

General Practice Series

THE THIRD STAGE OF LABOUR

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Many doctors have told me that they have adopted practices which exclude midwifery mainly because of the third stage of labour. There can be but few—if any—doctors who have not been confronted with the frightening complication of this stage of labour which may act like a paralysing drug to the newly initiated. The impact may be so sudden and so severe upon the doctor that the decision to steer clear of it for the rest of his or her days is readily understood. This is the stage of labour following the birth of the baby. The mother feels that she has done her job and often is exhausted. The doctor and nurse may inadvertently relax in their trains of thought and action whereas they are witnessing and conducting a physiological act which in the flash of an eye may become so pathological as to cause the death of the mother. The management of this stage requires patience and courage, that is, masterly inactivity most times, yet rapid determined action when warranted, for the onset of severe complications is usually unexpected, sudden, and may be catastrophic. Should the patient survive a severe degree of collapse, she is still confronted by many endocrinal changes that may follow in the wake of shock. Obviously, this places a heavy responsibility on the accoucheur. It is self-evident that he should at all times have the basic principles of the physiology and management of this stage of labour and its complications at his fingertips—literally and figuratively.

The Placental Stage of Labour

During the first stage of labour we are taught that the uterine muscle not only contracts but retracts. This property is responsible for cervical dilatation. Once the cervix is fully dilated, further contractions together with maternal, and, possibly, assisted efforts, result in the delivery of the baby. The patient now is said to be in the third or placental stage of labour. Let us therefore examine what has happened to the placenta during the first 2 stages of labour since this may have a direct bearing upon the mechanism of the third stage, i.e. of placental loosening and expulsion. The view is held that when contraction and retraction occur in the uterine muscle, the region of uterine wall over the placental area, although affected, is not as markedly involved as is the rest of that organ's wall. This may be regarded as a life-saving mechanism since nature would not allow the vital supplies to her young in the very act of birth to be dangerously hampered. However, what happens in the wall of the uterus might not necessarily affect its contents to the degree imagined by us. What we do know, however, is that with the birth of

the baby the uterine cavity shrinks and the uterine wall thickens at a comparative pace. This phenomenon may, often does, take a little while, i.e. the uterus does not necessarily change gears, it rests in neutral for a while. In lower animals, e.g. the pluriparous group, the young are expelled with amnion and placenta intact, i.e. there is a combination of the second and third stages. In the human, experimental work has been of great interest. Two studies are worth quoting. The first is Miss Burton Brown's work in Oxford. She injected radio-opaque material into the cord immediately after delivery, followed by taking serial X-ray photographs of the pertinent region. An immediate bunching up of the cotyledons reducing the placenta to half its size without separation was demonstrated. Once this had taken place, placental separation occurred in the presence of contraction and relaxation. Relaxation is necessary for the passage of the placenta into the lower segment. The average time taken for placental separation, as observed on utilizing this method, was $4\frac{1}{2}$ minutes. In Liverpool they went one step further. Starting off with anencephalics, working their way through breech deliveries and eventually to vertex deliveries, radio-opaque material was injected into the cords of undelivered babies. Serial X-ray photographs were then taken. It was shown that as the foetus was being born, the uterine cavity contracted in a cylindrical fashion. Placental separation occurred very rapidly, i.e. almost at the time of foetal delivery. Both at Caesarean Section (during which time observation may be accurate but interpretation may be fogged because we are not sure whether an incised uterus, possibly in an anaesthetized patient, acts normally) and clinically (with a hand gently placed upon the uterine fundus in a thin patient one can feel the uterus working, altering its shape and expelling the placenta) the observed time taken for the placenta to separate varies tremendously from patient to patient.

The conduct of the third stage depends upon this clinical variation, i.e. the time taken for the placenta to separate and be expelled from the uterine cavity. The act of separation is to be completed before expulsion can take place. The signs of separation are therefore to be awaited. They are:

1. Lengthening of the cord.
2. A slight gush of blood.
3. The rather flat-topped, triangular-shaped uterus becomes hard, globular and mobile as it rises in the abdominal cavity.)
4. Slight suprapubic pressure causes further lengthening

of the cord. (Recession at this stage indicated that the acts of separation and expulsion from the uterine cavity have not been completed.)

Once the placenta has been expelled from the uterine cavity, contraction of the muscle fibres closes off the sinuses, thereby assuring no drastic haemorrhage. Maternal bearing-down efforts at this stage of the proceedings will result in the birth of the placenta, which slides out (Matthews Duncan) or peels out like an umbrella turning inside out (Schulze).

The management of the third stage, as has been stated before, requires patience and courage. The courage has to be twofold, *viz.* the more difficult one of being able to do nothing, in the normal case, and the easier but more dreaded one of having to act in a well-planned determined fashion when the pathological occasion arises. Therefore, in the normal course of events, immediately after birth, or when the cord has stopped pulsating, it is tied and cut. The baby is removed. The vulva is inspected. Now comes the problem—should the fundus be controlled or not, i.e. should one belong to the 'hands on' or 'hands off' school. As is usual in all vexed questions, it is the person with the reasonable outlook on matters who tends to get a grip on the issue. Should the patient be well-built, but relatively thin, the fundus can readily be seen as a well-defined abdominal lump. *Visual observation* is thus all that is required. Any variation from the normal, i.e., enlargement or disappearance of this lump is easily recognized. On the other hand, should size and obesity not allow visual observation, a hand may be placed gently on the patient's abdomen. The fundus is palpated and from then onwards *manual observation* is carried out. It is of paramount importance to be aware of what is happening to the uterus. Should it become flabby and distended with blood, early recognition will lead to prompt action and possible avoidance of unnecessary further complications. It must be stressed that should a hand be laid on the patient's abdomen, it is there strictly for purposes of observation. At no time should it be used as an adjunct trying to hasten physiological placental separation by stimulating undue uterine action.

Should there be no bleeding and the vulva requires stitching, this may be readily undertaken at this juncture. The stitches may be inserted but should not be tied until after the passage of the placenta. Premature narrowing of the gaping vulva may lead to unnecessary difficulties, e.g. the placenta may tear out the stitches in passage, or, should manual removal of the placenta be required, the stitches will have to be severed. Once there is evidence of placental separation, that organ is expelled either by the patient or the accoucher. Often a bearing-down effort is all that is necessary. Slight suprapubic pressure, together with applying tension to the cord, is a most satisfactory procedure for its removal. As soon as the placenta is born, it is examined to note whether it is complete or not and whether its membranes are more or less complete. Any abnormality is observed and noted. In the normal course of events the act of labour now is over. The baby is a helpless little individual requiring nurturing in order to carve out its own future. The patient has become a mother. Within her, certain physiological changes are rapidly taking place since milk has to be supplied whilst her pelvic organs return to normal.

DANGERS OF THE THIRD STAGE

What then are the dangers that have dogged the whole length of this stage and may even follow soon after it? The greatest amongst them are *haemorrhage* and *shock* (as a result of haemorrhage or trauma). Of nuisance value and forever threatening with the above complications, is retention of either the whole or portion of the placenta.

Haemorrhage

The haemorrhage that follows in the wake of the birth of the baby or placenta may be due to:

1. *Patent placental site sinuses*, which in turn are:

(A) Caused by poor contraction and retraction, due to (1) exhaustion, (2) poor management of the second stage (anaesthesia, analgesia, manipulation), (3) overdistension (e.g. multiparity, hydramnios) and (4) fibrous tissue—grande multipara;

(B) Kept open by: (1) partial separation of the placenta, (2) clot, (3) rigid walls: ? essential hypertension, and (4) concertina effect of uterus, i.e. if the uterus is down in the pelvis the arteries pump whilst the veins are blocked.

2. *Clotting defects*:

(a) Some individuals bruise and bleed readily.

(b) Afibrinogenaemia.

(c) Blood dyscrasia.

3. *Trauma* of the cervix, vagina, vulva.

It is ever to be borne in mind that post-partum haemorrhage most often occurs when least expected. In 26,139 deliveries over 4 years in our institutions, post-partum haemorrhage

TABLE I. NUMBER OF CASES AND CAUSES OF POST-PARTUM HAEMORRHAGE

Unknown	1,451	63.4%
Known	752	39.9%
Clotting deficiency	8	0.4%
Traumatic	78	3.3%

occurred when least expected and without any apparent cause in 1,451 cases (Tables I and II). At all times must

TABLE II. HOSPITAL DELIVERIES, 1953-1956

Deliveries	26,139
Post-partum haemorrhage	2,289
Incidence of post-partum haemorrhage		8.7%

there be an awareness of this fact and whosoever is in charge of the delivery must be attuned to it mentally and physically.

It is difficult to define post-partum haemorrhage adequately. Individuals vary so tremendously in their reactions to blood loss. Of great importance in this reaction, amongst many others, is the haemic state before the onset of labour. The constant slow trickle is of as great importance as is the rapid gush of blood. For this reason it is both more scientific and accurate to measure the amount of blood lost by the patient. For statistical purposes a patient is classified as having suffered from post-partum haemorrhage if she had lost 20 fl. oz. of blood or more.

Treatment of Postpartum Haemorrhage

1. Uterine contraction has to be stimulated in order to close the sinuses. Uterine contents are to be expelled or removed, *viz.*

(a) Rub up the uterus.

(b) Express the placenta by Crede's method—or, should the placenta be out—express clot.

(c) Failure of Crede's method is to be followed by manual removal of the placenta.

(d) At all times must the expressed or removed placenta be inspected to make sure that it is complete.

(e) Keep the uterus contracted by the administration of oxytocic drugs e.g. ergot, pitocin.

Rarely is a uterus encountered that contracts but relaxes afterwards most readily, leading to further haemorrhage. Pitocin drip is of immense value in these cases.

2. Should the uterus be contracted, but be situated in the pelvis, it must be elevated into the abdomen in order to straighten out the concertina effect of the lower segment. Blood may then be returned to the systemic circulation by veins now rendered patent. These measures will obviate the use of bimanual compression, hot intra-uterine douches and packing.

3. If there is any interference with clotting, the appropriate constituents should be administered, e.g. fresh blood and fibrinogen, when indicated.

4. Lost blood should be replaced by adequate transfusion.

PREVENTION OF COMPLICATIONS

Everyone recognizes the dangers hidden in the third stage. Should we therefore not use all possible ways of preventing this one major complication? Full well is it realized that good conduct of all the stages of labour will lessen the incidence of post-partum haemorrhage. It is all very well leaving matters to nature when the whole structure of our civilization has been a gradual departure from natural living.

During the first stage of labour sedatives are usually given whereas sedatives and/or analgesics are administered during the second stage. Any drug that will shorten the third stage and will cause the uterus to contract and remain contracted,

therefore, is of immense value. Ergometrine possesses most of these properties. Unless contraindicated, by the presence of severe toxæmia (ergot may produce spasms) and heart disease, 5 mg. may be given either intravenously or intramuscularly when the head is crowned, should an expert be doing the delivery; or with the birth of the baby's anterior shoulder, should the accoucheur as yet not be proficient in dealing with the second stage complications (impacted shoulders). Delivery of the foetus should coincide with uterine contraction. The third stage in these cases is, as a rule, not only shortened but relatively bloodless. Let it not be thought that all haemorrhage and long third stages are obviated by ergometrine—far from it. The incidences, however, are greatly lessened. Many obstetricians do not subscribe to the almost routine use of ergot. Their views are respected. Many of these non-subscribers, however, use ergot when post-partum haemorrhage is expected, i.e. when labour has been long or forceps is being applied—yet post-partum haemorrhage most often occurs when least expected.

Let us now return to the treatment of post-partum haemorrhage. Should a midwife call you to a patient whose labour she has been attending stating that the patient is bleeding (whether the placenta is in or out of the uterus), the first instruction over the telephone should be: 'Give her 5 mg. ergometrine intramuscularly. I am coming immediately.' On arrival, always remember to inspect the placenta after full clinical assessment and possible management of the patient.

There is still much to learn about the physiology and management of the third stage of labour. The prevention of complications should be our continual aim. The old adage that labour can be said to have been normal once it is well and truly over, is as true today as it has been in the past.

A COMMENTARY ON ANCIENT MEDICINE: IN A LIGHT VEIN

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The title of this article has nothing to do with phlebitis, phlebotomy or intravenous therapy. The humorous, even in history, makes life endurable, and as regards medicine, old or new, is a pleasant interlude to the study of osteology or the incidence of nail-biting in schoolboys.

The study of history is always fascinating, and especially is it so to the doctor when he reads and ponders over ancient medicine. One often forgets that the topmost leaves of the mighty yellowwood tree have for their origin the hidden roots in the earth, where these have been for a thousand years. And so the marvellous and brilliant achievements of modern medicine have been slowly and painfully built up on the labours and thoughts, often in retrospect ludicrous and fantastic, of an ancient colleague of ours some 6,000 years ago. One must admire those 'healers of the sick', most of whom probably laboured conscientiously to the best of their ability and according to the light they had received. But in what a world of total darkness and ignorance about the composition and functions of our body, and the nature of disease, did they grope! Each generation of doctors has at times been inspired by, and has marvelled at, the labours of its predecessors, but has also been amazed and amused at their views and therapy. And likewise future doctors will judge us—till a split atom destroys our world.

Ignorance and superstition have always gone hand in hand. Superstition has been the essence or life-blood of the human race in the dawn of its existence, especially with regard to ill health, disasters and prognostications; it is observed in all primitive peoples and even today is found amongst the most civilized. We must admire the courage of our predecessors of remote ages who, engulfed by these two factors, nevertheless probed in the dark and searched for the truth. One of the most fruitful sources of medical

and therapeutic errors, and also in other fields—more so in the past, though it is still common today—was the fallacious reasoning of *post hoc ergo propter hoc*; because event A took place after B, A was necessarily the cause of B. An instance of such reasoning is recorded where a Turk, suffering from typhus fever, in his delirium drank water in which cabbage leaves were being soaked. *Mirabile dictu!* he recovered, and for years afterwards cabbage infusion was used as a sovereign remedy for this disease. A comet appears; a pestilence decimates the population: the comet caused the disaster!

From the pages of the Greek historian Herodotus, an astute observer and delightful writer, who lived some 400 years B.C., one has culled some priceless gems about ancient beliefs and practices. Many things he observed himself; of others he was told.

A King of Egypt had developed eye trouble (probably trachoma), which had blinded him for ten years and which the royal physicians could not cure. The blindness was a punishment for having committed a sacrilege when in his rage he had thrown a spear into the swirling waters of the Nile, which had risen far above its usual level. In his despair he consulted an oracle from a temple. One must admire the skill and astuteness with which many of these oracular words were couched, often obscure and capable of several interpretations. This priest knew that the women of his time observed a very flexible moral code and, as he thought the prognosis pretty hopeless, he advised the King to bathe his eyes with the urine of a chaste woman. He first tried his Queen, and thereafter many women without any success. At last the miracle happened: he was cured. Is it fantastic to think that this particular urine contained an excess of potent adrenocortical steroids? Herodotus

naturally does not mention this remarkable hormone. Today we use this therapeutic agent, but obtained in a less objectionable, easier and definitely more certain manner. Years ago in my time female urine was used as an eye lotion for sties! The happy but sadly disillusioned King collected all the unfaithful ladies (his Queen included) and the unchaste virgins, put them into a room and set the house on fire. Needless to say in true romantic fashion he married the restorer of his sight, and presumably they lived happily ever afterwards. If that King had possessed commercial instincts what a fortune he could have made by patenting and marketing the queenly urine in a land probably harassed by endemic trachoma! One can visualize agents of enterprising pharmaceutical firms peddling this astounding royal remedy throughout the country. We, and especially our womenfolk, living now can truly be thankful that the punishment inflicted by the King on the unfortunate ladies has not been incorporated in our laws, and that this acid test for fidelity and virginity has not been produced in our divorce and law courts.

It will be of interest to all of us, and a contribution to the acrid dispute between general practitioners and specialists, to know that our historian found in Egypt a state of affairs similar to what we have here. (Who said that specialists arose within the last hundred years?) I quote his words: 'The practice of medicine they split up in several parts, each doctor being responsible for the treatment of one disease only. There are in consequence innumerable doctors, some specializing in diseases of the eye, others of the head, teeth, stomach and so on: while others deal with the sort of troubles which cannot be exactly localized.' Obviously the last class was the G.P. of that day. He, as in our time, had to know everything, diagnose and treat obscure diseases, for which he probably got a miserable pittance in comparison with the specialist's fee. His drugs were probably mere placebos, containing harmless or witch ingredients, as described by Shakespeare in the cauldron of the witches of Macbeth. Fortunately he, as well as the specialist, had Nature and Time as invaluable allies. (Are not many of our reputed cures that are attributed by credulous and grateful patients and relatives to our skill and super-knowledge and a host of injections and vitamins etc. due to unknown factors and natural defences of the body—the *vis medicatrix naturae* of the old healers?)

In Babylonia there were no doctors: what a scope and scoop for squatters! Invalids were brought out into the streets. Any one passing along *must* stop and ask the sick person what was the matter. He could then offer him advice on his complaint, either from personal experience or observation of a similar trouble in others.

The Egyptians believed that all the diseases (no doubt punishments by the gods excepted) came from the food eaten, and consequently they purged themselves with emetics and clysters every month for three successive days. Herodotus remarks that they were amongst the healthiest people in the world. (Surely no one can boast about Egyptian health today!) He believed that this happy state of affairs was due to the absence of changes in the climate, 'for change and especially change of weather was the prime cause of disease'. Obviously in a mild and constant climate the call on the heat centre and its attendants—vasodilators, constrictors and sweat-glands—as well as the wear and tear of the sympathetic and parasympathetic nerves would be little. But imagine three days of vomiting and purging! One wonders how

doctors and business men performed their duties on those days, and what financial losses employers incurred with every one of their workmen absent for three days every month. It would have been a calamitous day if this drastic prophylactic treatment was carried out by all at the same time, unless these days were proclaimed as public holidays; hardly holidays!

In a certain Indian tribe there were no doctors for the simple reason that no one was allowed to get ill. It was a crime against the community, and the death penalty was imposed. Whenever a person fell sick his closest companions killed him because, as they put it, their meat would be spoiled if he was allowed to waste away with disease. 'The invalid naturally protests, but to no purpose; his friends refuse to accept his plea and kill and eat him just the same.' The women eat their women friends. If any one was lucky enough to live to an advanced age (which seldom happened, for most people would have had some disease or other) he or she was offered in sacrifice and devoured. These proofs of true friendship were certainly very economical: no doctors' bills, no hospital fees, no cemeteries with expensive coffins; moreover the butcher's account was considerably reduced.

An Egyptian King, a captive at the court of Cambyses, son of the great Persian King Cyrus, was caught stirring up trouble amongst his own people; 'he was made to drink bull's blood and died on the spot. And that was the end of Psammenitus!' There must have been a very severe incompatibility between the blood of this gentleman and that of the bull. One wonders if the phenotype of his blood was perhaps group $O_1 R_1 R_2 (C De/c D E)$, $M Nss, P_-, Fy^{a+}, Lu-, K K$. This formula is enough to kill any ordinary Egyptian, even a King.

Herodotus heard interesting tales about the Ethiopians on the coast of the Indian Ocean, related by spies whom the Persian King Cambyses had sent to that country. They were the tallest and best-looking people in the world. They all lived to the age of 120 or more; their food was only boiled meat and milk. There was a spring, the water of which smelt like violets and made a man's skin glisten as if he had washed it with oil. The water lacked density and nothing would float on it. The constant use of this water must be the cause of the longevity. Further the semen of these men was black like their skins—a peculiarity also reported from the Indian tribes mentioned above. Well, well! Was this due to an inborn error of metabolism (in Garrod's phrase) which caused a disturbance of the pigment-forming hormone; or was it a waste black pigment excreted by an unusual route? I suppose there was something logical about this belief: a black man must of necessity have a black discharge to produce a black-skinned offspring. A similar reasoning would make a black hen lay a black egg; and the yellow races would have yellow semen. In inter-marriages one could expect, from the Mendelian laws of heredity all sorts of testicular or prostatic discharges according to appearance—a veritable variety of semen in technicolour! At this stage it is perhaps appropriate to record our historian's dryly humorous and sensible remark: 'My business is to record what people say, but I am by no means bound to believe it.'

There are many other fascinating tales about the customs and beliefs of peoples who lived in Northern Africa and Asia which have a bearing on medicine and sickness; also of strange animals and their habits in producing offspring. We also, fortunately, are by no means bound to believe these stories.