

FACE OF THE FUTURE

Plastic surgeon Peter Butler talks to **Rebecca Coombes** about his battle to perform the first full face transplant, media intrusion, and professional resistance to his work



The world's first full facial transplant could finally happen in the United Kingdom this year. Peter Butler, leader of the surgical team at the Royal Free Hospital in north London preparing to carry out the controversial procedure, is uncharacteristically hesitant about details. One reason is his heightened sensitivity about the British media. The press have been on red alert over Butler's activities ever since a French team performed the first partial facial transplant in November 2005. About 31 patients have approached Butler's team seeking a facial transplantation. The details of some of them were leaked to the press, leading to interviews with patients' families. Journalists will be especially keen to uncover the identity of whoever becomes the first eventual donor, Butler believes.

Butler has been working on how to do a facial transplant for 15 years. In fact, one of the lead surgeons on the French team credits him with the idea, but Butler's fastidious working methods and the Royal College of Surgeons' resistance meant he didn't do the first transplant. French surgeons replaced the nose, chin, and mouth of Isabelle Dinoire in 2005 after she had been mauled by her dog. Since then, a further partial transplant has been done in France, and one in China. Butler's team now has approval from the ethics board to conduct four full facial transplants. "The next phase will be to look for a donor face to match them. It's a long process. It will probably be this year, but we are not sure.

There are about four to five patients that are ideal but they don't want to be the first."

The burden of publicity is a key issue. This small group of patients includes casualties from the armed forces, injured on duty in Iraq. The eventual recipient will be a UK resident, not a child, and have passed through a rigorous and validated screening process.

Motivation

Although Butler is understandably wary of the press, he is an open and resolute character, convincing about the value of facial transplants as a vast improvement on existing reconstructive techniques. There are around 250 000 severely disfigured adults and children in the UK, many of whom rarely leave their homes and find it hard to make emotional contact with others. Until now, surgical techniques have been limited to using the patient's own skin and tissue. "With large facial injuries, you are moving skin from the leg, abdomen, or back," says Butler. "Although this closes and restores continuity in the face, it is still an immobile piece of tissue and doesn't function very well. It limits sensation, the colour match is inappropriate—usually looking like a patchwork quilt if you do lots of different tissues. You have very few other options."

Butler was switched on to the possibilities of facial transplantation early in his career. As a registrar in Dublin he spent a year working on a badly burnt teenager whose initial facial reconstruction had contracted, pulling down

his eyes, chin, and lips. "He was dribbling and could get screamed at in the street. But in the year I spent with him there was no way of restoring 'normality'—no facial skin I could use. The end result showed me the limitations I was working in. That was 20 years ago, and the technology is still largely the same today. There have been minor developments [for example, artificial dermis]. But that's when I started thinking there must be another solution, and started to think about tissue engineering." In the mid-1990s, it led Butler to Massachusetts General Hospital and Harvard Medical School as a research fellow.

Born in Dublin, Butler's father was dean of dentistry at Trinity College, his mother was a pharmacist, and his uncle a professor of medicine. He is married to Annabel Heseltine, the daughter of Tory grandee Michael Heseltine, with whom he has four young children. Butler chose plastic surgery because, "It is the last general specialty in surgery—you get the whole range of patients from the cradle to grave and all regions of the body. It is one of the most challenging."

Obstacles

As Butler tells it, the technical side of conducting a full facial transplant, although complex, has not been his main battle. Microsurgical skills and anatomical knowledge are well established. The struggle came with public and professional resistance to the idea of transplanting one person's face on to another's. When news of Isabelle Dinoire's surgery



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that might improve their quality of life is unethical.”

Butler and his team spent the next three years addressing the royal college’s reservations. “The idea is to approach them with evidence. Nothing is a barrier. You just need to find that solution.” It was a research driven strategy. In addition to studies of patients with severe facial injuries, the team conducted public engagement exercises and consulted with health professionals, including those working in organ transplantation and families of organ donors. This enabled the team to develop validated screening tools, assessing both surgical and psychological suitability.

Butler has attempted to head off concerns that recipients would take on the facial identity of their donor. “If I place a tissue envelope on top of a facial skeleton you will get the cranial facial skeleton coming through, but the skin tone, texture, and hair colour will be that of the donor. As long as you are well matched you should not see the donor in the recipient. We started to do transplants between two cadavers, but it just looked like cadavers. So then we found a computer simulation method using forensic anthropology and transplanted a face between myself and other people. And you get a hybrid—more the recipient than the donor.” The team spent many hours developing a system to closely match the skin tone of donor and recipient, a more complex version of a Red Cross make-up guide for camouflage. “Otherwise, if I’m working in London and get called up about a donor in Oxford, how do I know they are even close?”

On safety, Butler has the data collected from the 32 hand transplants that have so far been performed worldwide. “Renal transplantation has a 10% loss through acute rejection of your graft within the first 12 months. But no hand transplant or face transplant has been lost through acute rejection. The longest hand transplant is 8-9 years old and so far none has shown chronic rejection. That doesn’t mean there won’t be cases. The difficulty is that no one knows. There are no data yet. The work we are doing now is looking at how chronic rejection might present. It is likely to be small, microsclerotic events.”

Next steps

Does he see transplants being carried out on the NHS? “Oh yes, why not? It’s the reason why we applied to do four transplants—so that it would be a clinical series. With that evidence I will go for national funding.” It will cost an average of £25 000 (€35 000; \$50 000) an operation in a process that will end up involving about 35 professionals. His charity, the Face Trust, has so far raised enough for three operations.

There were a lot of dark days, admits Butler. “Because of the opposition there were days I thought this would never happen. The person who has been really helpful to me is Simon Weston, whose face was injured in the Falklands conflict, and who is patron of the Face Trust. He wrote a *Daily Mail* article saying he wouldn’t want a face transplant because he wouldn’t want to kiss somebody with someone else’s lips.” Butler went on to do a series of public engagements, sharing the stage with Weston, who was then won over. “I used to phone Simon Weston on a Friday night and say I’ve had a bad week. He would say, ‘No, you are doing a good thing. This is going to help people—you must keep going.’”

“There are always moments of doubt. But then you meet the patient and they tell you, I don’t really have a life, I have an existence. And I’d like to have a life—even if that life is shortened by [the procedure]. Obviously there are the unknowns. We don’t know how well it will work, how it will look. We presume looking at the French one that it will look pretty good.”

Transplantation may get overtaken by better technology. “I’ve worked in tissue engineering for 15 years,” says Butler. “We can now produce reasonable cartilage, although it is not mechanically that strong. The skin is similar to a skin graft and we cannot produce anything as specialised as facial skin. That is the challenge: technology may be 10-15 years away, it may never happen, it may be something else—for example, we are also involved in nanotechnology, which is very much in its infancy right now, and we are developing blood vessels.”

Butler describes himself as a pragmatist: “I’ll go with anything that works. At the moment that is facial transplantation.”

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broke, the press interest was massive. Unlike with a hand transplant, a comparable operation because it is also a complex reconstruction of several tissue types, people found facial transplantation deeply unsettling. Butler explains: “We had conducted our own surveys to find out what people were most worried about and found it was the transfer of identity—if I give you the face of my loved one, will I see them walking down the street?”

This was also one of a series of objections raised by a working party of the Royal College of Surgeons’ in 2003, whose report advised against a full facial transplant because it was experimental. The working party’s main reservations were how surgeons could comply with the laws of consent when the risks were unclear. There were also concerns that transplant recipients would have to take lifelong anti-rejection drugs, which are known to increase the risk of cancer and significantly lower life expectancy. And, should the face be rejected, it would be unlikely that another transplant would be possible.

Butler was down, but not out. “Their argument was that this procedure is quite risky, and the outcome so unknown that any patient seeking it must be quite mad. And if mad, they couldn’t give consent. They were using extreme examples of risk to argue against it.” Butler’s response was to mount a careful counter argument. “We had an ethicist on our team, Richard Ashcroft, who said, actually the quality of life for these individuals is so poor that not to offer them an intervention