

India Emerges as a Global Leader in Hand Transplantation

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In 2015, India launched its remarkable journey into the world of composite tissue transplantation, starting with hand transplant at the Amritha Institute of Medical Sciences in Kochi under the visionary leadership of Dr. S. Iyer. What began as a pioneering effort has now catapulted India to the forefront of this medical frontier, with six hospitals adopting these complex procedures. India proudly claims its position as the global leader in composite tissue allotransplantation (CTA), performing the highest number of such transplants worldwide.

Composite tissue allotransplantation involves transplanting a complex combination of tissues derived from both ectoderm and mesoderm, including skin, fat, muscle, nerve, and bone. Kleinert and Peacock coined the term CTA⁽¹⁾, which encompasses not only hands but also a diverse range of composite structures, extending from knees to abdominal walls, from nerves to faces and scalps, and from tracheas to uteruses⁽²⁾. The latter has been a recent addition to this expanding array of CTA.

Unlike life-saving organ transplants, CTA aspires to restore function and enhance the quality of life. The historical roots of CTA trace back to the 15th century, where the replacement of a leg from a deceased donor by Saints Cosmos and Damien marked the earliest recorded instance of such a procedure. Immunosuppression and surgical advancements have significantly elevated the success rates and functionality of hand transplants. Ongoing research promises to further hone these techniques and broaden their accessibility, as exemplified in the invited article from Dr. S. Iyer in this issue.

India, burdened with a high incidence of road traffic accidents and agricultural injuries, faces a growing population of amputees. While concrete statistics are lacking, estimates suggest over half a million hand amputees, with thousands more joining their ranks annually. This surge underscores the pressing need for hand transplants. Encouragingly, three of

the six hand transplant units in India are government-funded, hinting at a future with even greater access to these transformative procedures.

Yet, numerous challenges persist on this path. These include:

- Consent - often complicated by the visibility of hands, poses a unique hurdle from the donor family's perspective.
- Matching prostheses can be challenging to obtain, hindering the transition from donated hand to prosthetics.
- Gender disparities between donors and recipients, as well as differences in muscularity and skin colour, add complexity to these transplants.

Addressing these challenges demands innovation, including the development of cost-effective perfusion machines to sustain donated hands during transportation, a field ripe for research and investment within our programmes.

References:

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To cite : Shroff S. India Emerges as a Global Leader in Hand Transplantation. *Indian Transplant Newsletter.* 2023 Jul-Sep; 22(2):p1.

