

21-year-old student from Pune and the curious case of her changing hands

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Shreya Siddanagowder in Pune. (Express Photo: Arul Horizon)

“Sometimes good things fall apart so that better things can fall together,” was the first sentence Shreya Siddanagowder wrote in her notebook a year after her hand transplant.

Today, her handwriting almost matches her original, but what has left doctors surprised is how the colour of Shreya’s hands, which once belonged to a 20-year-old man from Kerala until his death in August 2017, had changed to match the rest of her skin tone.

“I don’t know how the transformation occurred. But it feels like my own hands now. The skin colour was very dark after the transplant, not that it was ever my concern, but now it matches my tone,” says 21-year-old Shreya, who underwent Asia’s first inter-gender hand transplant.

Back in Kochi, where she underwent the double-hand transplant at Amrita Institute of Medical Sciences (AIMS), surgeons are researching whether female hormones could hold the key to such changes.



After the transplant and now. (Express Photo: Arul Horizon)

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“We are hoping to publish two cases of hand transplant in a scientific journal. It will take time. We are recording the colour change in (Shreya’s) case, but we need more evidence to understand the change in shape of the fingers and hands. An Afghan soldier, who received a double-hand transplant from a male donor here, had also noticed a slight change in skin tone but he died in Afghanistan last week. We could not document much,” says Dr Subramania Iyer, head of plastic and reconstructive surgery at Amrita Institute.



Shreya underwent the double-hand transplant at Amrita Institute of Medical Sciences (AIMS) in Kerala’s Kochi.

Plastic surgeon Dr Mohit Sharma, who was part of the team that conducted the transplant for Shreya, says there is limited research in inter-gender hand transplants.

“There was one female-to-male hand transplant in the West. But there has been no scientific research into what happens after that. In a year or so, the lymphatic channel between the donor’s hand and the host’s body opens up completely to allow flow of fluids. It is possible the Melanin-producing cells slowly replaced the donor’s cells. And that led to the change,” he says.

Melanin is a pigment that is responsible for skin colour. The more Melanin, the darker the skin colour, and doctors believe Shreya’s body produces less Melanin.

In September 2016, while travelling from her hometown in Pune to Manipal Institute of Technology in Karnataka, Shreya met with a bus accident that forced the amputation of both hands. A year later, she visited the Amrita Institute to register for the transplant.

The hospital was the only centre in Asia to conduct a series of successful hand transplants then. And at the time, there were over 200 enquiries by amputees, some from as far as Afghanistan, Malaysia and Bangladesh. Shreya says she met an Afghan national who was waiting for a donor since a year.

Hand donations are rare, because few families are willing to donate limbs fearing disfiguration of the body even though a prosthetic limb is fitted to the donor’s body. “The transplant coordinator said it could take months for a donor to come. We returned to our hotel without any hope. An hour later, the hospital called us back for urgent blood tests,” Shreya recalls.

She came to know later that Sachin, a B.Com student from Ernakulam’s Rajagiri College, had been declared brain dead that day after being involved in a bike accident — and that his family had agreed to donate his hands and other organs.

Shreya’s blood type was compatible with Sachin. On the same day — August 9, 2017 — a transplant stretching over 13 hours was conducted by a team of 20 surgeons and a 16-member anaesthesia team. The hand of the donor was first attached by bone, then arteries, veins and tendon muscles before the skin was stitched to Shreya’s upper limb.

For a year-and-a-half, she remained in Kochi to undergo intensive physiotherapy. The peripheral nerves took time to develop, and sensation grew by 1-2 mm every day. “The hand felt heavy, it was bulky initially,” she says.



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One of the first changes was reduction in weight as the extra fat slowly dissolved to match her leaner upper limb.

Explaining the shift, Pune-based physiotherapist Ketaki Doke, who has been working with Shreya, says behind this could be the muscle reconditioning itself to the new host. "The nerve begins to send signals, it is called reinnervation, and the muscles function according to body needs. A man will have muscle function different from a woman. The muscles in her hand may have started adapting to a female body," says Doke, adding, "It was still not anticipated that her hands will transform so much."

In the last 3-4 months, Shreya's mother Suma noticed that her fingers were becoming leaner, slightly longer. "I see her hand every day. The fingers have become like a woman's, the wrist is smaller. These are remarkable changes," she says.

Iyer, from Amrita Institute, says they never anticipated such changes. "This is our first case of male-to-female hand transplant. We can only guess that female hormones have led to the change but assessing the exact cause is difficult," he says.

Dr S D Gangane, head of the anatomy department in Terna Medical College, Navi Mumbai, says hormones secreted by a female body differ from that of a male. "That can impact the functioning and look of hand. But it is only a guess in this case," he says.

Says Dr Uday Khopkar, head of dermatology in KEM Hospital, Mumbai: "A hand transplant is rare, and such colour transformation is rarer. We cannot comment until proper research is conducted."

Doctors believe that when Shreya lost 12 kg due to an infection last year, extra fat from her hand was shed making it leaner. While her mother says her finger looks longer and thin after that, “they still have a masculine stubby look of a man that only we can make out,” she says.

Even now, Shreya’s physiotherapist says, one of the three nerves and her finger muscles are yet to function fully but will improve over time.

But as she learns to make her hand function normally, the painted fingernails and skin tone, she says, let her lead a normal social life. Meanwhile, she has quit engineering and is now pursuing BA in Economics from Fergusson College, Pune. Last semester, she wrote her exams on her own — by hand.