often be found to have risen a degree or more, and afterwards every 4 hours for a few days or longer if necessary, otherwise it is very easy to miss a puerperal rise. If it should rise above 100° the cause must immediately sought for & if it cannot be explained by the state of the bowels or of the breasts or by retention of urine or some cause not connected with the uterus it is best at once to wash out the uterus & introduce the Iodoform. No harm will result if it is done unnecessarily; & if we wait for more definite symptoms the most valuable time may be lost. This is not necessary to have fetor of the Lochia. The most septic cases are often quite free from fector.

The diseases of the puerperium associated with rise of temperature

Before proceeding to this subject I wish to glance at the lymphatic system of the pelvis.

Ellis in his demonstrations of anatomy 3rd Edition page 643 et seq. says. The lymphatic glands of the pelvis form one chain in front of the sacrum and another along the internal iliac artery. Their efferent ducts join the lumbar glands. Into these glands the lymphatics of the genital organs in the female & the lymphatics of the viscera and walls of the pelvis are collected.

164 The lymphatics of the vagina accompany the blood vessels to the glands by the side
666 of the internal iliac artery. The lymphatics of the uterus are in two set. One set accompanies the uterine vessels to the glands on the internal iliac artery another set issues from the fundus enters the broad ligament and accompanies the ovarian artery to the glands on the aorta. The last are joined by the lymphatics of the ovary & fallopian tube.

Quain Vol I page 507 The lymphatics of the External genital organs pass into

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the superficial inguinal glands. The efferent vessels from these perforate the fascia, come into connection with the deep glands, pass into the abdomen by the side of the vessels and being connected with a chain of lymphatics which lie along the external iliac artery, terminate in the lumbar glands.

Thus it is seen that the lymphatics from the whole of the genital tracts in the female pass eventually into the pelvis & that septic sores on the external part can lead, equally with those more internal, to the conveyance of sepsis into the abdominal cavity

The lymphatic system of the uterus is enormously increased in size and activity during gestation and is destined to play a most important part in the involution of that organ which follows delivery. Unfortunately for this very reason it has also enormous capabilities for the absorption of any septic material which may be present in the genital tracts; & there is probably no reason why septic trouble runs riot under these circumstances

of the puerperal diseases connected with rise of temperature of any importance I believe that practically all are due to septic infection. What is it then which determines the differences between them? Why is there at one time a localized pelvic inflammation, at another time a spreading inflammation associated with general septicaemia, or at another merely fever and death without any visible pathological change except an alteration of the blood? Are the local inflammations, not uncommon in midwifery practice, where strict antisepsis is not carried out, merely fortunate escapes from general septicaemia; or are they something Essentially different. I remember once in the Early years of my practice, before I was so much impressed with the importance of antiseptics in midwifery, that I had quite a small Epidemic of cases of puerperal pelvic inflammation. They were all cases attended during a period of a fortnight some 5 or 6. Yet not one of these had any symptoms approaching to general infection; and it does not seem to me probable that,

if there was not something essentially different in the sepsis causing these cases, from that which sets up general septicaemia; that they would not all have escaped the graver disease.

Is it then that the species of microorganism at work in the one case is different to that at work in the other; or is it the same infection acting under different conditions of the system & different surroundings; or is it that the dose is different. I think that my cases quoted above rather point to the difference in the species of the microorganism as the most important factor. But probably the surroundings of the case & also the dose of Bacilli are often of great importance.

Watson Cheyne suppuration & septic diseases 1889 Page 17 lines 5-10 points out the constant association of Streptococci with spreading inflammation & of Staphylococci with circumscribed abscesses and again at page 72 "Influence of species" he refers to the same point. He also says "The Streptococcus is by far the most dangerous organism from its power of creeping in the living tissues & states that

Fraenkel has found streptococcus pyogenes in a great variety of puerperal diseases especially in the so called Lymphangoitic forms in which it rapidly spreads finally setting up general septicaemia.

This is the commonest form of rapidly fatal puerperal fever associated with general peritonitis - At the bottom of the same page (72) he says the micrococcus pyogenes tenuis is specially associated in man with mild inflammations. Thus there is ample evidence in favour of the theory that Species has a vast importance in determining the character of the resulting inflammation. The same thing is seen in Surgical practice. A merely septic wound is a perfectly different thing from a wound attacked by Erysipelas.

Dose and Concentration is one of the most important factors on the part of the micro organisms in determining the kind of inflammation or Septicaemia that results. Ogston looks upon the difference between acute abscess and general pyaemia as principally a quantitive one. This is only partially

correct but at the same time dose & concentration (i.e. that the whole dose acts at one point) has a very important Effect upon the nature of the resulting illness Watson Cheyne septic diseases page 60. found in Experimenting with Proteus Vulgaris that rabbit were invariably killed by a dose of 225.000.000 bacteria while a dose of 56.000.000 bacteria always caused an Extensive abscess upon which the animals died in from 1 to 8 weeks. Fewer than 18000000 bacteria seldom caused any result whilst numbers intermediate between the last two caused abscess, the size of the abscess depending upon the initial dose. Similar results were found with Pyogenic cocci. Watson Cheyne attributes these phenomena largely to the simultaneous action of the products of the bacteria which assist them to gain a foothold by their injurious Effect upon the cells.

This question of the Effect of dose is one of very great interest and probably explains in a large measure the deleterious Effect of retained pieces of Placenta and membrane or clot in the uterus for they provide

a suitable soil for the development of countless countless of microorganisms. For supposing that only a few gain entrance to the uterus at the time of labour they would probably be at once destroyed by the healthy tissues and quickly washed away in the lochial discharge but if they meet with retained pieces of the secundines they find a soil in which to develope which is outside the influence of the living cells of the body; & these cells having no power over them they are free to develope unopposed until a dose is manufactured strong enough to attack successfully the uterine tissues themselves. and unless the whole mass is quickly swept away by the uterine douche general septicaemia may result.

The condition of the tissues into which the bacteria are inoculated is also a matter of vast importance; for if they are bruised and lacerated it is found that a much smaller number of Bacilli are able to Establish themselves, than when the tissues are sound. This can easily be understood

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if we bear in mind what occurs to the tissues when they are bruised not only is the vitality of the cells themselves lowered & the circulation of the part interfered with, and probably also the influence of the nervous system retarded more or less by the bruising of the terminal branches of the nerves; but numerous little clots are formed, by the laceration of the tiny blood vessels, which are outside the influence of the living cells and in which, any bacilli which may gain entrance to them have a greatly increased chance of establishing themselves.

This explains why, caeteris paribus, puerperal fever & puerperal inflammations are much more likely to follow severe & protracted labours.

Various things have an effect upon the virulence of micro-organisms. For instance their virulence may be decreased by cultivation outside the body or by the action of antiseptics not sufficiently strong to kill them or the contrary is supposed that their virulence may be increased by their passage through

some individuals Watson Cheyne
septic diseases page 81.

This probably explains to some
extent the increase in virulence during
Epidemics of septicaemia.

Local & seasonal conditions have
also a certain influence. It is known
that cold & moisture are predisposing
causes to diphtheria, & they may be
also but probably less may slight extent
in puerperal cases. and the frequent
occurrence of osteomyelitis in Berne
is an instance of the effect of locality.

Mode of Entrance of microorganisms
in the puerperal female

They may be carried into the genital
tracts by imperfectly sterilized hands
or instruments but this ought never
to occur. But I am inclined to think
from careful observation that they
are not unfrequently carried in
from imperfectly sterilized internal
parts by the examining fingers &
since I have paid very minute
attention to this point I have had very
much better results. I used to find
after most elaborate cleansing of
hands & instruments that still cases

of infection would prove true where occur but since it has been my practice to sterilize the vulva before each examination it is very rare that a case goes wrong. In private practice even good nurses require constant supervision upon this point.

and I am also, as before stated, very careful that the examining finger goes straight into the vagina. There may be some slight fistula in ano, unnoticed, which secretes a little pus, that may by the straining efforts of the patient be spread over the perineum. Lastly there may be some old pelvic suppuration discharging into the vagina or some other purulent vaginal discharge. This is not a common cause but that it does sometimes operate to defeat the very greatest care I am convinced and I have noticed on several occasions when a case has inexplicably become septic that the infant has also suffered from purulent ophthalmia. Sterilization of the vagina before delivery has perhaps diminished this risk; but in private practice it is not always possible

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to carry it out; as the practitioner often and the nurse also sometimes does not see the case until the head is down on the perineum; and it is always difficult to satisfactorily disinfect the vagina. It also seems to me that it would often be futile for this reason; that if a man is discharging into the vagina or if the vaginal mucous membrane is secreting pus although one might wash it away for the moment more would be at once poured out. Whether gonorrhoea can produce septic infection appears to be doubtful and many affirm that when it apparently does there is a mixed infection at work and they allege, that when glandular abscess occurs with gonorrhoea, that the gonococci are not found in the abscess, but ordinary pyogenic cocci.

If this is so we already know that glandular suppuration is common in gonorrhoea or that the influence, at any rate, is that there is probably often a mixed infection in gonorrhoea; or at any rate that the gonorrhoeal inflammation

gives the pyogenic cocci a better chance of obtaining a foot hold

Pelvic inflammation occurring in the puerpera

This may be either pelvic cellulitis or pelvis peritonitis or perhaps more often a mixture of the two.

I have already stated my belief that these inflammations are invariably septic in their origin or practically so

They are not due solely to a prolonged & difficult labour or to traumatism for however severe & tedious the labour may have been, if sepsis is excluded the puerperium is passed often without the least rise of temperature. Such a case as the following is an instance It occurred in a case which I alluded last year. A primipara with a slightly contracted conjugate & very rigid soft parts was delivered by the forceps applied above the brim before the os was fully dilated She had been a long time in severe labour and although I was not careful to give plenty of time the os was severely lacerated & the vagina

torn throughout the greater part of its length. Yet the suspension was perfectly normal & at the end of 6 weeks scarcely a trace of the severe injury remained. The temperature at no time rose above 99°. This is only an instance of many similar cases which I have had. How often in surgical practice we see the same thing. There must be often very great & extensive injury to tissue as a simple but severe fracture yet there is no inflammation.

I think therefore that there can be no doubt that these pelvic inflammations are septic. They may be roughly divided into two classes. Those which suppurate & those which do not. To take the latter first as they are by far the most common. Why, if they are due to septic infection, do they not suppurate. In some cases it may be that the dose of poison is not sufficient & that the poison becomes shut off by the resulting inflammation & the tissues are able to deal with those micro-organisms which have gained entrance to them or it may be that the species of Bacillus influences the result; but I think that often

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the following is the explanation. The Bacilli remain in the genital tract or at any rate are confined to the surface of any lacerations or abrasions or to the Endometrium. What there they form their poisonous products which are absorbed into the surrounding tissues and set up inflammatory swelling in them. That it is the constant feeding of the tissues with these poisonous product which keeps up the local inflammation.

That the products of some Bacilli are capable of producing this result is proved, for instance in the case of diphtheria in which disease it has been demonstrated that the Löffler Bacillus only exists in the false membrane but in which disease you get set up by the products of the Bacillus not only general disturbance of the system but a large amount of local swelling in the cervical glands & cellular tissue.

Sir Wm Woodhead page 363 Last paragraph.

Sirs Woodhead page 358 line 23 et seq speaking of the alkaloids formed by micro-organisms says "but in addition they have an extremely injurious local caustic effect, giving rise in many cases

to the death of the tissues with which they may come in contact at the point where the poison is formed" If some of these alkaloids cause the death of the tissues it is only reasonable to suppose that others of a milder nature, or perhaps in a less concentrated dose, may set up inflammatory action with suppuration.

The Effects of treatment directed to the sterilization of the Endometrium or of a sloughy condition of a laceration is immediately causing the disappearance of the surrounding inflammatory deposit is also very strong Evidence in favour of this view being the correct one. Again and again I have found a mass of Adhesions in the broad ligaments disappear like magic after washing out the uterus & passing an Iodoform Bougie into its cavity. If the cervical canal has closed up, & there is no reason to suppose that that anything is retained but that there is only a septic Endometritis present; then 20 grains of Iodoform passed into the uterus & cavity without any preliminary douche is quite sufficient & is much safer under

these circumstances The following case which occurred in my practice two years ago very well illustrates this point. Wm M. had had a swelling which developed shortly after labour in the right Broad ligament. It was painful and the size of an orange remained stationary for 10 days. The temperature varied during this time from 101 to 102. I then introduced into the uterus, which was now comparatively small & with its cervix contracted, a drachm of Iodoform gr xx. The vagina having been previously well douched. No further treatment local or general was adopted. In 36 hours the temperature was normal & never again rose; and in 4 days the swelling had practically disappeared, and it never gave any further trouble. This is more satisfactory than weeks of rest in bed & hot vaginal douches. It is very important to get rid of these attacks as quickly as possible when they do unfortunately occur, as the longer they remain the more likelyhood there is of secondary contraction taking place in the tissues which have

been inflamed The resulting traction on the uterus & appendages often produces displacement resulting in misplacement and and perhaps lifelong misery. The point which I particularly wish to insist upon in relation to these cases of pus & suppurating pelvic inflammations is that they often are due to morbid products absorbed from septic surfaces in the uterus or vagina and that they are kept up indefinitely by a constant supply of the morbid material which is there elaborated; and that if the supply is cut off by the destruction of the bacilli in the genital tract, then the tissues will rapidly free themselves of the poison and return to their normal state.

The same thing is seen in the inflammation and thickening which surround a foul ulcer, perhaps in the leg, which are kept up for months or even years so long as the surface of the ulcer remains septic. But sterilize the ulcer and immediately all the inflammation & thickening which surround it will disappear.

Pelvic abscess.

Pelvic abscess may be due either to a cellulitis which has suppurated or to a circumscribed pelvic peritonitis which has suppurated and which has become shut off from the general cavity of the Peritoneum by adhesions. Both these forms are due to the entrance of pyogenic cocci. This is admitted now by all authorities even if they do not accept the septic theory as accounting for the former milder cases which I have just described. As far as my own experience goes I believe that they are principally due to suppurating pelvic cellulitis although generally there is more or less pelvic peritonitis surrounding them. The pus however is as a rule in the cellular tissue. This is I believe true of cases which occur during the puerperium if not of those which occur apart from this state - Much difference of opinion has existed upon this point; but the balance of opinion appears now to be in favour of the view which Blake Playfair Edit 89 page 415 lines 12. to 14 says "It is certain that suppuration is more likely to occur in cellulitis than in

pelvic peritonitis. Its origin in pelvic cellulitis is also pointed out by Galabin page 774 & 775. He says Speaking of localized Parametritis "that suppuration may eventually occur".

I have already stated my opinion that when a localized pelvic inflammation does not suppurate it is very often because the pyogenic cocci have not themselves gained entrance to the tissues or do perhaps sometimes occur not a sufficient number to cause suppuration or that they are not of a sufficiently virulent form; but in the suppurating variety of cellulitis with which we are now dealing there can be no doubt that they have gained entrance to the tissues. It may be that they have been directly inoculated into the tissues at the time of labour; or that from various causes such as virulence or concentration of dose or from increased susceptibility from bruising of the soft parts they have afterwards been enabled to establish themselves.

If suppuration has now occurred what is its course. Galabin page 774 775 speaks of it as usually pointing

in the groin - Dust Lawrence of Clifton tells me that he has collected a series of 100 cases seen in consultation in which the abscess has pointed in the groin - My own experience has been quite the contrary Out of my 3000 cases of labour in which there have been several cases of suppurating pelvic cellulitis not one has pointed in the groin. The majority have pointed in the vagina & discharged themselves this way. two have discharged through the bladder or urethra - none through the Rectum -

The best treatment is I think Hot vaginal douching external fomentations opium & quinine internally attention to the state of the bowels; and if they point internally I believe it is best to allow them to open themselves. I have always followed this plan & with complete success. If the point externally they should of course be opened with antiseptic precautions.

When the abscess is due to an encysted pneumonic peritonitis it is much more serious than when due to a suppurating pelvic cellulitis. There is more risk, although fortunately not so great a

one as might be expected, opts
rupturing into the general cavity of
the peritoneum. and when it is opened
either by nature or by art it is more
difficult to heal as its walls are
formed of peritoneum instead of
cellular tissue - moreover the resulting
mischief is more serious from the
matting together of important organs
The cause of suppurating pelvic-
peritonitis is the direct passage of
the septic poison through the walls of
the uterus or Fallopian tube or through
the patent end of a Fallopian tube.
In a suppurating cellulitis the septic
poison penetrates into the tissues
surrounding the uterus
The diagnosis of Pelvic abscess rest
upon the temperature curve the occurrence
of Rigors and other signs of the presence
of Pus; combined with the physical
signs of swelling & possibly of fluctuation

Puerperal Septicaemia.

Puerperal Septicaemia occurs when the septic poison is not arrested in the pelvic organs as was the case in the localized inflammations which I have just described; but it from a greater intensity spreads to the system generally.

This greater intensity may be due as shown before to larger initial dose of the poison or to a debilitated condition of the patients or lastly and probably more important of all; the microorganisms which cause the general infection are of a different species and have an innate power of spreading in the tissues, without setting up a limiting inflammatory barrier. The Streptococci have been found especially associated with these grave forms of infection. As has been shown when speaking of the localized pelvic inflammations there is probably in most cases a different poison at work although of course cases overlap each other to a certain extent. It seems true something analogous to the difference which exists between simple inflammation & spreading inflammation or phlegmonous Erysipelas - The poison may gain

Entrance either by the Lymphatics or by the veins. I think the most usual channel is the lymphatic system; and when it is remembered how enormous is the increase in these vessels during pregnancy, it is no wonder, if any virulent microorganisms gain entrance, that they spread rapidly setting up an uncontrollable septicaemia, in many cases.

I think for clinical purposes at any rate puerperal septicaemia may be most conveniently separated into the following three varieties (1) Acute septicaemia without any visible pathological changes beyond a profound alteration of the blood (2) Septicaemia with pathological changes most commonly acute spreading suppurative peritonitis (3) Septicaemia or often only Septic intoxication, at any rate during its earlier stages, in which the microorganisms are chiefly and probably at first solely confined to ~~the~~ decomposing contents of the genital tract or to the lining membrane. In the first variety death takes place before there is time for any inflammatory reaction in the tissues. I have never met with a case of this description but a similar result is sometimes seen in the

acute specific fevers such as Scarlatina

The second variety in which ~~there~~ there is a marked inflammatory reaction which with the first variety constitute the majority of the so called heterogenetic cases, is when well marked most terribly fatal. I have seen four cases one occurring in my own practice and three in the practices of others during 16 years of work. They were all fatal, remorselessly fatal never pausing in their downward course.

They are I believe in the vast majority of cases due to primary inoculation of the tissues of the genital tract at the time of labour with a virulent spreading variety of microorganisms.

So far as my experience goes they set in almost invariably early if within the first 3 days much more often within the first 48 hours. I have not yet met with a case of acute spreading peritonitis in which there has been a period of complete apyrexia for 48 hours after delivery. This statement refers to the typical cases of this class but of course more often peritonitis often comes on at a later period in the third variety. When well marked

these cases are almost as fatal as the first variety usually running their course in a few days. The onset is usually but not always abrupt. There is probably an initial rigor after which it will be found that there is some pain over the uterus. The temperature is raised to 102 or 104 or more. The pulse is rapid. Swelling of the abdomen rapidly comes on. Each hour almost the tenderness & swelling spread higher & higher over the abdominal cavity. One early sign of great value is immobility of the abdomen during respiration. The lineas are drawn up & the aspect of the patients pitiable. There may be constipation or diarrhoea. After a time dulness comes on in the flanks. Septic Pneumonia or Pleurisy or both rapidly supervene & death ensues. 3 of the cases which I have seen followed this course two of them being associated with diarrhoea and one with constipation. But in the fourth case there was a much more insidious onset & throughout the whole course of the disease until death occurred on the third day there was very marked pain. The other symptoms of Peritonitis were however undoubted. The peritonitis

arises through Exclusion of the septic inflammation to the Peritoneum through the lymphatics &c. it may arise from septic matter passing through a patent tube - In one case which occurred in the practice of a midwife I am inclined to think that it may have taken its origin in rupture of an old encysted pelvic abscess. That this is a possible cause there is no doubt, at any rate although she attended some 4 or 5 cases during the same 3 hours Some before & some after this case all the latter did well without any use of temperature unfortunately an autopsy was not allowed. occasionally undeserved blame may arise in this way.

The prognosis of this class of cases in its well marked form is very bad any high temperature and rapid pulse are of bad omen. The pulse is rightly held to be the more important sign of the two In some very bad cases the temperature never rose much over 101 but the pulse was ominous from the first and the case ended fatally in 3 days

In the third variety in which the septic microorganisms are wholly or chiefly in the contents of the genital tract or in which they are contained in a septic endometritis there is a marked contrast to the variety just described. These cases are often described as autogenetic but they are not autogenetic any more than the first and second variety, as the septic material must be introduced from without but perhaps they more often take origin in a slight preexisting septic condition of the vaginal mucous membrane than is the case in the first two varieties; and for this reason that the contents of the uterus such as retained placental shreds & pieces of membrane form a more favorable soil for the growth of putrefactive bacilli than the healthy tissues and that these microorganisms which would be comparatively innocuous to healthy tissues are enabled to obtain a foothold in this dead tissue and multiply and to manufacture their poisonous alkaloids unhindered - A small proportion may arise in this way, but still in this third variety, as in the others in the vast majority of cases the septic material

is conveyed to the patient from without.
By whatever term these cases are
described I wish to insist particularly
upon their clinical difference from
the second variety in which as I think I have stated
the poison is usually inoculated
primarily into the tissues themselves
and spreads in them from the first.
The symptoms in this variety are equally
alarming at first. There is generally
a severe rigor followed by very sharp
rise of temperature and all the usual signs
of acute septic infection; but there
is not the same amount of pain
over the uterus and lower part of
the abdomen, and at first at
any rate there is no general peritonitis.
The uterus may be somewhat tender,
there may be more or less inflammatory
deposit around it, but the abdomen is
found to move with respiration and
tympanitic distension is not as a
rule early in its onset. Very often
the temperature rapidly falls to normal
again after a uterine douche or even
without it. There may be after hours
of apyrexia & then the same phenomena
occur again - I have come to look upon
this quick fall in the temperature, combined

as it is with an amelioration of the all the symptoms as of very favourable prognosis and of great value in showing that I have a case of this class to deal with. The irregular temperature with high peaks is in marked contrast to the continuously high temperature of cases associated with general peritonitis. These cases are generally at first cases of Saprœmia or septic intoxication; although if not promptly treated they may soon pass into the graver condition of septicæmia. and they often rapidly get well.

In describing these two, the second & third, varieties of puerperal fever I have purposely laid great stress upon their essential difference both in origin & course; but without doubt there are very many cases intermediate between the two & there is not of course clinically this rigid distinction I have merely illustrated my meaning by taking the typical cases of each & I think that it is a distinction of some practical value which I have endeavoured to point out.

The nature and sources of the poison in puerperal septic diseases.

The theory of Dr Lyon Baker and those who thought with him that Puerperal fever is a disease sui generis, and due to a specific infection is now quite untenable; I do not propose to go into this point further that to state my belief that it is the same thing as surgical septicaemia only occuring in a puerperal woman; and that it is in the same way as surgical septicaemia due to a variety of septic microorganisms. Holding this view I feel very strongly that if a patient get puerperal septicaemia it is my fault or the fault of some one of her attendants. This is I think true absolutely if we except the occasional and rare cases in which the poison was present beforehand in the maternal passages as in gonorrhoea or a discharging sinus.

What are the principal modes of access of the poison to the patient
(1) Causes affecting her surroundings
e.g. an insanitary state of the house.
The presence of a case of contagious disease in the house such as Erysipelas

a foul wound. Scalatina? or above
all another case of puerperal septicaemia
(2) Causes appertaining to the attendants
for example; their having recently been
in contact with septic cases. I would
wish here the importance of great
care that there is no septic focus
upon any of the Attendant such as
a slight poisoned wound upon the
finger or hand perhaps unnoticed
or any chronic discharge such as
otorrhea or ozoena. I feel pretty sure
that one fatal case of puerperal
peritonitis, which I have seen was
caused by a slight septic wound on
the finger of one of the attendants which
was not at the time considered of
any importance. I think that the
slightest suspicion of a septic wound
or sore however trifling upon the hand
or finger should be an absolute bar
to any one attending to a puerperal
or parturient woman. In the sudden
emergencies which occur during labour
you never can be sure that the damaged
finger or hand will not be instinctively
used to assist.
(3) Causes appertaining to the patient
(a) local such as gonorrhoea or

purulent Leucorrhœa, pelvic abscess
fistula in ano &c.
(b) As predisposing Causes debility of
the system Retention Lacerations
bruising and Lacerations of the Soft part

That puerperal septicæmia can originate
from any septic material conveyed
from a wound or from Erysipelas especially
phegmonous Erysipelas there is no doubt
nor is there any doubt that it can originate
from the post mortem poison. Can it originate
from one of the acute specific fevers such
as Scarlatina i.e. Can ordinary puerperal
septicæmia arise from infection from one
of these fevers without the appearance of
the usual symptoms of the fever. Scarlatina
is the Specific fever about which most is
known in this relation & I will take it as
the type in describing this cause.

My own experience is confined to one
case - a lady whom I attended, a primipara,
had a natural and easy labour and
went on well for two days On the third
day she had a severe rigor & the temperature
rose at once to 105. The pulse became
very rapid The lochia were abundant
& and free from odour (the most rigid
antiseptic treatment had been carried out)

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There was no tenderness over the uterus, neither was there then or at any subsequent time during the progress of the case, the slightest pelvic inflammation. On the following day there was slight sore throat and a typical scarlatina rash. It was afterwards found that the nurse, who slept with the patient from the first, had been assisting a neighbor to nurse her child with scarlatina just before coming to my patient. This lady had a perfectly normal attack of scarlatina followed by profuse desquamation; no complications occurred, and apparently her puerperium was unaffected by it so far as her uterine system was concerned. She locheia remained sweet throughout and she made an uninterrupted recovery. It is probable that in this case the infection was conveyed in the ordinary way & not through the genital tract & that the concealment of antiseptics had also tended to guard the genital tract.

The probability is that when puerperal septicaemia originates from a case of scarlatina there is a mixed infection at work, & that the scarlatina poison operates by preparing the soil for the pyogenic germs & rendering the patient

more vulnerable to them - Crookshank page 253
states that Bäumler & Friedenberg found
in the throat of patients suffering from
Scarlatina, and also from the internal
organs; micro organisms indistinguish-
able from Streptococcus pyogenes &
stated that the identity of this Strepto-
coccus with Streptococcus pyogenes
& Streptococcus puerperalis was
established by microscopic and
macroscopic appearances, and also
by Experiments upon animals - They
considered that the Streptococcus was
due to secondary infection to which the
door was opened by the lesion of the throat.
Possibly here when the Scarlatinal infection
occurs through the genital tract it acts
in the same way by opening the door to
this secondary infection, and it is possible
also that this secondary infection may
be existing side by side with the true
Scarlatinal poison & the conveyed with
it from the case of Scarlatina which is
the source of the infection - There is also
another way in which the Uterine system
may become affected by this secondary
infection. It may be that sometimes
the Streptococci gain entrance to the blood
through the throat lesion & that circulating

in the blood they may find a congenial soil in the uterine tissues whose vitality has been lowered by the pressure perhaps bruising to which they have been subjected during the labour. In support of this proposition I would instance the fact that animals will survive without ill effect a certain dose of septic microorganisms so long as they are uninjured; but that if any part of their bodies has been injured, as by the production of a simple fracture an abscess will be produced at the seat of the injury by a dose exactly the same as that which was harmless to the uninjured animal.

There seems to be a large amount of evidence in favour of the theory that both Erysipelas and scarlatina can produce puerperal septicaemia without showing manifest signs of the specific disease but there is not sufficient evidence to show whether in these cases there has been secondary infection at the same time - There has not at present been isolated any specific organism for scarlatina; but if such should be accomplished, it would be interesting & instructive to ascertain

whether a pure cultivation of it was capable of setting up puerperal septicaemia when injected into the genital tract of a puerperal animal.

In the collective investigation report on Puerperal pyrexia page 125 2nd paragraph it is stated "It is still a matter of opinion whether the poison of scarlatina can produce ordinary puerperal peritonitis without rash or sore throat.

Those who hold that this is possible appear to be unanimous in the statement that if the specific signs of Scarlatina are not manifested the case is much more severe & likely to end fatally, than is the case when the disease runs its natural course.

The infection conveyed from a case of Phlegmonous Erysipelas produces undoubtedly any fatal form of puerperal septicaemia. It may set up Erysipelas externally starting from an abrasion or, what more often happens, it sets up an Erysipelatous inflammation of the internal organs which rapidly spreads over the peritoneum. Acute spreading peritonitis in the puerpera has many points similar to an External Erysipelas

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Prophylaxis & treatment of puerperal septicaemia

With those who practice antiseptic midwifery the number of cases showing symptoms of puerperal septicaemia will be very small, and of this small number the great majority will be due to the imperfect emptying of the uterus, whereby a nidus is left for the development of the ordinary putrefactive bacteria which are so universally present. Small pieces of placenta & membrane are of more consequence than mere clot as they are not so easily repelled by the uterus & moreover blood clot is not so favourable to the growth of micro organisms as dead tissue.

The essential points in the prevention of septicaemia are three (1) Strict antiseptis or rather asepsis at the time of labour and afterwards (2) The perfect emptying of the uterus insured by the careful management of the third stage of labour. I have for many years devoted a great amount of attention and care in endeavouring to arrive at the essentials of success, and I have come to the conclusion that given that the first of these points (strict asepsis)

is insured as it can be and ought to be in every case; that the results turns chiefly upon the successful attainment of the second point, the complete evacuation of the uterus.

For the successful practice of asepsis I have arrived at the following routine Absolute sterilization of hands and instrument and of the external parts of the patient. For the instrument a 5 per cent solution of Phenol is beyond doubt the best - For the hands & external parts of the patient a (1 in 1000) Sublimate solution is the best. But in using sublimate solution one little point is of great importance (viz) that Soap & water should first be freely used & that the skin should be absolutely freed from the slightest greasiness. If this is not most carefully attended to the Sublimate solution will not come into perfect contact with the skin. I have often noticed in using it that after immersing the hands in it the moment they are removed from the solution the latter runs off them as water runs off a duck's back; and I am never satisfied until this has been overcome - The one drawback in my opinion to Sublimate Solutions is

that it is wanting in penetrative power. It has not the power of going into the cuticle which is possessed in such a remarkable degree by Carbolic acid. For this reason if my hands have recently been contaminated by any suspicious discharges I prefer to use a 1 in 20 carbolic solution first; and afterwards the one in 1000 sublimate solution - No kind of lubricant should be used during labour for the examining finger for this same reason with the exception perhaps of sublimated Glycerine which is free from this objection. Lastly I have given up even this. It is quite unnecessary as the maternal parts are fully lubricated by the mucous which they secrete. A basin with the sublimate solution stands by the side of the bed into which the hand is immersed before each examination and the hand must be cleansed each time before being again dipped into it; as the discharges cause a rapid deterioration of the mercurial solution by precipitating it as the albuminates. The external parts of the patient are cleansed with the same solution before each examination The examinations should be as few as

possible - after the completion of the labour the external parts are again douched & an Iodoform pessary (gr 20) introduced into the vagina - Sublimate pads are used and frequent cleansing of the external parts but the genital tracts is left entirely alone during the puerperium - This applies to perfectly straightforward cases. If there has however been any undue manipulation I give immediately after labour an antiseptic uterine douche and pass the Iodoform pessary into the uterus. afterwards confining myself as before to antiseptic treatment of the external parts. - If it has been impossible to remove any shred of membrane or placenta I repeat the uterine douche at the end of about 36 hours by which time they will have become loosened; & if they do not then come away as often as necessary until they do. After Each uterine douche the Iodoform pessary is again introduced into the uterus

If this is done one douche a day is quite sufficient. By these means I am generally able to prevent any harm arising even when the uterus has not been emptied completely at

the time of the labour. I am sure that it is for better practice than waiting until any symptoms appear before resorting to the uterine douche.

The second great point in the insurance of an aseptic puerperium (4) the complete emptying of the uterus; has already been treated of in my remarks on the management of the third stage of labour.

Is it safe to attend midwifery when you have septic cases in your practice.

If in attendance upon a case of puerperal septicaemia or of phlegmonous Erysipelas or a septic wound in which it is necessary that you should soil your hands with the discharges I think it is wise to abstain from midwifery practice. You cannot do justice to either the one case or the other, & you may be called at any moment from the septic case to attend a woman in labour. Great as is my belief in the value of antiseptics I cannot bring myself to believe them to this extent. Of course in some practices it may be impossible to avoid it but, I think that if by any means a substitute can be found this should be done.

With scarlatina the case is different

for the infection here is a dry one and does not penetrate into the folds and creases of the skin & under the nails as is the case with liquid discharges.

After 24 hours of isolation from an infectious case and thorough & repeated antiseptic Cleansing & with change of clothes I believe that practical safety is attained. In the case of the midwife who attends to the ordinary cases of our lying-in-society here, if ever a suspicious case arises let once make her own attendance upon the patient & thoroughly disinfect herself - myself taking charge of the sick case. By this means we have never yet had a second case arising under practice out of the first.

Treatment of puerperal septicaemia

The temperature of a puerperal woman having been carefully watched from the first; if any rise takes place over 100° a careful search should at once be instituted for the cause; and if it cannot be quite satisfactorily accounted for by anything outside the uterine system such as obvious mammary inflammation &c. then the proper treatment is at once to administer an intra-uterine douche; following this by the introduction

into the uterus of the Iodoform pessary.
Instead of introducing the pessary
it is sometimes easier to inject some
Iodoform Emulsion by means with drawing
the uterine tube, care of course being taken
that no air is admitted. This may be
conveniently done by making a little
nick in the india rubber tube just
beyond the uterine tube & inserting the
nozzle of a syringe previously completely
filled with the Emulsion. By compressing
the india rubber tube on the distal side
of the syringe the Emulsion can then be
easily injected into the uterus. The nozzle
of course must be made to fit tightly
into the little hole in the india-rubber tube.

For washing out the uterus I prefer a
reservoir douche, the proper pressure being
obtained by raising the reservoir about two
feet above the patient. The antiseptic I
prefer is Tincture of Iodine in warm
water ℥ij to ℔j. The vagina should first
be douched. The the curved uterine pipe,
preferably a glass one, should be guided
through the os by two fingers with the
solution flowing all the time. The fingers
should be retained at the os to make
sure that the solution is returning properly
The left hand or the hand of an assistant

should then be placed on the fundus to
note any over distension of the uterus.
During the first few days after delivery
the ordinary glass tube answers very
well, but as soon as the cervical canal
is becoming narrowed it is necessary to
have some form of double channel
tube of which Budin's is in my opinion
the best. It is less likely than any
other to become blocked by debris, and
if it does, the debris can often be
dislodged by withdrawing the tube a
little. Bozemanns tube I have found
to become blocked almost at once, by
debris getting into the exit holes. In
the absence of a special tube a large
size new gum elastic catheter may be
used. This often answers better than
anything else as it may be moulded
to any curve required upon it stillet.
The stillet should be cut shorter
than the catheter so as to extend
scarcely to the eye but quite to the
other end of the catheter. The india rubber
tube from the douche can then be slipped
easily over the catheter and is in no
way interfered with by the stillet. The
catheter can then be passed like a
sound or if any unusual difficulty is

Encountered a duckbill speculum may be passed and the anterior lip of the os steadied with a hook; after which there can be no difficulty in passing the tube - It is advisable to dip the hook in pure carbolic, liquified, the little puncture is then at once sealed and no harm results from it - Sometimes it is advisable to introduce a second and larger catheter without its stilette to act as an exit tube. The return flow must be most carefully watched and the douche tube instantly clamped if there is any obstruction. If the cervical canal is much closed & the uterus considerably involuted the portability is against there being anything much retained in the uterus; but under these circumstances there may be a septic Endometritis which is keeping up the septicaemia. In such a case as this I believe the best practice is, after careful disinfection of the vagina, to pass an Iodoform Bougie into the uterus and not to use the uterine douche as it is not devoid of danger under these circumstances.

When the cervix is at all contracted even with the greatest care & gentleness it is quite possible to force fluid along

the Fallopian tube. There is also another way in which harm may arise when the outflow is not very Easy. Then although the fluid may be returning at about the same rate as you are injecting it yet if the outflow is not very Easy the fluid whilst passing through the uterine cavity is at a pressure and by this means Septic matter may be driven into the lymphatics & great harm be done. I think this may account sometimes for the fact that the temperature rises after a uterine douche as is sometimes observed. I can recall no case in which I believe that this happened to myself.

Alarming collapse from over distension of the uterus sometimes occurs but with the exception of the case just mentioned I have never seen any harm arise from the uterine douche.

By this prompt local treatment I do not think that harm is ever done; and it should always be resorted to at once. It is not advisable to wait for the development of more distinct symptoms; as we never can go back and take up again the chance which we have missed of cutting off the poison

at its source - If the case is one of those in which the poison was first in the tissues themselves no harm has been done. If it be a case in which the poison is in the uterine contents or in a septic Endometritis infinite good will be accomplished, and as we cannot tell which kind of case we have to deal with at first, I think it is the best practice to commence always with this local treatment. Of course if the case is not seen until there is extensive purulent peritonitis it is useless to try it. If there is only commencing general infection it is possible, if the source of infection is removed, that the system may be able to deal successfully with the dose of poison which has already been absorbed.

This then being the way in which I commence my treatment in all cases I will now describe what measures have seemed most useful in the further conducts of these cases. They chiefly depend upon which of my two great divisions the particular case belongs to. I take first the cases which so far as my own experience goes are the most common. Those which I have described

in any third class as dependent upon putrifaction taking place in the contents of the uterus or in which not more than the Endometrium or Vaginal mucous surface is involved in the septic process.

These are the cases in which most can be hoped for in treatment. The local antiseptic remedies which I have just described will often be found to cut short the disease, if early enough applied; but if as often happens although immediate good follows them, the symptoms again come on a repetition of the same treatment should be carried out as often as necessary. Once a day will usually be sufficient or perhaps not so often if the Iodoform is in each case left within the uterus. If not only septic contents are present in the Uterine Cavity but there is a septic Endometritis as well; it will certainly be necessary to repeat them more than once before this is subdued, and in addition general treatment will be necessary to enable the system to overcome the poison which has already gain entrance to it; & which must of necessity be still further absorbed as long as

living microorganisms exist in the genital tracts. Constant watchfulness and care are necessary but the good nursing are capable of accomplishing much. I have seen some apparently almost hopeless cases get quite well. And, if they do recover, it is marvellous how little permanent damage is left, and how complete the recovery is.

One case which I attended through a very severe attack of this kind, was on two occasions almost at the point of death and on each of these occasions the attainment of the necessary therapeutic end was followed by immediate improvement. On the first occasion the cause of danger was threatening heart failure. The pulse continued to rise in frequency & was almost uncountable, & the patient was rapidly sinking; when the exhibition of large doses of digitalis rapidly toned up the heart & rescued the patient from death. A few days afterwards she became delirious and almost maniacal from want of sleep. One drachm of Sulphonal given in 20 grain doses sent her to sleep for nearly 24 hours, with short intervals for nourishment,

after this she became perfectly sensible
& was soon convalescent. Large
quantities of stimulants are often
necessary and of course as much
highly nourishing fluid food as
possible -

Quinine is often of much service
but I should like specially to mention
Warburg's tincture which I have found
of the greatest service. I generally give
it in 3j doses every 4 hours. It has
a particularly beneficial effect when
there is high temperature combined
with constipation and flatulent
distension of the bowels - after from
3 to 4 doses have been given the bowels
often begin to act freely, the temperature
to fall, the tongue to clean, and the
flatulent distension to disappear.
Patients speak so gratefully of the relief
it gives to this last most distressing
symptom. I have almost always
found it well borne by the stomach when given in this
way - One young patient I think owes
her life to Warburg's tincture. Every
day that the patient can be kept
alive her chance of ultimate recovery
improves - These cases although
very anxious ones are always full of

hope and are in marked contrast
in this respect to the second variety
the treatment of which I will now describe
In this second variety in which the
poison is from the first, or at any rate
very early in the case, in the tissues
themselves, after the first douche, which
I give in all cases, I do not think that
much is to be hoped for from further
local treatment. They are as I have
stated before in the majority of cases
associated with that remorseless disease,
acute spreading suppurative peritonitis.
Of course the same general treatment
which I have described above applies
also to these cases. It is the spreading
nature of the poison which is at the
root of their fatal tendency. The same
thing is seen in surgical practice
when Erysipelas attacks a wound
The most ~~rigid~~ active antiseptic
treatment of the wound afterwards
fails to check the disease because
the poison has gone beyond its reach
And so it is with the disease now
under consideration —
The saline purgation has been proposed
but I cannot see how it can Eliminate
the septic pus which is in the peritoneum

Opium appears to me no good for anything but Euthanasia. Quinine Carbolic acid and many other medicines are practically useless and we are reduced to an endeavour to support the patients strength. But in spite of our best endeavours a steady rapid downward course is the rule in the well marked examples of this disease.

Incision and drainage of the peritoneum have been proposed and tried in a few cases but hitherto I believe without success.

I would suggest the following as perhaps a better plan. That a large drainage tube should be passed down to the bottom of Douglas' pouch & retained there. The patient should then be raised at the shoulders and upper part of the body so as to allow as much of the pus as possible to fall into Douglas' pouch and drain away. The shoulders & body should then be lowered, and a large quantity of warm sterilized water allowed to flow in through the tube. The upper part of the body should then be raised again & the water allowed to drain off washing

out pus with it. Water should then be admitted again & the process repeated; and so on, as often as necessary, until the water returns clear. An antiseptic dressing should then be applied over the tube & frequently changed. The flushing of the peritoneum should be repeated from time to time as often as considered necessary. By this treatment an enormous amount of poison would be got rid of & if carried out early enough might be of some avail.

The difficulty of course is that almost as soon as one recognizes the nature of the case it has become almost desperate.

One other method of local treatment for aseptic condition of the endometrium I should like to mention only to condemn it (viz) curetting. I cannot see that it is safe and should not like to try it under these circumstances. It would be quite impossible to make sure that all septic matter was removed; & if any is left behind more harm than good must result as the instrument would open up innumerable channels for the absorption of septic poison.

with fever.

Much has been written about this disease in the past but I believe that it is now pretty unanimously accepted that what used to go by this name is in reality a transient septic intoxication from the absorption of the products of putrifaction through abrasions in the genital tract - A transient rise of temperature does sometimes occur when the breasts first become full and hard but it rapidly subsides when the secretion is well established, and is accounted for by the local condition of the breast. The temperature is not raised by this cause to any great height, and the condition of the breasts should never be accepted in the early days of the puerperium as the cause of any decided pyrexia without the very greatest caution.

Mastitis and mammary abscess. With the exception of the slight cases just referred to this trouble usually, in my experience comes on at rather a late period of the puerperium generally after the first week - Mastitis or mammary abscess are behind by some to be occasionally dependent upon general septicaemia,

but so far as my own experience goes this is never the case; but on the contrary septicaemia always tends towards the disappearance of the milk and shrinking of the breasts, which give no further trouble.

The causes of mammary inflammation mostly always lie in the breasts themselves and in the vast majority of cases are due to some faulty condition of the nipple, either from fissures & ulcers of the nipple or blocking of the milk ducts. The condition of the nipple most favorable to mammary trouble is cuticularization. The nipple is tied down and instead of expanding with the general enlargement of the breast during pregnancy and after the birth of the child, it sinks in, or rather the breast swells up around it.

Associated with this retracted condition of the nipple will usually be found numerous excoriations and fissures in the nipple. These are not apparent until the nipple is drawn out by the breast pump, when they will be almost invariably found.

This condition of the nipple acts deleteriously in two ways. Firstly the milk ducts are kept upon themselves

and thereby mechanically obstructed
And secondly (& this is perhaps of
chief importance) the ulcerated and
fissured condition is concealed & if
sought for and found is very difficult
to heal satisfactorily, as the discharges
are confined in the cracks which are
with difficulty kept clean. although
the nipples may be carefully drawn out,
and the unhealthy sores dressed yet
they speedily retract again & cause
retention of the discharges.
This the absorption of pepsis into
the breast from these sores which
produces the serious cases of mastitis
ending in abscess - The septic microorgan-
isms may be absorbed either by
the lymphatics, in which case the abscess
is usually more superficial; or the
microorganisms may creep down the
milk duct producing a deeper
and more serious abscess.
To guard against the occurrence
of Breast inflammation the nipples
should be carefully attended to during
the latter months of pregnancy and
from the first hour after delivery they
should be most scrupulously cleaned.
very often a few little pimples or

ulcers will be found covered by
scab, under which is a minute quantity
of pus - There are innocent enough
in appearance, but, that they are the
real source mammary abscess I have
satisfied myself. The scab should
as quickly as possible be removed by
warm Boracic fomentations and the
little sores got into a healthy condition
After a short while Boracic ointment,
and perhaps an occasional touch
with a solution of nitrate of silver
will be found a good means of
obtaining a cure. The breasts of course
should never be allowed to become too
full. By constant care of the nipple
I have been able to reduce very much
the number of cases of serious
mammary trouble.

If unfortunately a breast abscess should
form it should be opened with
antiseptic precautions as soon as it
has come fairly near to the surface.

It is better not to be in too great a
hurry; otherwise unnecessary injury
may be inflicted upon the breast
tissue in reaching the abscess - Unless
the abscess is quite superficial and
insignificant it is much better to give

an anaesthetic; as in can then proceed deliberately and make sure of getting an opening at the most dependent point. This object is best secured by making a tiny opening at the spot where the abscess is most superficial and inclined to point. This spot will usually be near the nipple. A curved and rather pointed director should then be passed through this little opening down to the bottom of the abscess & then by gently manipulation made to appear beneath the skin. It should then be cut down upon by a small radiating incision brought out through the lower wound. A pair of sinus forceps may then be passed along the groove of the director into the abscess cavity and opened out to make a channel for the drainage tube. It is important not to cut into the heart tissue with a knife; as during its state of physiological activity the blood vessels are large, and you may easily get serious bleeding. This is difficult to control without opening up the wound and thereby causing much unnecessary disfigurement.

A good size drainage tube must

how to introduced and the dressing applied. By this method I have treated a good many serious and deeply seated abscesses in which after 6 months scarcely a mark was left.
There is no need for an incision more than sufficient to admit the drainage tube easily. If the abscess is kept aseptic it is often surprising how quickly it heals.

Phlegmasia Dolens.

The first question which arises in relation to this disease is whether it is septic in its origin - This question has been hotly contested & I do not propose to enter into all that has been written about it; the many theories which have been advanced. The most recent belief inclines to the septic theory and this is the view which I hold with regard to it. One point which has seemed to me of some importance in support of the septic origin of the disease is this that in the cases in which Phlegmasia Dolens afterwards arises there has been almost invariably a certain amount of rise of temperature in the earlier days of the puerperium

and this has, I have usually found, been accompanied by a greater or less degree of pelvic inflammation, often so slight as to escape notice if not carefully looked for. This indicates that a septic process, perhaps often of only a mild nature, has been at work. It is this I believe which is the cause of the clotting in the veins below. I have seen several cases of Phlegmasia dolens but have not yet met with one which has occurred in a patient who has had a perfectly normal temperature up to the time of its occurrence.

Galabin page 803 holds the septic theory stating in support of it, that when the disease occurs apart from pregnancy it is generally in a case in which there is some source from which septic absorption may take place as in ulcerated cancer of the cervix. I have recently had under my care a patient with uterine polypus in whom there was aseptic discharge from the uterus. She had a prolonged attack of Phlegmasia dolens

Playfair page 401 mentions the same point

Tyler Smith page 538 mentions the case of a practitioner who, whilst attending

a case of Erysipelatous sore throat, attended also 3 ladies in their confinement, all of whom were attacked with Phlegmasia Dolens - This is particularly valuable Evidence.

The possibility of the clot in the Uterine veins extending through the veins in the broad ligament to the iliac vein & then spreading down into the femoral vein might be considered; but if the disease was due merely to clotting of this mechanical nature without some further cause, I cannot understand why there should be a decided temperature often ushered in by a definite rigor.

These symptoms could not surely be caused by an aseptic clot in the veins.

Kaypan page 398 describes it as a local manifestation of a general blood dyscrasia and does not as Eventually a local disease

Dr. Tilney Fox also advocates the septic theory and considers that obstruction of the Lymphatics, plays an important part.

Dr. H.S. Garrigues in the American System of Gynaecology and obstetrics page 321. vol 4 mentions the disease as one of the

manifestations of puerperal infection.
He mentions it as a matter of course, apparently thinking it unnecessary to discuss the question - The gravity of Phlegmasia Dolens varies greatly in the same way as it does in the case of the other troubles of the puerperium connected with Septic infection. I have never yet seen a case out of any 3000 labours which has of itself given rise to any serious anxiety. Dangers of course may occur such as detachment of clots.

The treatment required is absolute rest with soothing external applications. Opium if necessary at first for the pain. Tinct. and Calis in Iron. Very prolonged rest is often necessary and it is a great mistake to allow the patient to get about until the swelling of the leg has passed off; otherwise it is very apt to become chronic.

In conclusion I would say that this thesis does not in any way profess to be an exhaustive treatise upon the subject, but that it only contains, as it title portrays, some points in the management of the third stage of labour & the puerperal

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state. In it I have endeavoured to indicate those points which have seemed to me to be of very great importance in the practical management of the lying in woman, as they have occurred to myself during the past sixteen years and out of the experience of 3000 labours.

The careful observation of them has enabled me to reduce to a very small proportion the number of cases which depart from the normal course. The subject is one of very great importance not only to the lives of our patients, but also in enabling us to preserve their health and usefulness in after life intact; and in the prevention of a fruitful source of uterine trouble and chronic invalidity.