

**On haemorrhage from the umbilicus after the separation of the funis / by John Manley.**

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## HÆMORRHAGE FROM THE UMBILICUS

AFTER

## THE SEPARATION OF THE FUNIS.

BY JOHN MANLEY, M.D.

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*Read on Thursday, January 24, 1850.*

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HÆMORRHAGE from the umbilical vessels occurring after the separation of the cord, is a subject which has either been entirely overlooked, or has only obtained a passing notice in systematic works on the diseases of infancy. My attention was drawn to this peculiar and comparatively rare accident by a case which came under my observation in the latter end of October of the past year, while attending the patients of Mr. J. L. Worship, of Riverhead, Kent, during his temporary absence. The child, a male, a fortnight old, had been born after a natural labour, and had presented at its birth all the signs of health and strength: its parents were of the labouring class, and but poorly provided with the necessaries of life. I found that it had already for some days been affected in a marked manner with jaundice, the *icterus neonatorum*, for which small doses of the Hydrarg. c. Cret. had been administered. The symptoms of the jaundice were still very evident, and the dusky yellowness of the skin was general, and could not be mistaken for the colour of the integument peculiar to new-born children in a state of health. Moreover, the conjunctivæ presented a yellow tinge. The bowels were much relaxed during the first period of the disease; the stools were frothy, and of a lightish hue, although not the decided clay colour of the fæces in the jaundice of adults. They, however, improved in appearance afterwards, and their number decreased considerably, the Hydrarg. c. Cret. already prescribed having been continued. I omitted any attempt to examine the urine and its colour, as also many other

symptoms, as my whole attention was soon absorbed by an unusual and very embarrassing occurrence. At my first visit the mother called my attention to the presence on the binder and body-linen of a few drops of blood, which evidently came from the navel: she assured me that the separation of the cord had taken place in the usual way, and at the usual time, about the fifth day, without any violence having been used. She had, however, soon after, observed the presence of some spots of blood on the linen, when changing and dressing the child. Upon examining the umbilicus, I found the circumference of it to have a natural appearance, but the fundus was filled with a dirty-looking substance, resembling the *debris* of cellular tissue mixed with blood: upon washing the part clean I perceived the blood to ooze more particularly from one spot: this I touched repeatedly with the nitrate of silver, hoping that this cauterization would be sufficient to arrest the bleeding. At my next visit, however, I found it had continued; I then made pressure, as well as the struggles of the infant would allow; the hæmorrhage, however, went on, and evidently increased in quantity, to judge by the degree to which the linen was soiled with blood. I then began to experience much anxiety as to how the case might terminate. I repeated the cauterization with the nitrate of silver, applying it much more vigorously than the first time; I moreover enjoined the mother to keep up continual pressure with the thumb over the graduated compress, which I fastened over the navel as firmly as I could. The mother

assured me that she continued this pressure the greater part of one night. Seeing that this was inefficient, and, as I thought, from want of perseverance, I made an application of the actual cautery in the following manner:—I heated to a white heat the extremity of a wire, and applied it freely to the spot from which the blood appeared to escape. Several other means, such as powdered alum, Ruspini's styptic, &c., were used conjointly with the actual cautery, but without any permanent good effect. Ligature or torsion of the vessel was altogether impracticable: repeated attempts to seize it with the forceps or tenaculum entirely failed; the substance which filled the bottom of the navel broke up under the most delicate application of these instruments: there was literally nothing upon which to lay a firm hold, and the blood appeared to come from a point having an indistinct resemblance to a circular orifice situated below the level of the skin, and sunk in the hollow of the navel. Both the cauterization with the nitrate of silver and with the heated iron had the effect of momentarily arresting the hæmorrhage; but upon renewal of the cries and movements of the infant, the eschar formed by these applications was raised up by a fresh flow of blood, and it really appeared as if this fluid had lost all power of coagulating; it was, moreover, thinner than usual, and of a lightish colour. At this period of the case, and after the several applications mentioned above had been persevered in some time without any good result, and the state of the child was becoming more and more alarming, it was suggested to me to use the powder of matico, and through the kindness of a gentleman practising in the neighbourhood, I, after an unavoidable delay, procured some of the leaves of this styptic; but, to my regret, on proceeding to the house with the intention of applying them, I found the infant *in articulo mortis*, and any further attempt was useless. The period of time that elapsed between my first visit and the death of the child was about eight-and-forty hours: the bleeding had, however, as already mentioned, been observed by the mother a day or two previous to the patient coming under my care. No post-mortem examination could be obtained; a circumstance much to be regretted, as the interest of the case would necessarily have

been much enhanced could the state of the liver and its ducts have been ascertained, as also that of the foetal vessels. I have, however, ventured to place it on record, even in this imperfect state, as corroborating many particulars related in similar cases by modern observers.

As far as I have been able to ascertain, Underwood is the first writer who has alluded to this form of umbilical hæmorrhage: he first mentions an oozing of blood from the navel as the consequence of an unkindly separation of the cord, and owing to the shooting up of a soft fungus: this is sometimes attended with a hæmorrhage, which in some instances may prove alarming: it, however, can always be arrested by caustic or compress, with bandaging. "There is, indeed, another kind of hæmorrhage," he adds, "of more importance, but this seems to be sympathetic, and is attendant upon infants who are in an ill state of health during the month, and is perhaps a bad sign: it takes place when the cord has been apparently well healed, but the skin, afterwards gives way, and the bleeding is much more considerable than in the former; it requires, however, nothing more than the application of common styptics, with proper compress and bandage." Through the somewhat confused and contradictory description given by Underwood, one fact can clearly be discerned—viz. that whatever form of this peculiar hæmorrhage he had opportunities of observing, he did not in any case consider it to be of a very serious nature, nor peculiarly intractable, still less as being generally attended with fatal consequences. We shall presently see that the results of more recent observations lead to very different conclusions.

As a contrast to the opinion of Underwood I may quote the following passage from Burns, which distinctly shows that his experience had taught him to consider this form of hæmorrhage as an accident of a formidable nature:—"Sometimes," says this author, "a day or two after the cord separates, or at the time of separation, hæmorrhage takes place: this may yield very readily to compression or astringents, but, nevertheless, may prove obstinate and fatal."

In the prosecution of my inquiries on the subject of umbilical hæmorrhage after the separation of the funis, I have

derived great assistance from the highly-interesting paper of Mr. Edward Ray, read by this gentleman before the South London Medical Society, and inserted in the *MEDICAL GAZETTE* of March 9th, 1849: together with the narrative of a striking instance of this form of hæmorrhage, accompanied by a description of the post-mortem appearances, Mr. Ray has given an abstract of all the cases he had been able to meet with at the time he wrote. His publication is of too recent date to render it necessary for me to enter at any length into the particulars of the case observed by himself, and of those to which he refers; in the sequel I shall have frequent occasion to allude to the leading features of them; but with the view of continuing the history of this remarkable accident, which has been so ably commenced by Mr. Ray, I will proceed to relate, with as much brevity as will be consistent with perspicuity, the main particulars of three cases I have found recorded in two French periodicals. I will also allude, more especially on account of the anatomical peculiarities observed in them, to the cases related by Dr. A. D. Campbell, in the *Northern Journal of Medicine* (vol. i. p. 237), under the title of *Icterus gravis Infantum*.\*

In the number of the *Archives Générales de Médecine* for October 1849, the particulars of two cases are given, a full account of which was first published in the inaugural dissertation of M. Emile Dubois, a pupil of Professor Paul Dubois. In the first the subject was a *male* infant, eleven days old. Hæmorrhage occurred six days after the separation of the cord; it was, however, arrested by a mode of ligature adopted by Professor Dubois, which I will describe when speaking of the treatment of this accident. After the separation of the slough caused by the ligature the hæmorrhage did not recur, and the umbilicus healed; but the general state of the child did not improve; he soon ex-

hibited symptoms of purpura, and blood was passed per anum. Ecchymotic spots appeared in different parts of the body, and death took place about the seventh week. The umbilical vein was almost entirely obliterated, as also the left umbilical artery; but it was not so with the right one, which was still pervious, and presented at intervals slight dilatations, containing small quantities of liquid blood, and some small clots.

In the other case, a healthy woman, æt. 23, was confined of her first child, a *male*, and well conformed: the cord separated on the seventh day, and was replaced by a small ulceration in the centre of the umbilicus. Bleeding commenced the following day, was very abundant, resisting cauterization with the nitrate of silver, compression, &c. The same mode of ligature was then resorted to as in the first case, and the hæmorrhage was arrested: the child died, however, twelve days after, of enteritis. The parietes of the umbilical vein, and of the ductus venosus, were collapsed, but their calibre was not obliterated: the umbilical arteries had the appearance of whitish cords, with a very narrow canal and thick walls; each contained an adherent filiform clot. There was no trace of peritonitis.

The particulars of a case published by M. Thore in the *Gazette Médicale de Paris* (March 11th, 1848), are as follows:—The infant, a *male*, was 13 days old when brought to the hospital: upon examination, a few spots of dried blood were found upon the abdomen; the bleeding returned the night after its admission, and continued, without, however, being very abundant, until the eighteenth day; it appeared to yield to cauterization with the nitrate of silver: the child lived twenty days longer, and finally died of purpura and thrush. The umbilicus was almost entirely cicatrised; the umbilical arteries in the vicinity of the navel, and to the extent of about an inch, were filled with pus and coagula of blood; higher up they contained a very fluid blood; they were patulous in the remainder of their course. The umbilical vein was empty, its walls collapsed, and its calibre less than that of the arteries. Ductus arteriosus incompletely obliterated, containing a little fluid blood.

From Dr. Bowditch's paper.—Y. Z. was confined on 17th August, 1839, after a natural pregnancy and labour,

\* Since this communication was made to the Abernethian Society of St. Bartholomew's Hospital, I have met with a paper on the subject of umbilical hæmorrhage after the separation of the funis, by Dr. Bowditch, published in the *American Journal of Medical Sciences*, New Series, No. xxxvii. pp. 66-71. I have taken the opportunity of adding an abstract of the cases contained in this paper to those I had already collected. It is singular enough, that this subject, which had hitherto passed almost entirely unnoticed, should all at once have attracted the attention of several observers.

of her first child, a female, to all appearances healthy: the funis separated on the third day. The child thrived until the 14th, except that there was occasionally a slight oozing from the umbilicus, with the formation of a small coagulum. On the 14th the hæmorrhage became manifest; was checked by compression, but recommenced on the following day. The umbilicus looked healthy; there was no distinct orifice, but from the corrugated centre of the umbilical depression there was a constant slight oozing of thin arterial-looking blood. Compression, slight astringents, as sulphate of copper, of zinc, were employed without effect. On 16th, the hæmorrhage increasing, nitrate of silver was applied very freely, but appeared only to increase the flow of blood. A double ligature was then passed through the umbilicus and surrounding integuments, so as to enclose the whole: the bleeding was arrested by this means during a space of three or four hours, but it returned: two needles were then passed at right angles to each other, through the skin, to which ligatures were applied, as in hare-lip. A circle of integuments, three quarters of an inch in diameter, was thus enclosed: the hæmorrhage was restrained. On the 17th day, the third of hæmorrhage, the compress over the umbilicus was slightly stained with blood, and some blood appeared also in the dejections: on the 18th, oozing from underneath the compress: a sugar teat used by the child was stained with blood; four bloody dejections, one clotted. A slight ecchymosis on the inside of first joint of right thumb. Several bloody dejections during the day. Constant oozing from the umbilicus. Death took place on the 20th day from birth, on 6th from the commencement of the bleeding. No autopsy was made.

In April 1840, and September 1843, the same lady had two boys, who are now alive and well, without tendency to hæmorrhage. But in January 1845, she gave birth to another child, a *male*, who died of hæmorrhage from the umbilicus. In this case the labour was natural. The child was plump and hearty, rather above the medium size; it thrived; the bowels, however, were never very freely opened; no meconium was discharged, nor yellow stools, but these were whitish, almost clay-coloured.

The urine, on the contrary, was at times of a deep orange colour, as if strongly impregnated with bile. Slight icterus for a few days, but not more than is commonly seen in healthy children.

The cord separated on the 5th day; the umbilicus discharged a little purulent and bloody fluid until the 8th; on the 10th there was a slight oozing, with a spongy appearance of the interior of the umbilical aperture: from this point the blood oozed. A purpuric spot was observed by the nurse on the edge of the left scapula, about half an inch in diameter. The oozing continued notwithstanding the use of tannin and compression. Two fresh spots appeared on the right elbow. The actual cautery was then applied, by means of a large knitting needle, on the 12th day, about 48 hours after the commencement of the hæmorrhage: the child was then of a somewhat yellowish and livid colour.\* The hæmorrhage continued, and the blood showed no tendency to coagulate. Death took place four days after the appearance of the first ecchymotic spot.

The autopsy was performed 26 hours after death. There was nothing remarkable at the umbilicus, nor was there any open blood-vessel evident.

The heart was normal. The hypogastric arteries were somewhat thickened and hardened for an inch from the umbilicus, but no air could be blown through them or the umbilical vein: they contained no coagula.

The organ principally diseased was the liver, which was found to be enlarged, of a yellowish colour externally, quite flaccid, and on incision presented the following structural changes. None of the red parts were perceptible, and the cut surface looked very much like the interior of the colon when covered with soft yellow fæces; the matter was removed with the greatest ease on slightly touching the cut surface with the scalpel; it stained a linen cloth as fæces would.

The gall-bladder was small, contracted, and contained no bile; was healthy interiorly; the ducts were pervious, and contained a little yellow matter.

To these facts observed by himself, Dr. Bowditch has added a brief analysis of twelve others, published after the

\* It is difficult to ascertain, from some contradictions in the report of the case, whether true jaundice did exist or not in this instance.

preparation of his paper in the Boston Medical and Surgical Journal for July 11th, 1849.

From this analysis it appears that death took place in every case,—in the majority from exhaustion; in one, however, the infant died comatose: the hæmorrhage from the umbilicus, in one case, was sudden, and returned suddenly after having been temporarily arrested, causing death in a few hours. In the others it proceeded gradually, and was somewhat checked by the means employed.

Jaundice was a common accompaniment, and an unfavourable sign. Bleeding from other parts was also observed. Purpuric eruptions were present in two, and bloody dejections in six. No mention is made of the post-mortem appearances in these twelve cases.

Dr. Campbell, in the paper already mentioned, has given the history of three cases of jaundice, two of which were accompanied with hæmorrhage from the umbilicus.

In the first, a lady, who had previously given birth to two healthy children, was confined of a third, a *female*, which became jaundiced the day after birth; the cord separated on the 5th day; the stools were light-coloured; the urine of a brown tinge. Hæmorrhage from the umbilicus occurred on the 9th day, after a fit of coughing. Caustics and compression appeared to arrest it, but it returned on the following day, and the child died the same afternoon. The blood which escaped from the umbilicus contained a large quantity of bile, evident from the deep tinge of the clothes.

The internal organs, with the exception of the liver and spleen, were of a pale yellow colour, and bloodless. The liver of normal size, apparently softer than usual; full of bile of the colour of burnt amber. The gall-bladder was very small and collapsed, contained only a little mucus, and *formed a close sac, having no outlet, the excretory ducts leading from the gall-bladder and liver being absent.*

In the second case, the previous history showed that the mother had already given birth to three children, two girls and a boy; the girls were still living; the boy died on the 11th day after birth. The parents stated that he became jaundiced about the third day, and hæmorrhage occurred from the umbilicus on the seventh day, two from the sepa-

ration of the funis: it continued until the eleventh day, when the child died quietly. In the present instance, the infant, a *male*, likewise became jaundiced on the third day after birth: on the seventh there was an oozing of blood from the navel: this was arrested by astringents, roller, and graduated compress; the cord had fallen on the preceding day, leaving a clear and healthy surface.

On the 8th the hæmorrhage returned and continued until the eleventh day, when the child died in a comatose state, in spite of the application of various styptics and pressure, which only restrained the oozing for a short time: the quantity of blood lost was estimated at about  $\frac{3}{4}$  iss.—*Post-mortem.* The body was of a bright yellow colour; all the internal organs, except the liver and spleen, were also yellow. There was no trace of disease about the navel; liver slightly congested, and more dense than usual.

The gall-bladder contained a quantity of bile, which could not escape, *owing to an indurated plug of inspissated bile which occupied the ductus choledochus.*

In the third case mentioned by Dr. Campbell, there was no hæmorrhage from the umbilicus, but jaundice came on the day after birth, and the abdomen was tumid, from enlargement of the liver: the child lived to the age of six months: death then ensued, the liver having increased so as to fill the greater part of the abdomen. Upon examination, *neither a gall-bladder nor bile ducts could be discovered.*

It is difficult, on perusing these curious histories, not to be struck with the very frequent repetition of some most prominent features. A singularity of them which has particularly attracted the attention of Mr. Ray, is, to use the words of this writer, "the peculiar disposition this kind of hæmorrhage has to attack the male sex only, and its liability to occur in a succession of male children from the same parents."

The case that came under my own observation, and several of those to which I have alluded, corroborate the first part of Mr. Ray's proposition; and one of those recorded by Dr. Campbell will be found to confirm the second: at the same time, it must not be forgotten that we have mentioned two cases in which the accident was observed in infants of the female sex. It may, therefore, be questioned whether the fre-

quency of its occurrence in males, as hitherto observed, be not a purely accidental result, which may be no longer found to obtain, as more numerous cases are recorded. Another circumstance which cannot fail to arrest attention is the excessive mortality attendant on this accident: how this result may be modified by ulterior observation, remains to be shown: it is, however, not improbable that the cases extant have been put on record chiefly on account of their fatal termination.

The frequent occurrence of jaundice, of petechiæ, and of extravasations of blood under the integument, or into the gastro-intestinal canal, are not the least interesting features of this singular affection. The physical qualities of the blood are also worthy of notice: it is frequently mentioned as being of a lighter colour than natural, and presenting no tendency to coagulate. The foetal vessels, in some cases, are described as containing some *fluid blood*.

With one exception, the mode in which the blood escaped from the umbilical pit, when recorded, was uniform: it was an oozing, and generally it was difficult to decide during life, and even after death, from which of the umbilical vessels the blood issued: in Mr. Ray's case, however, it distinctly appeared to be supplied by the left umbilical artery.

In my own case, I have already mentioned that it came from a spot having an indistinct resemblance to the orifice of a vessel, but it was impossible for me to determine what vessel it might be. In the first case related by Dr. Campbell, the blood contained a large quantity of bile.

In none of the cases does the quantity of blood lost appear to have been considerable, but the difficulty of estimating this loss with any degree of correctness must be very evident.

In the majority of the cases a remarkable uniformity was observed to exist in the post-mortem appearances in the foetal vessels and ducts; these were constantly found to have undergone only an incomplete degree of obliteration. Upon this subject Mr. Ray remarks, that "little is said by authors respecting the period of change from foetal to extra-uterine circulation, and the mode in which the foetal vessels become closed." From his own observations, he is disposed to believe that it is by the gradual contraction of their coats, and not by

the formation of a clot within them, that the obliteration takes place.

It is, however, but justice to Billard to state, that the changes which ensue in the foetal vessels after birth were carefully investigated by him some twenty years back, and the result of his observations was that the mode of obliteration is not the same in the umbilical arteries and ductus arteriosus, as in the umbilical vein and ductus venosus: in the first it is a consequence of the thickening or concentric hypertrophy of their coats, aided by the contractility of the same. This hypertrophy Billard considers to be of an *active nature*, the blood being obliged to abandon these vessels in consequence of the organic changes which supervene in their walls: in the obliteration of the umbilical vein and ductus venosus no such hypertrophy is remarked. After the section of the funis, the parietes of these vessels collapse, their sides become contiguous, and thus their calibre is obliterated, in the same manner as obtains in all ducts, of whatever kind, when they no longer give passage to the fluids habitual to them.

This second mode of obliteration Billard terms *passive*, and is a result, not a cause, of the repulsion of the blood. Burdach, in his *Physiology*, has also treated this question at some length; and there will be found references to several other writers, both of modern and of less recent date.

With regard to the period after birth at which the foetal vessels and ducts are closed,—notwithstanding some slight discrepancies which are observed to exist between the results of Billard's investigations and those of Bernt, and other writers mentioned by Burdach, still they are all agreed on one point—viz., that the process of obliteration *commences* as soon as the second or third day after birth. From this it is evident that, in several of the cases I have alluded to, this natural process was defective, and not sufficiently advanced.

Still more remarkable than the imperfect state of obliteration of the foetal canals and ducts were the anatomical anomalies observed in the cases of icterus recorded by Dr. Campbell, and more particularly in two of them, where a total absence of gall bladder and bile-ducts, or of these latter only, was found to exist. In no other case that I have

been able to meet with is any allusion made to a malformation or deficiency of any part of the biliary apparatus. Moreover, as a general rule, the original deficiency or absence of the gall-bladder has only been observed as a rare occurrence.\*

What the precise nature was of the structural change the liver had undergone in the second case related by Dr. Bowditch it is not easy to determine, from the very brief account he has given of it. There does not appear, however, to have been any malformation, and it is clearly stated that the gall-bladder was healthy, although contracted, and that the bile-ducts were pervious. From the peculiarities observed in the foetal vessels at the umbilicus, in the case of Mr. Ray, and which are illustrated by a drawing, this gentleman is inclined to suppose that there existed some malformation at that part,—“a sort of common receptacle, in the form of a dilated artery, into which the umbilical arteries emptied themselves, from which the umbilical vein proceeded, and from which also the hæmorrhage took place through the umbilicus.” It is, however, difficult to understand how the foetus could have lived *in utero*, had any such abnormal communication between the umbilical arteries and the vein existed at the umbilical ring.

The treatment of this very unmanageable form of hæmorrhage has hitherto proved very unsatisfactory. The reports of the cases bear sufficient evidence to the utter inefficiency of ordinary hemostatics, such as compression, styptics, and caustics; even the actual cautery has failed. Moreover, from the short duration of the accident, we should not be warranted in placing much dependence on constitutional remedies alone. From these circumstances, it becomes an imperious duty on the part of the medical attendant to decide immediately between tying the bleeding vessel or vessels by cutting down upon them through the abdominal walls, or performing what is termed by French writers the ligature *en masse* of the umbilicus. The first of these operations has been advocated as a last resource by Mr. Ray, Dr. Radford, &c. It does not appear, however, to have been performed; and it is probable that, from

its severity, and the difficulties attending it, many will be deterred from undertaking it. The ligature *en masse* is preferred to all other methods of treatment by M. Paul Dubois. It is executed in the following manner. A cushion is placed under the infant's loins to render the abdomen prominent. The operator introduces horizontally from left to right a hare-lip pin, which pierces the integument at the base of the navel. By means of a loop of thread passed under this pin, he raises the integuments, and a second pin is introduced perpendicularly to the first, and beneath it: the thread is then twisted several times in a figure-of-eight shape round each pin; and to complete the ligature, the base of the umbilicus is encircled with a waxed thread. The pins may be removed towards the fourth or fifth day, but nothing must be done to hasten the separation of the eschar, which must be entirely left to itself.

A similar plan was followed by Dr. Bowditch in the first case related by him. In two in which M. Dubois used it the hæmorrhage was arrested, and was not renewed, although the children ultimately died. The result was not so favourable in the case of Dr. Bowditch, when the oozing returned on the following day, and continued until death.

M. Dubois appears to place great confidence in this mode of tying the navel, and is of opinion that it has no tendency to produce peritonitis.

Burns\* entertains a different opinion, and states that a ligature round the umbilical aperture, or the twisted suture, have not only failed, but appeared, by propagating inflammation to the peritoneum, to hasten death. However this may be, the ligature *en masse* will, I think, always be preferable to the far more serious operation of tying the bleeding vessel by cutting down upon it through the abdominal walls. And when we consider the more than doubtful utility of all other means, and the loss of time incurred in applying them, it appears to me that the only safe line of conduct would be to proceed immediately to tie the navel in the manner described, as offering the best chance that mechanical means afford of arresting the hæmorrhage. Unfortunately, however, as the observations show, in these peculiar forms of umbilical hæmorrhage,

\* Rokitansky, vol. xiv. p. 360.

\* Princ. of Midwifery, p. 576.



attended with other signs of a diseased state of the blood, no great reliance can be placed on mechanical means of whatever nature; and, as already stated, there is but little time and opportunity for the exhibition of constitutional remedies. Nevertheless, every practitioner, in presence of a case of this kind, will feel a strong desire, as much for his own satisfaction as for that of the friends of the patient, to arrest the hæmorrhage from the navel; and for this reason principally do we advocate the ligature *en masse* in preference to the tying by incision.

The interpretation of the facts related in the preceding pages, and the consideration of the causes of this peculiar form of hæmorrhage, and of its concomitant phenomena, might afford occasion for much speculation.

Before proceeding with the few remarks I would devote to this part of my subject, it is necessary to premise that they will relate to those forms of umbilical hæmorrhage only which may be termed intractable, to distinguish them from the bleeding which sometimes accompanies the formation of fungous growths from the umbilicus, or which is the consequence of the premature and violent removal of the portion of desiccated funis, in both which cases the flow of blood is generally controlled by the ordinary remedies, when timely applied.

In presence of a bleeding which obstinately resists the most powerful and varied means opposed to it, one is naturally led to connect it with that interesting class of facts which are generally considered to be the consequence of an hæmorrhagic diathesis or constitution: and, indeed, on comparing these cases of umbilical hæmorrhage, and their concomitant symptoms of a diseased state of the blood, with the facts just alluded to, and taking into consideration the frequency of its occurrence as hitherto observed in infants of the male sex, which is well known to be a prominent feature in the history of the cases attributable to an hæmorrhagic diathesis, one cannot but be struck with the many points of analogy which they present.

The cases, however, before us are essentially deficient in one particular, which would be necessary to render the analogy more complete—namely, that in no one is the hereditary transmission

of the hæmorrhagic constitution clearly proved. Now this appears to be a characteristic trait in the history of the so-called *bluter*, or bleeders, of the Germans.

In my search for cases which might bear out the analogy between these two classes of facts, I have had the good fortune to meet with one only in which the hæmorrhagic constitution appears to have been transmitted from *the mother* to the child. From the interest it presents, I am induced to give a brief abstract of it.

A woman, æt. 23, had during her two confinements such copious epistaxis that it was found necessary to plug the nostrils to master it. *Her mother* and *her sisters* were also subject to epistaxis, hæmoptysis, and abundant hæmorrhages; but the most remarkable feature of the case was, that this woman's second infant died on the third day after birth in consequence of hæmorrhage *from the umbilicus and the gums*, preceded by inflammation of the umbilical vessels, of the bladder, scrotum, and left testicle. It also presented *ecchymotic spots on the left forearm*.\*

That there was a diseased state of the blood, dependent on a deficiency of the fibrine, in these cases of hæmorrhage from the umbilicus, is a fact which, I think, will readily be admitted; but the determination of the causes producing this state appears to me to be a question of great difficulty. One circumstance, however, would seem to furnish some clue towards its solution,—at any rate, as regards a certain number of these cases,—I mean the presence of the jaundice which was observed to exist prior to the supervention of hæmorrhage.

The admixture of the biliphæin or colouring matter of the bile with the blood appears to determine certain changes in this fluid, one of which is a diminution of the fibrin, and, as a consequence of this, an impaired power of coagulation.† Clinical observation

\* Vide Gaz. Méd. de Paris, p. 105, 1842. From the Oesterreich. Medicin. Wochenschrift.

† Vide Simon's Chemistry, vol. i. p. 187, and Dr. Horaczek, Die gallige Dyscrasie (Icterus), Vien 1844, and Brit. and For. Med.-Chir. Rev. vol. xxii. Hunter, however, only admitted this action of the bile on blood extracted from the body, and was of opinion that it could not enter the blood in sufficient quantity during life to produce the phenomenon of non-coagulation; and adds that, in the severest form of jaundice, this fluid retains a great power of coagulating,—Vide, On the Blood, vol. iii. Palmer's edit.

appears to have confirmed these results of chemical analysis. In the discussion which followed the interesting communication of Mr. Ray to the South London Medical Society, Dr. Hughes mentioned a case in proof of the tendency of jaundice to give rise to an hæmorrhagic condition of the blood, which occurred in Guy's Hospital eighteen years ago, when it was found impossible to restrain the oozing of blood from the orifices after cupping, and which, of course, ended fatally. M. Andral\* has recorded a case of jaundice dependent on an incomplete obliteration of the ductus choledochus, with a granular state of the liver, which was accompanied during life with various sanguineous exhalations into the digestive canal, the tissue of the lungs, and subarachnoid cellular tissue.

M Durand Fardel† has related a case of protracted jaundice in which the integuments were of a dark-yellow colour, approaching to green (*tirant sur*

*le vert*). Death was the consequence of an abundant hæmorrhage from the intestines: the biliary ducts were thickened and narrowed.

Many similar cases could, I have no doubt, be met with, especially in those forms of green or black jaundice in which the dark colour of the skin does not appear to depend simply on the admixture of the colouring matter of the bile with the blood, but where it is probably produced partly by extravasation of the blood into the subcutaneous cellular tissue.

But whatever assistance we may obtain from these facts in the explanation of those cases of umbilical hæmorrhage preceded and attended by jaundice, there still remains a certain number in which the symptoms of a diseased state of the blood were quite as strongly marked, and which, nevertheless, at no period of their course exhibited any traces of jaundice. It is for these facts that I am at a loss to offer even the most conjectural explanation.

\* Cliniq. Méd. t. ii. p. 534, et seq. 4th edit.

† Arch. Gén. de Méd. Juin 1840.

The first part of the paper is devoted to a general  
 introduction of the subject. It is then divided into  
 three main sections. The first section deals with  
 the general principles of the theory. The second  
 section deals with the special cases. The third  
 section deals with the applications. The paper  
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The second part of the paper is devoted to a  
 detailed study of the special cases. It is then  
 divided into two main sections. The first section  
 deals with the case of a single variable. The  
 second section deals with the case of multiple  
 variables. The paper concludes with a summary  
 of the results.