

RECHERCHES PHYSIOLOGIQUES ET PATHOLOGIQUES SUR LA TRANSFUSION DU SANG

By: Mr. ORÉ

A TRANSLATION BY PHIL LEAROYD

A copy of the notes of the 5th August 1863 meeting of the Société de Chirurgie titled 'Physiological and pathological research on blood transfusion' by Mr. Oré, presented by Mr. Broca and published in the 18th August 1863 edition of the journal *Gazette des hôpitaux civils et militaires* (number 96, pages 383-384) can be viewed or downloaded from the following site:

https://archive.org/details/BIUSante_90130x1863/page/n392/mode/1up

The notes of this meeting, presented by a Mr. Broca, involve a submission by Mr. Oré which also provides an insight into the discussions made by the members of the 'Society of Surgery'. Whilst the presentation includes some interesting facts regarding the recent research into the different aspects of blood transfusion, it is I believe the member's discussion afterwards that provides an excellent insight into the opinions of surgeons regarding blood transfusion at that time.

The presentation mentions (for the first time in my experience) the cruelty towards animals that some experiments entailed, as well as questioning the effective completeness of the defibrination process, something again which other authors have somewhat glossed over.

I am unsure as to the actual memoir produced by Mr. Oré that is mentioned in this document given that it is discussed in 1863, but it may well be Mr. Oré's thesis with a similar title that was published in 1865 – see:

Oré, P.C. (1865) Recherches expérimentales sur la transfusion du sang. Thèse pour le doctorat ès-sciences naturelles. [Experimental research on blood transfusion. Thesis for the doctorate in natural sciences] Bordeaux.

<https://www.babordnum.fr/items/show/329>

I have produced a translation of this dictionary entry from the original French into English to hopefully enable its content to be appreciated by a wider audience. Whilst I am obviously aware that instantaneous computer generated translation is available, this process however struggles with accurately reading the original text and interpreting specialist terminology, as well as producing a 'colloquial style' not always representative of the original text. In addition, an 'automatic translation' may either purposely or inadvertently alter the wording to 'make it read better' but in doing so there has to be an element of interpretation involving something on the lines of 'I believe that this is what the author is actually trying to say'. I want to avoid that as much as possible and try to present what the author actually wrote and as a result the reader may find that the English text does not 'flow' as well as it could. Although I have taken great care in accurately identifying the original text and producing a true representative translation of the author's original wording I cannot guarantee that this work does not contain 'translational errors' and the reader is recommended to check specific details against the original text.

I have maintained the original paragraph settings and general layout of the text within the translation. People's names have been reproduced as originally printed.

Physiological and pathological research on blood transfusion.

– Mr. BROCA read a report on the work of Mr. Oré (of Bordeaux) on this subject.

One of our most distinguished provincial colleagues, Mr. Oré, professor of physiology at the Bordeaux School of Medicine and surgeon at the Saint-André hospital, sent you a few months ago, in support of his candidacy for the title of corresponding member, a considerable work entitled *Physiological and pathological research on blood transfusion*.

For several years now, Mr. Oré has been tirelessly concerned with this question, which is both physiological and surgical, and the desire to respond to a wish expressed for a long time already within the Society of Surgery, has not been a stranger to the direction he has given to his work. Many of you will no doubt remember the remarkable observation that I communicated to the Society by Mr. Nélaton, on 18 December 1850. One of the interns of the Saint Louis Hospital, a brave young man whose name I cannot pronounce without some emotion, for this name is that of a fellow student and a lamented friend, Charles Dufour, did not hesitate to give his blood. The transfusion had an immediate and almost unexpected result. The patient, who for a moment had seemed dead, revived, the pulse rose, the heat returned, at the end of two days the breasts began to swell, and this made it possible to count on a remarkable success, when an accident unfortunately too frequent in hospitals, puerperal metro-peritonitis, caused the death of the patient twenty-one days after the transfusion.

When this important fact was communicated to us, no one thought of blaming the transfusion for the death. The transfusion had produced everything that could be asked of it. It had resuscitated the patient, but it had not been able to save her from the other chances of death inherent in childbirth. So the Society was deeply struck by the benefit due to the transfusion, and Mr. Larrey in particular expressed the wish that this operation, which was probably too much praised in the past, but no doubt also too much disdained today, would be the subject of new research intended to establish its practical value. To respond to the desire expressed by our eminent colleague, Mr. Oré has undertaken a double series of historical and experimental research on blood transfusion. The important work which he read to the Society last December, and which relates to the introduction of air into the veins, relates to the same research.

As the process of direct vessel-to-vessel transfusion is not applicable to humans, it is by means of a syringe that the blood must be transfused, and everyone knows how difficult it is to make an injection of a liquid without exposing oneself to pushing out a few air bubbles at the same time. It was therefore necessary to know what quantity of air could be introduced into the veins without inconvenience, and this is how Mr. Oré was led to study the effects of gas injections into the veins.

I do not have to talk to you about the work which he has communicated to you on this last question, and which is to be the subject of a special report; but I nevertheless thought it necessary to point out to you the solidarity that exists between the two memoirs that Mr. Oré has submitted you.

The dissertation on transfusion consists of two parts, one physiological, the other pathological.

The physiological part is purely historical and critical; it is the very complete exposition of one of the most curious questions of physiology. This history has doubtless already been written many times, but the author has made it interesting and above all instructive, by reproducing *in extenso* a great number of piquant details, scientific and judicial documents, relating to the famous trial of the transfusionists of the seventeenth century.

Mr. Oré divides the history of transfusion into three periods; the first, which might be called the period of fabulous times, for things were then seen which we can scarcely believe today, lasted barely three years, and ended in 1668 with a decree of the Châtelet, forbidding the practice of transfusion in humans without the approval of a doctor regent of the Faculty of Paris. As a result of this notice, the transfusion was abandoned, then forgotten, and there was no further mention of it for a period of two hundred and fifty years. Finally, the third

period, which deserves to be called the scientific period, was inaugurated in 1818 by the works of Blondell.

This time the experimental research was conducted in a methodical manner, and with a perfectly determined aim. During the first period, the illusory goal had been pursued, of regenerating the blood by transfusion, of curing the most diverse illnesses, madness, epilepsy, phthisis, and even of rejuvenating the elderly; the blood of the calf or lamb was injected into the veins of the man; the blood of these innocent beasts seemed preferable to human blood, because no one was ignorant at that time that the nature of man has been corrupted since original sin, while the brute, having neither passions nor disorders, provides pure and natural blood. We also learned without too much surprise that a madman, treated by the injection of a few ounces of calf's blood, had regained enough reason to confess and to stop beating his wife.

Blondell, dismissing these strange theories, nevertheless asked himself whether the transfusion, originally received with almost insane enthusiasm, had not been rejected afterwards with too exclusive a severity. He thought that this operation, compromised by applications as imprudent as they were absurd, might at least furnish a valuable resource in cases where life is threatened by excessive loss of blood. It was in this direction that he directed his research, and most of the transfusion experiments which have since been carried out on animals have been aimed at determining the conditions favourable to the success of the transfusion practiced under such circumstances. Among the authors who have contributed to shedding light on this subject, we must mention in the first place Messrs. Prévost and Dumas, Dieffenbach, Bischoff, Polli, Brown-Séguard, and finally Mr. Nicolas, author of an important thesis on blood transfusion, defended in 1860 before the Faculty of Paris.

It results from the numerous and varied experiments due to them, that the defibrinated blood of an animal can be injected in small doses into the veins of an animal of the same species without inconvenience; that animals, exhausted by previous bleeding and plunged into a state of annihilation which would be fatal without the resource of transfusion, can by this means be recalled to life, and that for this it is sufficient to inject them with a quantity of blood much less than that which they have lost. But there are still many obscure or uncertain points that require new experiments. The dose of the injection, the temperature of the injected blood, the quality of the prior defibrination and the defibrination process, the operating manual and a large number of practical details have yet to be determined. It is clear that the operation of transfusion can only take its place in conventional surgery when all these questions have been definitively resolved. That is why Mr. Oré has devoted several years to the experimental study of transfusion, and if we think of the frequency of death by haemorrhage, of the moving situation of a surgeon, who, after having stopped the blood, nevertheless finds himself powerless to bring his patient back to life, we will recognize that this subject is one of those that most deserves our attention. This is one of those cases which might be cited among many others, in which the experimentation carried out on brutes directly serves the interests of mankind, and in which the most fervent protectors of animals must reserve a part of their sensibility for human beings whom the progress of experimental surgery can snatch from death.

Desiring to put the finishing touches to his personal research before communicating it to you, to answer all objections and to remove the apparent contradictions that exist between certain results announced by his predecessors, Mr. Oré did not think it necessary to treat the physiological question before you *in extenso*. He also considered that the essential point, for the moment, was to demonstrate by observations collected on man, the practical usefulness of transfusion. For this, he has collected with the greatest care, and reproduced in full in his memoir, all the observations on transfusion that have been published since 1818, either in France or abroad. This account is necessarily very long, but you will not fail to recognize its usefulness. A statistical table of 79 cases concludes the memoir of Mr. Oré. The author must have included a certain number of facts which I will not tell you about; although I have given to the third period in the history of transfusion the name of scientific period, which it unquestionably deserves, it has happened more than once that adventurous practitioners, as

there will always be, have dared to treat by transfusion phthisis, cancer patients, madmen, individuals suffering from dysentery or even diseases that they have not been able to characterize. These facts, which are nine in number, seem to me to have to be set aside. I will also mention fourteen cases of spontaneous anaemia or chlorosis, which do not seem to me to be of a nature to serve as a model. This leaves 56 cases of transfusion for haemorrhage; they are the only ones who, in the present state of the question, should concern us.

The transfusion was performed ten times for traumatic haemorrhages and saved 5 patients.

It has been performed 46 times on women in childbirth, rendered bloodless by excessive blood loss. 38 patients, that is to say, 82 out of 100, recovered.

These results speak for themselves, and I would add that the immediate direct success of transfusion has been even greater than the preceding figures indicate. Three women who have given birth, including that of Mr. Nelaton, have succumbed to late puerperal accidents; which brings to 44 out of 46 the number of women in whom the transfusion produced the effects that were expected. Likewise, the five patients suffering from traumatic haemorrhages who were not cured succumbed to accidents to which transfusion was completely unrelated. But let us, if we wish, take into account the interpretations, accepting as conclusive only the observations of completed and definitive healings; let us leave to the charge of transfusion all cases where other causes have caused the death of the patients; there will still remain the very remarkable and encouraging fact that transfusion has cured 50 per cent of the individuals exhausted by traumatic haemorrhages, and 82 percent of the women cured by puerperal haemorrhages.

This operation, which is too little used, therefore deserves more attention than is generally given to it, and Mr. Oré will have rendered surgery a real service by contributing by his persevering research to spreading it in practice.

Your committee, gentlemen, has the honour to propose to you:

- 1° To thank Mr. Oré for his important communication;
- 2° To invite him to send you shortly the work on experimental physiology in which the results of his personal research will be recorded;
- 3° To send his memoir back to the publication committee;
- 4° To honourably inscribe his name on the list of candidates for the places of national correspondents which will soon be declared vacant.

Mr. CHASSAIGNAC. I would like to know if among the patients whose observation Mr. Oré has cited, there are a large number in which the blood has been defibrinated before being transfused; and I ask this question because in the only case of transfusion that I have performed, this manoeuvre of defibrination left me with a bad impression: it seemed to me that part of the vitality of the blood was being taken away.

Mr. BROCA. In my report, I identified the issue of defibrination as still under consideration. In the majority of cases, the blood was defibrinated. It was recognized in animal experiments that defibrination was useful, but then it had been complete. However, it is extremely difficult to obtain this complete defibrination; most often fragments of fibrin are left to remain, which produce lesions that are found at autopsy. In his work, Mr. Oré aimed to shed light on this question.

Mr. MOREL-LAVALLÉE. It would be very essential to know what were the condition of the patients before the operation, and on what set of symptoms it was based to judge that transfusion was indicated.

Mr. FORGET. I think it would be interesting to know if the cases in which the blood has been defibrinated are the ones that have been followed by success.

Mr. BROCA. In a very large number of observations, it is not said how the blood was treated. It was Bischoff and Dieffenbach who were the first to highlight the advantages of defibrination. However, in animals where the transfusion can be carried out from vessel to vessel, the operation is more successful. I do not pretend that the importance of fibrin should be exaggerated, for it is the globules that seem to play the principal role. It is not a

question of giving back to the patient all the blood he has lost, but of giving him the strength and time to make it again. Mr. Morel asks me a question that arises in all major operations. There is a moment when the whole of the phenomena is such that for every educated physician the patient is lost: it is then that one operates.

Mr. MOREL-LAVALLÉE. Apart from this assessment, based on medical tact, there are symptoms which must have provided the indications, and this is what I would like to see pointed out in the observations.

Mr. CHASSAIGNAC. I had not decided alone on the operation on the patient of whom I have just spoken; Mr. Monneret had urged me to operate, because the patient was quite dying. This case was not a happy one, and I had been discouraged, because the manoeuvre of defibrination seemed to me to be bad, and because, on the other hand, if one does not defibrinate, a clot obliterates the cannula. The reading of the Mr. Oré's work makes me reconsider my first impression, and I see in it that defibrination is not so bad a thing as I had thought.

Mr. VERNEUIL. I take the question from Mr. Morel, and I think it would be useful to see the observations from this point of view. But it is fair to note that for these operations carried out *in extremis*, criticism is difficult. Without doubt, transfusion could, in cases of traumatic haemorrhage, be practised more often; but one is taken unawares, one loses time, and one does not think of the operation. I have seen, for my part, several patients die as a result of traumatic haemorrhages without it being possible to give them any help, and when the haemorrhage had been stopped, life was sometimes extinguished two or three hours later, as a result of the excessive exhaustion caused by the loss of blood.

Mr. MOREL. I did not criticize the operations that were carried out; I asked whether the authors of the observations had given details that would allow us to judge whether they had always operated on purpose.

Mr. BROCA. We have talked about the need to keep the blood warm; but it is injected in such small quantities that it could be left to cool without inconvenience. Refrigeration is also a way to delay clotting. There is still another way to prevent clotting; this means, which the transfusionists were well acquainted with, consists in the use of alkalis, such as ammonia salt and soda ash.

Mr. DEPAUL. The question of transfusion has had the fate of many others which have been successively taken up and abandoned. With regard to women in childbirth, I must say that I have read the observations, and I have not found a single one that was conclusive; I am therefore surprised that Mr. Broca seemed to believe that 82 out of 100 patients are cured. I am convinced that the women who have been operated on and who have been cured would have been cured without it. It should not be forgotten that haemorrhages in women in childbirth occur in two ways. Sometimes their progress is sharp, rapid, in a way lightning-like, and then there is no time to act; sometimes the haemorrhage is slow, chronic, so to speak, and it is very rare that it leads to death. All in all, the transfusion operation inspires me with little enthusiasm.

Mr. BROCA. I have said, no doubt, that the operation of transfusion deserves more attention than is generally given to it, but I have not pretended that 82 out of 100 patients can be cured in this way. Mr. Depaul distinguished between acute haemorrhages and slow haemorrhages. Between these two forms, there is another which includes cases in which the patients have lost a great deal of blood, still retain a very weak pulse, and die after a few hours without the blood having continued to flow. I saw with Mr. Blot a sick woman who took two hours to die like this. According to these cases, to which Mr. Verneuil alluded to, that after having used all other means, one could have recourse to transfusion.

Mr. BLOT. I associate myself with the remarks just made by Mr. Depaul. As for the fact that I saw with Mr. Broca, if the haemorrhage was fatal, it was because the patient was albuminuric, and then everything became useless.

– The meeting was adjourned at half-past five.

The annual secretary, FOUCHER.