Waiting for the Xenografts...
by HANNAH BRADBY Oct 15, 2012


Transplant surgery holds a certain fascination, both for its potential to restore a broken human body and for the prospect of Frankenstein-horrors that it conjures. David Hamilton’s detailed history starts, as the title suggests, with legends of limb replacement, but does not linger with the ancients, as it is the modern application of science to clinical problems that interests him.

The book’s first major medical figure is Gaspare Tagliacozzi, appointed to the Bologna chair of anatomy in 1570, author of an illustrated text ‘On the surgery of mutilation by grafting’, describing early techniques of plastic surgery. Tagliacozzi’s patients came to him with a lost ear, lip or nose as a result of warfare, duelling or syphilis, which would be replaced with a flap of skin lifted from their own upper arm. The arm was held in place near the face, while the flap grew into its new site over a number of days. The success of Tagliacozzi’s surgery was partly due to the support system binding the patient’s forearm in front of his nose while the skin flap developed a new blood supply. Although Tagliacozzi was honoured in his own lifetime and his book remained in print, crucial details of his successful technique got lost or misinterpreted and had to be rediscovered more than 200 years later. Specifically Tagliacozzi’s successful use of skin (not muscle) and the use of a person’s own tissue in autografts (rather than using donated tissue) to rebuild their missing features came to be obscured through neglectful and malevolent reporting.

One of Hamilton’s themes is the way that science progresses in fits and starts and as a result of circumstances and chance as well as scientific endeavour. Laboratory mistakes sometimes result in a breakthrough, overturning previous orthodoxies, while disastrous accidents can contribute to clinical developments. In 1958 six Yugoslavian physicists involved in a nuclear reactor accident, were treated in Paris. One physicist who had received a lower dose of radiation recovered spontaneously, whereas the other five men were treated with bone marrow. The following year 12 year old Nils Alwall was flown from Sweden to Boston, after his only kidney was lost in an accident, in the hopes that he could receive a kidney from his mother. He died from complications of the initial radiation dose and that treatment protocol was abandoned forthwith. This book’s human body count, often noted briefly as ‘overall results were poor’, is second only to the number of laboratory animals that died in the course of the developing science of immunology. The mounting number of deaths over the 500 plus pages of the book are balanced by the success stories, such as the 23-year old who successfully donated a kidney to his twin in 1959. These Boston twins showed that it was ethically possible to remove an organ from a healthy, living person and that complications to the recipient after transplantation were treatable.

Although Hamilton’s tone is cool and he favours a calm approach to medicine, the human drama of the egos and competitiveness that drove the development of transplant medicine are nonetheless part of the story. The bulk of this book covers the twentieth century and the long, painstaking efforts to understand immunity and graft-rejection which was so crucial for transplant surgery to become beneficial. Hamilton is interested in the collaboration between surgeon and lab scientist necessitated by the early experimental work, as well as public reaction to the successes and failures. The development of transplant medicine has been dependent on public opinion, both for ethical permission and for the donation of organs. After
a series of experimental and unsuccessful heart transplants in 1968, prompted by Christian Barnard's widely publicised world-first in 1967, donation rates fell, including those for kidney and corneal transplantation, where the surgical techniques were well established, successful and safe.

The final chapter is titled 'Waiting for the Xenografts' and offers optimism for the possibility of the techniques of genetic engineering, cloning and stem cell manipulation making the techniques of transplant medicine available to more people currently on waiting lists. Hamilton professes faith in human ingenuity and endeavour and communicates the sense of prerogative necessitated by the progress of a heroic medicine that requires sacrifice and that does not routinely alleviate suffering.

Further Information

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