

WEITERE ERFAHRUNGER AUS UBER 400 DIREKTEN BLUTTRANSFUSION VON VENE ZU VENE.

By: PROF. F. OEHLECKER.

A TRANSLATION BY PHIL LEAROYD

A copy of the paper 'More experiences from over 400 direct vein to vein blood transfusions' by Prof. F. Oehlecker, published in 1924 in the journal *Zentralblatt für Chirurgie*, can be read or downloaded from the following site:

<https://archive.org/details/zentralblatt-fur-chirurgie-51.1924-hefte-27-52/page/2346/mode/2up>

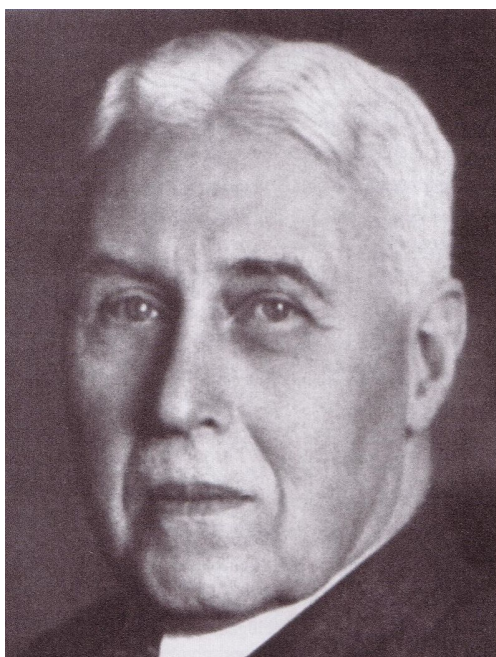
This rather short and somewhat disjointed paper by Prof. Franz Oehlecker provides some interesting insights to the type of discussions that were occurring in Europe in the 1920s regarding blood transfusion. The author alludes to knowing about and using grouping sera to ABO group the patient and donor to ensure 'matching' prior to transfusion but identifies that he prefers the use of an initial small volume transfusion to assess 'compatibility'. He also mentions indirect transfusion using citrate anticoagulant but defends direct vein-to-vein transfusion as it is 'what he knows best'.

Oehlecker does not identify the device that he uses for his direct transfusions but it is one that allows intermittent volume transfer, interrupted as necessary with isotonic saline solution (i.e. probably Roussel's 'transfuser'). It is unfortunate that his defence of the importance of blood transfusion and his use of it in different surgical situations is not more thoroughly presented – especially from an historical viewpoint!*

* See also: Oehlecker, F. (1933) *Die Bluttransfusion*. Berlin: Urban and Schwarzenberg.

I have produced a translation of this paper into English to enable its content to be appreciated by a wider audience. Whilst I am aware that instantaneous computer generated translation is available, this process 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. The paragraph settings and general layout of this paper has been maintained within the translation. The numbered references are placed at the bottom of the relevant page where they occur in the original article - these have been placed together at the end of the translated article.



Prof. Franz Oehlecker
(Photo credit: Wikimedia Commons)

MORE EXPERIENCES FROM OVER 400 DIRECT VEIN TO VEIN BLOOD TRANSFUSIONS.

PROF. F. OEHLECKER.

There is still some uncertainty and disagreement about some issues surrounding blood transfusion. There is still some confusion and disagreement about some issues of blood transfusion. Since some controversial points can only be clarified or corrected by practical results on a large amount of material in addition to exact scientific investigation, I would like to share some of my recent experiences.

The question of haemolysis is of greatest interest: in the case of clinical reactions following transfusion, a strict distinction must be made between the symptoms which appear immediately in the first minutes after the transfer of blood and those which sometimes appear in some cases $\frac{1}{2}$ to 1 hour afterwards. These latter reactions have nothing to do with haemolysis; they consist of chills and a fever that usually soon subside. These later onset symptoms (especially in the case of a severely depressed patient) may appear frightening to those who have not yet observed them, but they soon pass and are of no particular importance.

Haemolysis is characterized by conspicuous clinical manifestations, which begin immediately in the very first minutes of blood transfer. If, for example, 10-20 cc of blood has been transfused, and the patient's behaviour remains absolutely calm and unchanged, the two types of blood are compatible and the transfusion can be continued. However, if the patient shows noticeable restlessness in the first 1-2 minutes; complains of anxiety, palpitations or even low back pain and the pulse gets worse, there are signs of haemolysis. Sometimes we see how the previously pale, anaemic patient, suddenly shows a surprising redness on his face, which soon turns into a pale, livid coloration. In severe haemolysis, especially if a lot of blood has been transferred quickly, the pulse disappears at the periphery and slight disturbances of consciousness, vomiting and defecation may occur. This transfusion shock forms a very alarming picture for the uninitiated, but it slowly improves after a few minutes. At the beginning of the transfusion, we usually transfer 10 or 20 cc of

blood under close observation of the patient and the pulse. Then it is best to give 30-50 cc of blood, especially if there is still any uncertainty and observe again for a few minutes. If there are now clear signs of shock, the blood transfusion must of course not be continued.

It has been claimed that there are transfusion shock phenomena which are not accompanied by haemolysis. Despite my numerous transfusions, I have never seen such a case. This fallacy was apparently arrived at because man did not distinguish between haemoglobinemia and haemoglobinuria. After the onset of shock symptoms, the transfusion was stopped and, because no haemoglobin was seen in the urine, it was concluded that there was no haemolysis. However, it is important to know that about 50 cc or a little more blood can be dissolved in the foreign circulation without haemoglobinuria occurring. The dissolved dye is first collected by the liver. As I have explained in my previous work, in many transfusions I have taken blood samples from the recipient before the blood transfusion and after the blood transfusion or immediately after symptoms of shock for spectroscopic examination of the serum. I found that haemolysis (haemoglobinemia) was always present when symptoms of shock occurred.

I have previously emphasized that all preliminary serological tests are not absolutely safe and flawless, and I still take the same position today. But blood group determination according to Landsteiner-Jansky-Moss, which Hotz particularly recommended to us, is an excellent, practical method for eliminating most of the dangers of blood transfusion. I owe a great debt of gratitude to Mr. Clairmont for providing me with the necessary test sera. We now use the group definition as a matter of principle. (1) However, in order to precisely determine the value and reliability of this method, we proceeded as follows in more than 50 cases: In the case of the donor and the recipient, an exact group determination was made, as well as blood samples taken for spectroscopic examination. Regardless of the failure of the group determination, the transfusion was attempted, and the initiation of the transfusion was carried out in a cautious manner, as can be easily done with my method, and with which no harm was ever done. In the case of our large precisely examined material, it has now been found that in 90% of the cases the predetermination was correct, but that in 10% it was not correct. In two cases, a large blood transfusion could be carried out without any disturbance, although it should not have been carried out according to the group determination. In three cases, haemolysis occurred where, according to group determination, the blood types should be compatible. The cases have been investigated so closely that any source of error is excluded, and indeed Mr Clairmont has had the kindness to check our investigation in some cases.

It has also been stated by others that the agglutination test is not absolutely reliable. It must therefore be demanded that the donor be selected according to the determination of the group, but that the biological test must nevertheless be made as a last resort, i.e., that the transfusion must be begun with small doses, cautiously palpated. This point of view has recently been expressed by, among others, Breitner (Klinik v. Eiselsberg) and von Hempel-Heller. Anyone who deviates from the above rule can probably experience a whole series of smooth transfusions until an unfortunate coincidence unexpectedly occurs. This danger is particularly great with the Brown and Percy method, when a large amount of blood is pumped into the recipient as quickly as possible in succession in order to avoid clotting, relying on the agglutination sample.

The biological sample becomes particularly important where transfusions are carried out less frequently, where test sera are not currently available or where there is no certainty or practice in the method of group determination.

In addition, it is essential in the selection of the donor that the donor is strong and healthy. The view that the blood of relatives is more suitable, or even that the blood of the same sex should be taken, is erroneous. - Apart from syphilis, it should be remembered that malaria is not transmitted during transfusion. People, who have been in malaria areas, even if they were not clinically ill, are still unsuitable for transfusion years later. (2) - If the blood of a donor was suitable for a transfusion, the same is true if the transfusion is repeated; no agglutinins are formed. - (Likewise, no anti-haemolysins are formed; a donor whose blood

was unsuitable for transfusion is also not usable for a second blood transfusion later for the same case.)

My method (pumping the blood from vein to vein with intermediate rinsing of salt water) has been carried out by my colleagues - especially Mr. Cornils and Mr. Hinrichsmeyer - and myself well over 400 times. Usually, these are large transfusions of 800-1000 cc. Like any surgery, the delicate act of transplanting the extremely delicate blood tissue requires practice and familiarity with the instruments. (3) The transfusion from vein-to-vein is neither an infusion nor an internal measure, but a not indifferent surgical intervention, which has the great advantage of being far more physiological than an indirect procedure, where the blood is first stirred in a vessel, subjected to the action of air and cooled by a chemical agent, and only then infused. - There is no denying that the citrate method can nevertheless be useful in some situations and for those who have not mastered another technique.

In Brown and Percy's method, blood is drawn up from the donor in a carefully paraffinised glass cylinder fitted with a rubber balloon and then quickly pumped into the recipient's vein, into which a glass cannula has previously been attached. Since it has been said by some that this method would be likely to supersede my procedure, I would like to say the following by way of comparison: The American method has the only advantage that the donor and recipient do not have to lie next to each other. Like Hempel (Heller), whose detailed, recently published work (4) may be referred to, I have never experienced any disadvantage or particular inconvenience for the donor in this juxtaposition. For the rest, however, it seems to me that all the advantages are on the side of my method: my apparatus is more convenient to sterilize and more quickly ready for use. It does not need to be paraffinised. - A larger amount of blood can be transferred; the extraction can be slower for the donor, but also more thorough, and the donor can immediately receive saline solution as a substitute from the apparatus at any time. - The compressive force required to overcome collapsed veins in a severely depressed receiver is greater. - The blood remains in a small pathway closed from the outside world for only a very short time and only comes into contact with physiological saline solution. If we pump 50 cc of blood each time, it takes barely 20 seconds, but it should be borne in mind that only the first parts of the blood are only in the foreign bloodstream in about 20 seconds. The last parts sucked in are immediately or within a few seconds already in the foreign venous tract. So we are already getting very close to the type of transfusion that is impractical, but the best from a physiological point of view, namely the vascular suture. - Furthermore, we can interrupt the transfusion at any time, so that at the beginning of the transfusion a biological test can be made and waited quietly, whereas in the method of Brown and Percy the blood must be delivered to the recipient as quickly as possible.

Of course, practice makes a big difference in any method. But I believe that an objective judgment will have to admit that my method best meets the biological requirements, is in many respects more practical, and is also the most suitable for reducing and eliminating the last dangers of haemolysis, which even the agglutination test in some cases out of 100 cannot prevent.

A few brief remarks on the indication: Blood transfusion is, of course, primarily indicated in the case of heavy bleeding, especially if bleeding has been repeated. There are cases where saline infusions alone are not enough. In the case of gastric and intestinal bleeding, a (not too large) transfusion can probably have a haemostatic effect on minor bleeding. (5). Otherwise, as with any other bleeding, the source of the haemorrhage must of course be surgically blocked before the blood transfusion. Or, in very severe cases, a transfusion must be given, operated on and then blood transferred again. In this way, we have been able to get through desolate cases (severe blood loss in the case of large Grawitz's tumour, bladder papilloma, rectal polyp, etc.) where saline infusions would no longer be successful.

Good results in haemophilia (blood from the father or strangers), purpura haemorrhagica and others. In preparation for operations for stomach cancer and other tumours, where the patient was very anaemic and very run-down.

The transfusion has also proven to be effective in cases of prolonged shock, e.g. after heavy crossings (although the type of impact here is still unclear), as well as in the collapse stage of acute pancreatic necrosis.

In severe cases of sepsis, true bacteraemia, endocarditis lenta, etc., the blood transfusion is without any influence, but it often has a brilliant effect in patients who have suffered severe phlegmons and suppurations and do not recover properly. Here, a blood transfusion often changes the picture in one fell swoop, and a quick cure occurs. Apart from many special cases that have been sent to me and cannot be listed here, we have done most of the transfusions in pernicious anaemia. The anaemic symptoms, which severely torment the patient in the form of ringing in the ears, palpitations, etc., disappear immediately, and in a large number of cases the transfusion continues to have an irritating effect on the bone marrow to produce new blood. The blood transfusions were also often repeated here. The overview of a large amount of material allows us to conclude that large blood transfusions, in addition to internal treatment, are primarily capable of prolonging life in pernicious anaemia.

(1) My colleague Dr. Cornils will report in more detail. - When in this journal (1924, No. 28, p. 1508) Kubányi says that at the congress of chief surgeons, I alone was against the agglutination test, this is a misunderstanding,

(2) *Deutsche med. Wochenschrift*, 1920. Nr. 37.

(3) The technical details, the behaviour of the veins in the crook of the elbow, etc., must be studied carefully: see in the *Deutschen Zeitschrift für Chirurgie*, vol. CLXV., p. 397, 1921. Particular attention should be paid to the footnote on the last page regarding the purchase of a good set of instruments from the Krauth company in Hamburg (Gänsemarkt).

(4) Bruns' *Beiträge zur klinischen Chirurgie*, Vol. CXXXII, Hft. 1, 1924.

(5) See also Stegemann (Kirschner), *Archiv f. klinische Chirurgie*, Vol. CXXII, p. 754, 1923.