ZUR TECHNIK DER INDIREKTEN BLUTTRANSFUSION

By: F. MERKE

A TRANSLATION BY PHIL LEAROYD

A copy of the paper 'On the Technique of Indirect Blood Transfusion' by Dr. F. Merke, published in 1923 in the journal *Zentralblatt für Chirurgie* (reference volume 50, number 33, pages 1275-1276) can be read or downloaded from the following site:

https://archive.org/details/zentralblatt-fur-chirurgie-50.1923-hefte-27-52

This short illustrated paper describes an alternative transfusion method that uses a (pressure) irrigator instead of gravity (i.e. inverting the blood bottle) to drive the blood from the bottle, and the use of a needle instead of a cannula for entry into the recipient's vein. The method also uses a paraffin coated, graduated, double-walled, evacuated bottle (i.e. a thermos bottle) – that helps to stop the blood coagulating and aids keeping it warm. Infusion of the blood into the recipient is via a syringe and the use of a 'few cubic centimetres of a 10% citrate solution'.

I have translated Merke's paper from the original German into English in the hope that the content may be appreciated by a wider audience. Whilst I am obviously aware that instantaneous computer-generated translation is possible, this process struggles with specialist terminology and also produces a 'colloquial style' not always representative of the original text. I have purposely produced this translation to be 'un-interpreted', in that I wanted to maintain the author's original meaning / wording as much as possible. As with any translation the wording may be purposely or inadvertently altered to 'make it read better' but in doing so there has to be an element of personal interpretation involving something on the lines of 'I believe that this is what the author is actually trying to say'. I wanted to avoid that as much as possible and try to present what the author actually wrote and as such the reader may find that the English text does not 'flow' as well as it could. Although I have taken great care not to misrepresent 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.

ON THE TECHNIQUE OF INDIRECT BLOOD TRANSFUSION.

By
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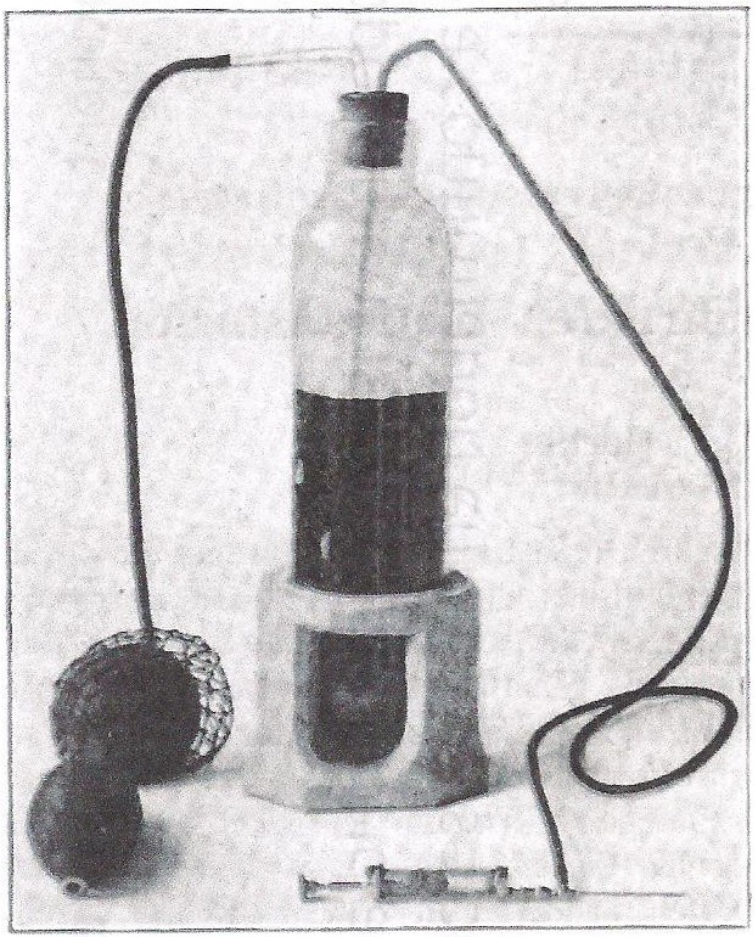
The most common indirect transfusion methods today are the citrate method and the syringe method. The former, previously usually carried out in such a way that a cannula was bound into the exposed vein of the donor, the blood was aspirated into a bottle containing citrate and held upside down, and from there again passed through a cannula into the exposed vein of the recipient, has been simplified in some places in such a way that needles are usually used instead of cannulas and an irrigator instead of the bottle. In this

simplification, the method has the advantage that it can be repeated several times on the same vein without causing any damage, both for the donor and for the recipient; it has only the disadvantage that, firstly, the longer duration of the transfusion can result in an even greater cooling of the blood due to the narrow clearance of the needles, and secondly, that in the case of collapsed veins of the recipient, the entry of the blood is often achieved only by large differences in height and then often only unreliably. However, both moments can be of decisive importance for success in the case of severe blood loss, where a rapid infusion of a large amount of warm blood is required. The second most common method is transfusion is by means of injections; in Germany, mostly carried out according to Oehlecker's instructions, practiced by the Americans in a considerable simplification (only a syringe with a T-shaped tube attachment, the legs of which are simply squeezed off), it has the disadvantage that donor and recipient have to lie next to each other, a circumstance which is very unpleasant, particularly important in difficult cases that have to be transfused during the operation, or when it comes to external donors.



In an effort to prevent the cooling of the blood as well as to ensure and possibly accelerate the flow of blood into the recipient's vein under a certain pressure, we have been performing all blood transfusions at the Basel Clinic for 1½ years according to the following method: by venepuncture (with a strongly curved puncture needle), the required amount of blood (up to 1 litre) is taken from the donor; the same flows directly from the puncture needle into a graduated, paraffinised, double-walled, evacuated bottle (thermos); with the help of a blower, the blood is driven through a paraffinised riser tube, a short thin rubber tube and a needle driven into the recipient vein. In order to rule out clotting with absolute certainty, a few cubic centimetres of a 10% citrate solution can be added to the bottle; instead of the usual straight puncture needle, we use a 10 cc syringe filled with citrate solution with a side path, which is connected to the riser tube by the rubber tube. The syringe makes the

puncture easier and allows aspiration of some blood from the recipient vein to check that the needle is positioned correctly and also the repeated injection of small amounts of citrate solution to prevent clot formation in the needle. The method has the advantage that, due to the absence of air in the double wall of the vessel, there is no significant cooling of the blood and the transfusion of the warm blood can still be carried out several hours after it has been taken. Furthermore, the pressure can be regulated by means of the blower without having to increase the height difference and thus extend the tube; this ensures that even in the case of severely collapsed veins of the recipient, the entry of the blood is absolutely guaranteed. Another advantage of the method is that the blood sample and infusion can be taken in separate rooms and even the body-temperature blood can be transported over a greater distance; in any case, recipient and donor are not forced to lie next to each other on operating tables, which is a great advantage, especially if transfusion has to be carried out during the operation or if it is a foreign donor. Finally, the technique is extremely simple and the transfusion can be carried out without the help of another person. Observing the known regulations (previous blood grouping of donor and recipient, etc.), we did not experience any disturbance with the indicated method in any of the numerous transfusions carried out at the clinic for $1^1/_2$ years, and we abandoned the other methods.