

# World first as surgeons give man a whole new face after marathon 24-hour op

Surgeons have made medical history by carrying out the world's first full-face transplant.

In the holy grail of plastic surgery, a young man left unable to breathe, swallow or talk properly by a farming accident five years ago has had his ravaged face completely replaced.

A handful of partial transplants have been carried out since Isabelle Dinoire had her face repaired by French surgeons in 2005.

But until now, no one has had the skill or courage to replace an entire face.

**HOW THE REMARKABLE SURGERY WAS DONE**

**STEP 1:** The first team works on retrieving the face from the dead donor in a procedure lasting up to four hours. Veins, arteries, skin and subcutaneous fat are taken alongside muscles leading to the lips, cheek and forehead and placed in preservation liquids.

**STEP 2:** Half-way through this process, once the retrieval team is sure there will be no problems, the patient is prepared for surgery.

**STEP 3:** The major part of the surgery then begins, involving both the retrieval team and the transplant team. Medics complete repair work on the donor's blood vessels. They then place the donor's nose, cheek and cheekbones, upper and lower jaw, roof of the mouth, face muscles and nerves onto the recipient in a process described by doctors as 'the point of no return.' They then sew the facial skin on.

**STEP 4:** Medics adjust the recipient's old and new bones, nerves and muscles to ensure swift and maximum recovery.

**STEP 5:** Once the operation is complete, the patient will be watched closely and will attend regular appointments with surgeons. It takes a few months for swelling to subside and many more months before feeling and function is restored to the face.

Microsurgery uses thread the width of a hair

**THE PATIENT**  
The computer generated model above shows the young man who was left unable to breathe, swallow or talk properly by an accident five years ago. Thirty medics in two teams took 24 hours to carry out the face transplant on March 20

Labels in diagram: Patients skull, Donor skull and jaw section, Actual vein size, Donor facial muscles, Donor veins, Donor facial skin



World's first partial face transplant recipient: Isabelle Dinoire in 2006, a year after her operation

The 24-hour operation involved 30 surgeons, anaesthetists, nurses and other medical experts at the Vall d'Hebron hospital in Barcelona.

The man, a farmer in his 30s, who has not been named, received new facial muscles, skin, nose, lips, jaw, teeth, palate and cheekbones.

He accidentally blew most of his face off, including his nose and jaw, with a gun five years ago. He was left with a gaping hole where his mouth and nose should have been.

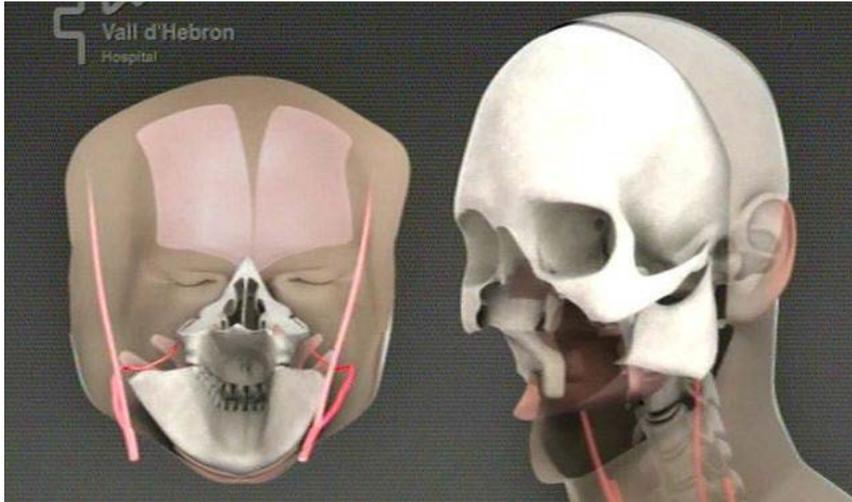
Nine earlier surgical attempts to rebuild his face had failed.

The full-face transplant operation took place on March 20 but details have only just been made public.

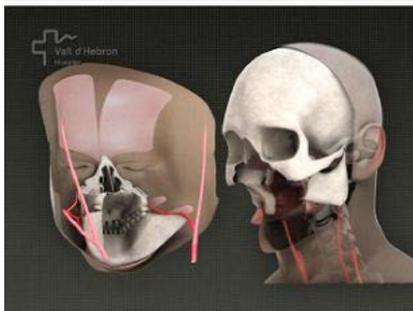
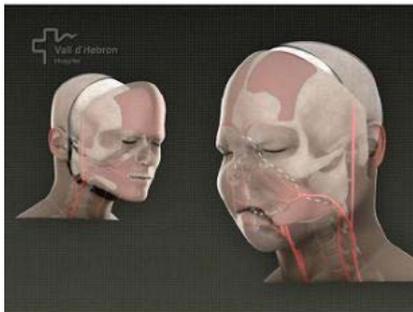
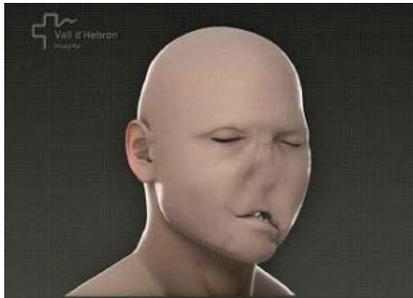
The recipient is said to be recovering well and has already glimpsed his new face.

Joan Pere Barret, the hospital's head of plastic surgery, said: 'The patient has scars on his forehead and his neck but they will become invisible in the future.'

'He has seen himself when he told us he wanted to and psychologists said he was ready. It was a week after the operation and he reacted well, saying he was satisfied with the result.'



A computer-generated image released by the Vall d'Hebron hospital in Barcelona showing the area of the face that was transplanted



These computer-generated images show the sequence of the procedure by surgeons for the world's first full face transplant. Although the man has been given someone else's face, he will not take on the looks of the donor, who died in a road crash. Instead, his new face will be a hybrid, identical to neither his old one nor the donor's but reminiscent of both.

He is expected to remain in hospital for another two months.

Dr Barret said: "Our aim is that in a few weeks, he begins to talk and eat as well as smiling and laughing."

The biggest concern now is that the man's body will reject the transplant.

He will have to take powerful immunosuppressant drugs for the rest of his life and faces an increased risk of cancer as a result. The drugs can also trigger other illnesses such as diabetes.

Miss Dinoire's body tried twice to reject the transplant and a Frenchman who was given a new face in two stages died after an infection triggered a heart attack.

There are also fears that patients who have already gone through the trauma of a major accident, plus countless operations, will struggle to cope psychologically with the effects of losing their identity.

However, many believe the risks are worth taking.

British surgeon Peter Butler, who had hoped to carry out the world's first total face transplant at London's Royal Free Hospital, believes the technique could one day benefit millions.

Mr Butler has said: "There are a quarter of a million people in the UK with severe facial disfigurement for whom reconstructive surgery has not worked.

"Their quality of life is indescribably poor and many seldom leave their homes.

"They live an almost twilight existence, hiding in shadows and afraid to expose themselves to unforgiving public scrutiny.

"Nobody underestimates the challenges of what we propose to do, but if facial transplantation is successful, it will be the first option offered to those who live in that awful twilight zone, and not the last.

"It will give them the opportunity to once again walk along a street in broad daylight with nobody noticing."

Congratulating the Spanish team, Mr Butler said: "We must also remember the family of the donor who, we understand, has helped not only the facial transplantation patient but others, with various forms of organ donation.

"To help others, not only to live but to have a good life, is a supreme act of human generosity."

The first of four British operations will be carried out as soon as a suitable donor becomes available.

In a statement, the Spanish hospital said that the unnamed man 'had been operated on nine times without satisfactory success, therefore he was considered for full face transplant.

'The operation was carried out by a multidisciplinary team led by Dr Joan Pere Barret, performing the transplant of the entire facial skin and muscles, nose, lips, maxilla, palate, all teeth, cheekbones, and the mandible by means of plastic surgery and micro-neurovascular reconstructive surgery techniques.

'This is the first full face transplant performed worldwide, as the 10 operations performed previously had been only partial.'

In the first part of the operation, the soft parts of the face, including veins and arteries, were extracted before firmer tissue was removed.

The young man's arteries and veins were then isolated and the donor's face checked to ensure there was a complete flow of blood.

The final part of the surgery involved transplanting bones and connecting nerves to the new face.

The statement said: 'The recipient must remain in Vall d'Hebron University Hospital for two months, although the duration will depend on his evolution.

'Once leaving the hospital, he will have to undergo strict medical examinations during at least four months.'