

BICENTENARY ANNIVERSARY OF JAMES BLUNDELL'S FIRST SUCCESSFUL BLOOD TRANSFUSION – 26th SEPTEMBER 2018

A version of this article, written by Phil Learoyd, was originally published in the British Blood Transfusion Society magazine *Bloodlines*

The obstetrician James Blundell (1790-1877) is recognised as being the person who revived the use of blood transfusion in the early part of the 19th century.

When working at Guys Hospital, Blundell became interested in, what was then, the virtually forgotten operation of blood transfusion as a possible method of treating post-partum haemorrhage. He performed extensive experiments on transfusing blood from one dog to another before attempting the operation on a human. He advocated the need to avoid species incompatibility and although he devised different types of complex apparatus for performing his transfusions (known as a Gravitator and an Impellor) he eventually used a simple syringe technique. Blundell performed his transfusions prior to the discovery of anticoagulation (and blood groups) and as such used the syringe to repeatedly and quickly transfer small volumes of venous blood from the donor to the patient.

Encouraged by his various direct artery-to-vein and indirect syringe transfusion experiments in dogs, Blundell performed a human-to-human blood transfusion between 2-3 pm on the afternoon of the 26th September 1818 on a man 'between thirty and forty years old' called Brazier, who was suffering from what would now be identified as being gastric carcinoma with pyloric obstruction. The report of this case was published in *Medico-Chirurgical Transactions*, 1819; 10: 295-311 (Fig.1).

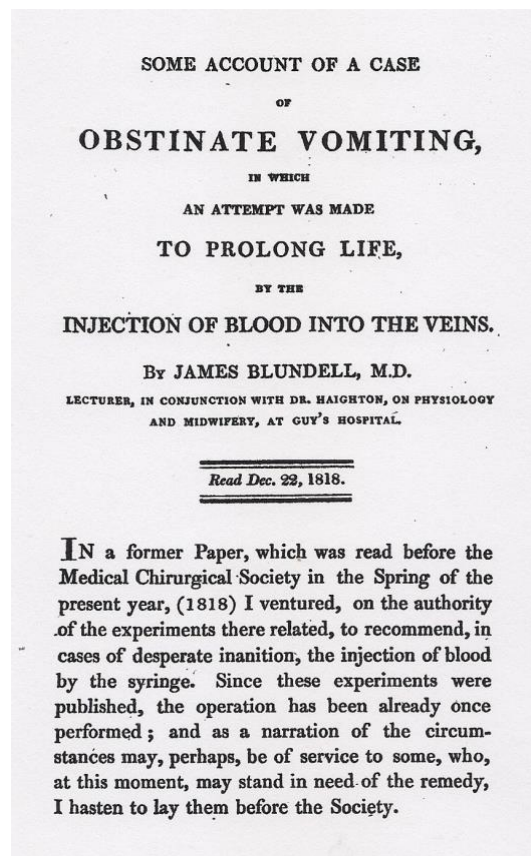


Fig. 1: Blundell's account of the transfusion of Mr Brazier

By the time Blundell attempted the transfusion, the patient was severely emaciated, hypovolemic from dehydration following persistent vomiting and was described as being 'at the point of death'. The donor was bled 'into a conical vessel' and the blood immediately drawn into 'a good syringe capable of containing two or three ounces of blood' (Fig. 2). After removing any air from the syringe, the blood was injected into the right cephalic vein via 'a little [rubber] pipe secured in the vessel'.



Fig. 2: A drawing of Blundell's syringe (taken from his book, page 156)

This rapid transfer infusion of blood from the syringe was performed ten times; the whole process taking about 30-40 minutes – the blood donors being described as being 'some gentlemen present'. Although Blundell noted that there were no immediate changes to the patient's condition, some 4-6 hours later the patient's body became warmer, his skin more pink, and his pulse stronger. In fact, the next day the patient is stated to have been able to eat a little food and to drink (over a period of time) a total of about a half-pint of porter [ale]. However, over the course of the next day his condition worsened and he died on the 28th September, about 56 hours after the transfusion. It is this transfusion that is recognised as being Blundell's first successful human-to-human transfusion.

However, Blundell published a book in 1825 called 'Researches physiological and pathological instituted principally with a view to the improvement of medical and surgical practice' (Fig. 3), which as well as describing some of Blundell's transfusion experiments on dogs and descriptions of some of his transfusion equipment, the book also lists case histories of five patients who he had transfused. All five patients died. These five cases can be summarised as follows:

Case #1: A woman who had lost 'a large quantity of blood' following the birth of the placenta was transfused (by syringe) with about 16 ounces of blood from two male relatives of the patient about 5-6 minutes after the patient had 'ceased to respire' and 'no signs of resuscitation were observed'.

Case #2: A young man who had lost a large amount of blood from a burst artery was transfused (using Blundell's Impellor) with 16 ounces of blood several minutes after he had stopped breathing, 'but no signs of returning life were perceptible.'

Case #3: A woman, who had hemorrhaged following delivery of the placenta was transfused (by syringe) with about four ounces of blood just before the patient ceased breathing. Blundell thought that the failure to revive the patient was due to an insufficient quantity of donor blood being available.

Case #4: A woman who 'had collapsed from puerperal fever' was transfused with about six ounces of blood from her father but Blundell observed that 'no decisive effect of any kind was produced by the operation and the lady died of the fever'.

Case #5: Mr Brazier who was the basis for the report published in 1819.

Blundell's investigations into the role of human blood transfusion were performed over a number of years, his successes coming only after a number of failures. Even though Blundell believed in the beneficial effect of blood transfusion these cases illustrate his initial hesitancy – using transfusion only as a last resort. Given that the five patients reported in this publication identify Mr Brazier as being case number five strongly suggests that Blundell's first human transfusion was performed before the 26th September 1818. However, the fact that the first two patients were apparently already dead and the third near to death when a transfusion was performed, this date can be taken as being when Blundell performed his first 'successful' human-to-human transfusion rather than the date of his first human transfusion.

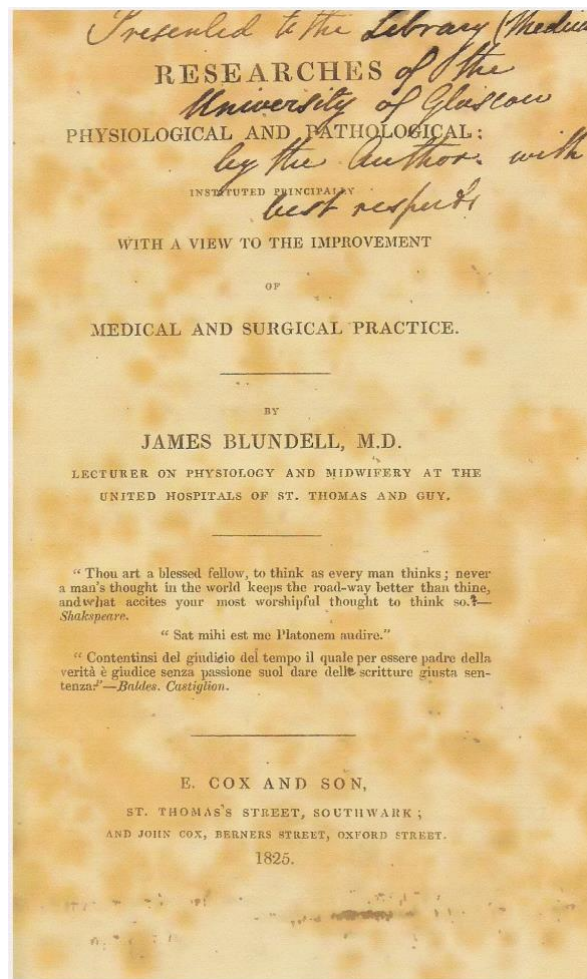


Fig. 3: Title page of Blundell's book published in 1825 with his own hand-written corrections/changes

Note:

The two publications listed in this article can be accessed via the internet at:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2116469/>

<https://www.biodiversitylibrary.org/bibliography/113885#/summary>