

A Bibliometric Analysis of Trends in Global Scientific Publications on Hand Transplantation

Alassaf MA,¹ Siddique N,² Khan MA,³ Waris A,³ AlGallaf LY,¹ Al-Qattan M,⁴ Rashid AM,⁵ Atreya A,⁶ Menezes RG¹

¹College of Medicine,

King Fahd Hospital of the University,

Imam Abdulrahman Bin Faisal University,

Dammam, Saudi Arabia.

²Gad and Birgit Rausing Library,

Lahore University of Management Sciences,

Lahore, Pakistan.

³Deanship of Library Affairs,

Imam Abdulrahman Bin Faisal University,

Dammam, Saudi Arabia.

⁴Division of Plastic Surgery,

Department of Surgery,

King Saud University,

Riyadh, Saudi Arabia.

⁵Jinnah Sindh Medical University,

Karachi, Pakistan.

⁶Lumbini Medical College,

Palpa, Nepal.

Corresponding Author

Alok Atreya

Department of Forensic Medicine,

Lumbini Medical College,

Palpa, Nepal.

E-mail: alokraj67@hotmail.com

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ABSTRACT

Background

Hand transplantation, first attempted in 1964, remains a technically demanding reconstructive option with limited surgical experience and research output.

Objective

To evaluate the scholarly literature on hand transplantation with bibliometric tools.

Method

Data were extracted from Scopus; the open-source tools Biblioshiny (bibliometrix, R) and VOSviewer were used for analysis and visualization. Publications from 1966 to July 2026 were included in the study.

Result

Of 754 records retrieved, 437 articles were selected for analysis. The broader corpus yielded a Hirsch h-index of 59, an Egghe g-index of 92, and 15,870 total citations. The year 2019 had the highest publication volume (n=31), while 1999 was the peak-citation-year (n=790) among only 4 publications that year. Journal of Hand Surgery was the most productive source (35 publications), followed by Plastic and Reconstructive Surgery (26) and Annals of Plastic Surgery (22). 'Dubernard JM, 1999, Lancet' was the most cited document (671 citations). 'Brandacher G' (Johns Hopkins University) was the most prolific author (35 publications, 716 local citations). The United States had the highest corresponding-author output (128 articles, 29.3%; 3,499 citations), followed by Austria (31, 7.1%) and China (27, 6.2%); France recorded the highest mean citation per article (78.5 citations/article).

Conclusion

This analysis indicates steady but uneven growth in hand transplantation research. Despite progress, distribution remains markedly uneven, with limited global participation and reliance on isolated surgical experience. Greater funding, international collaboration, and specialized research are needed to advance clinical outcomes, and address persistent challenges, such as immunosuppression and ethical issues.

KEY WORDS

Bibliometric analysis, Hand transplantation, Publication trend, Scientometrics, Statistical bibliography

INTRODUCTION

Hand transplantation (HT), a form of composite tissue allotransplantation, poses challenges due to high antigenic diversity, ranging from skin, fat, muscle, tendon, nerve, and blood vessels.¹⁻³ HT remains a major challenge for plastic surgeons and transplant surgeons. The first attempt occurred in 1964, when immunosuppressants were underdeveloped, leading to inevitable rejection within two weeks postoperatively.⁴ Subsequent research in immunosuppressants showed favourable outcomes. Successful solid organ transplantation led surgeons to revisit composite tissue allotransplantation, with the first successful human HT in 1998.^{1,3} A New Zealand patient elected to undergo the procedure to restore hand function after refusing a prosthetic.^{2,4} Although the surgery and immunosuppressive regimen were satisfactory, the hand was amputated due to the patient's psychological inability to adapt, leading him to stop medications and trigger rejection.¹ Months later, in January 1999, a HT was done in an amputee who lost his left hand to a firecracker.⁵ The next benchmark in the field was two years later, when a double HT achieved results equivalent to a replanted hand.⁶

More recently, over 150 HTs worldwide indicate resolution of critical challenges, yet others persist.⁷ These include risks from immunosuppressants, financial burden, and research limitations due to the inability to conduct randomized controlled trials for financial reasons.⁸ Bibliometric analysis maps existing studies and spots future trends in a field.⁹ This paper evaluates scholarly literature on HT using bibliometric tools. To the authors' knowledge, this paper is the first comprehensive bibliometric analysis on HT.

METHODS

The objective of this bibliometric study was to investigate the publication trend in the field of HT contained in the Scopus database. Scopus is a subscription-based, multidisciplinary abstract citation database maintained by Elsevier and is widely used by researchers for large-scale bibliometric analyses.¹⁰ Scopus provides access to a broad range of peer-reviewed literature across scientific, technical, medical, and social science disciplines. For the bibliometric analysis, a comprehensive search and selection method was employed to include all relevant literature linked to HT. To investigate yearly productivity, type of documents, relevant sources of publication, most cited documents, most prolific scholars, productive countries and organizations, authorship and citation patterns, theme-based keywords, and author keywords, MS Excel (v16.0), MS Access, VOSviewer (version 1.6.17), and Biblioshiny (bibliometrix package, R version 4.4.0) were used. To get the most relevant and maximum results, the keywords were combined using the Boolean operator "OR". The following query was used to acquire data from Scopus with the following keywords.

TITLE-ABS-KEY ("Hand Transplantation" OR "Hand Allotransplant*" OR "Hand and Composite Tissue Allotransplant*" OR "Hand and Composite Tissue Transplant*" OR "Hand Vascularized Composite Allograft" OR "Hand Composite Tissue Allotransplant*" OR "Hand Vascularized Composite Allotransplant*"). The Scopus search conducted on 12 July 2026 retrieved 754 records spanning all document types (1966-2026). Of these, book (n=2), book chapter (n=47), conference paper (n=35), editorial (n=18), erratum (n=6), letter (n=25), note (n=29), review (n=146), and short survey (n=9) were excluded, and the analysis was restricted to journal articles (n=437). These 437 records were exported for detailed bibliometric analysis in Biblioshiny; citation-impact metrics (h-index, g-index, total citations) were additionally computed on the full 754-record corpus and are reported separately. The co-authorship network was additionally generated from the full 754-record corpus to capture the broader collaboration landscape. Institutional productivity was assessed using the affiliation data exported from Biblioshiny; institutional name variants were consolidated where appropriate. The current study was restricted to publications on "hand transplantation" indexed in the Scopus database. No other databases were used for the extraction of bibliographic data.

RESULTS

A. Yearly growth in hand transplantation research

Publication output began in 1966 with only a single publication, followed by an 11-year hiatus (1967-1977) (Table 1). Production remained sporadic during the years 1982, 1983, 1985, 1989, and 1996. Sustained gap-free annual publishing resumed in 1997, entering a rapid expansion phase during the 2010s. The year 2019 emerged as the most productive year with the highest number of publications (n=31), followed by 2020 (n=27). Citation-impact analysis of the broader 754-record corpus yielded a Hirsch h-index of 59, an Egghe g-index of 92, and a total of 15,870 citations, reflecting substantial cumulative scholarly influence despite the field's modest publication volume. Peak-year-of-citation accumulation was 1999, generating 790 total citations across 4 published articles (mean=197.5 citations/article). In terms of cumulative citation impact, 2010 ranked second (TC=711.06, N=14), followed closely by 2015 (TC=709.92, N=24) and 2012 (TC=597, N=15). The year 2000 recorded a total of 552 citations across 4 articles (mean = 138.00 citations/article). The fitted Gaussian life-cycle model estimated a peak publication rate around mid-2016 (R² = 0.807) reflecting the structural midpoint of the field's growth. The year 2019 emerged as the most productive year due to a late-stage surge in actual annual outputs, before transitioning from an inflection phase between 2011 and 2019 into a plateau phase over the recent years.

Table 1. Yearly Productivity

Year	Articles (N)	Cumulative Articles	Mean Citations / Article	Mean Citations / Year	Total Citations (TC)
1966	1	1	183.00	3.00	183.00
1967–1977	0	1	0.00	0.00	0.00
1978	1	2	40.00	0.82	40.00
1979	2	4	6.00	0.12	12.00
1980	2	6	7.00	0.15	14.00
1981	1	7	5.00	0.11	5.00
1982–1983	0	7	0.00	0.00	0.00
1984	1	8	0.00	0.00	0.00
1985	0	8	0.00	0.00	0.00
1986	1	9	81.00	1.98	81.00
1987	1	10	89.00	2.22	89.00
1988	2	12	0.00	0.00	0.00
1989	0	12	0.00	0.00	0.00
1990	1	13	1.00	0.03	1.00
1991	1	14	6.00	0.17	6.00
1992	2	16	18.50	0.53	37.00
1993	1	17	11.00	0.32	11.00
1994	1	18	17.00	0.52	17.00
1995	3	21	14.33	0.45	42.99
1996	0	21	0.00	0.00	0.00
1997	2	23	48.50	1.62	97.00
1998	2	25	17.50	0.60	35.00
1999	4	29	197.50	7.05	790.00
2000	4	33	138.00	5.11	552.00
2001	7	40	18.71	0.72	130.97

B. Most productive sources in hand transplantation research

'Journal of Hand Surgery' ranked first in both productivity (n=35) and citation impact (TC=1,276; h-index=22), followed by 'Plastic and Reconstructive Surgery' (n=26; TC=809; h=16) and 'Annals of Plastic Surgery' (n=22; TC=220; h=8) (Table 2). By citation impact alone, 'Transplantation' (TC=941; h=11) and 'American Journal of Transplantation' (TC=909; h=14) also ranked among the most influential outlets despite lower outputs. Eight of the top ten journals are USA-based; 'Transplantation' is a joint Canadian/German society publication and 'Handchirurgie Mikrochirurgie Plastische Chirurgie' is Germany-based.

C. Most cited documents

'Dubernard J-M, 1999, Lancet' was the most cited document, accumulating 671 citations over 27 years (Table 3). 'Jones JW, 2000, N Engl J Med' ranked second (406 citations), followed by 'Petruzzo P, 2010, Transplantation' (352 citations) and 'Shores JT, 2015, Plast Reconstr Surg' (231 citations). The 1966 article 'Buncke HJ Jr and Schulz (1966, Br J Plast Surg)' was the earliest publication

2002	18	58	30.83	1.23	554.94
2003	8	66	40.00	1.67	320.00
2004	12	78	15.75	0.68	189.00
2005	9	87	36.78	1.67	331.02
2006	9	96	39.33	1.87	353.97
2007	9	105	39.11	1.96	351.99
2008	9	114	51.22	2.70	460.98
2009	18	132	28.56	1.59	514.08
2010	14	146	50.79	2.99	711.06
2011	22	168	26.18	1.64	575.96
2012	15	183	39.80	2.65	597.00
2013	13	196	25.15	1.80	326.95
2014	19	215	20.58	1.58	391.02
2015	24	239	29.58	2.46	709.92
2016	25	264	16.60	1.51	415.00
2017	18	282	21.06	2.11	379.08
2018	17	299	12.53	1.39	213.01
2019	31	330	12.87	1.61	398.97
2020	27	357	14.44	2.06	389.88
2021	21	378	6.86	1.14	144.06
2022	14	392	9.64	1.93	134.96
2023	14	406	4.79	1.20	67.06
2024	6	412	5.83	1.94	34.98
2025	15	427	1.60	0.80	24.00
2026	10	437	0.30	0.30	3.00
Total	437	—	—	—	9,417.82

Note: Year 2026 does not represent complete Calander year. TC values with decimal places represent fractional citation counts generated by the Biblioshiny analysis; raw citation counts may therefore differ from these values.

Table 2. Source of Publications

Source (n=182)	TP	TC	TC/TP	h-index	g-index
Journal of Hand Surgery	35	1276	36.5	22	35
Plastic and Reconstructive Surgery	26	809	31.1	16	26
Annals of Plastic Surgery	22	220	10.0	8	14
Transplantation Proceedings	18	414	23.0	11	18
Transplantation	17	941	55.4	11	17
American Journal of Transplantation	16	909	56.8	14	16
Hand	10	132	13.2	7	10
Annals of Transplantation	9	78	8.7	5	8
Handchirurgie Mikrochirurgie Plastische Chirurgie	9	49	5.4	4	6
Journal of Reconstructive Microsurgery	9	124	13.8	6	9

Total publications = TP, Total Citations = TC

retrieved which is an animal (rabbit) study on microvascular anastomosis technique. Yet, this 1966 article remains a top-10 most cited work even after 60 years.

Table 3. Top Ten Most Cited Documents

Documents (n=252)	Total Citations	Citation years	Total Citations per year
Dubernard J-M, 1999, Lancet	671	27	24.0
Jones JW, 2000, N Engl J Med	406	26	15.0
Petruzzo P, 2010, Transplantation	352	16	20.7
Shores JT, 2015, Plast Reconstr Surg	231	11	19.2
Schneeberger S, 2013, Ann Surg	190	13	13.6
Buncke HJ Jr, 1966, Br J Plast Surg*	183	60	3.0
Kaufman CL, 2012, Am J Transplant	167	14	11.1
Dubernard JM, 2003, Ann Surg	140	23	5.8
Lanzetta M, 2007, Transpl Immunol	134	19	6.7
Petruzzo P, 2011, Clin Transpl	130	15	8.1

*This record is an animal-model (rabbit) study on microvascular suture technique for ear reimplantation, not a human hand transplantation study; it was retrieved by the search string and is retained here as part of the Scopus corpus.

Table 4. Most prolific scholars

Author (n=1789)	Affiliation & Country	Total Publications (TP)	Fractionalized Articles (FA)	Local Citations (LC)
Brandacher G	Johns Hopkins University, USA	35	4.89	716
Schneeberger S	Medical University of Innsbruck, Austria	34	4.52	625
Margreiter R	Medical University of Innsbruck, Austria	25	3.95	542
Levin LS	University of Pennsylvania, USA	23	3.95	103
Petruzzo P	University of Cagliari, Italy	22	2.71	467
Lanzetta M	Italian Institute for Hand Surgery and Microsurgery, Italy	20	2.50	496
Lee WPA	Johns Hopkins University, USA	19	4.08	561
Pomahac B	Brigham and Women's Hospital / Harvard Medical School, USA	16	3.06	58
Gorantla VS	University of Pittsburgh, USA	15	2.55	254
Zelger B	Medical University of Innsbruck, Austria	15	1.36	207

D. Most prolific scholars

Seven out ten leading authors were affiliated with European institutions and three were based in the United States of America (USA) (Table 4). Among the seven Europeans, three were from Austria, two were from Italy, and one

each from France and Poland. ‘Brandacher G’ (Johns Hopkins University, USA) was the most prolific author with 35 publications and the highest number of local citations (n=716), followed by ‘Schneeberger S’ (Medical University of Innsbruck, Austria) with 34 publications and 625 local citations. ‘Margreiter R’ (Austria) ranked third in productivity (n=25), while ‘Brandacher G’ (n=716) and ‘Schneeberger S’ (n=625) held the first and second positions for local citations.

E. Authorship pattern

Several distinct collaborative clusters emerge, anchored by high-output research groups (Fig. 1). The most prominent network revolves around Petruzzo P, Lanzetta M, Dubernard J-M, and Margreiter R. A second, closely linked cluster is formed by Schneeberger S, Brandacher G, and Margreiter R. A third group, anchored by Pomahac B, Shores JT, and Levin LS, corresponds to the Boston–Johns Hopkins collaborative network. Smaller peripheral nodes (e.g., Wei FC, Lin CH) reflect isolated international contributions with limited cross-group collaboration.

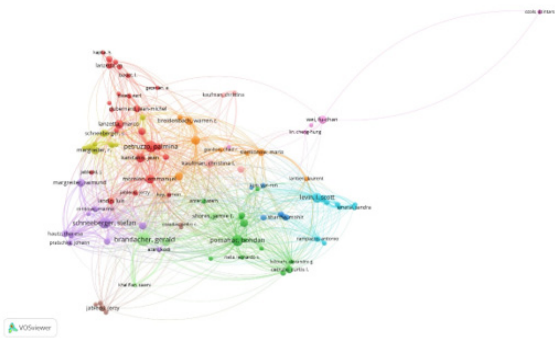


Figure 1. Co-authorship network in hand transplantation research (VOSviewer, full 754-record corpus)

F. Most productive countries and their impact

Analysis of corresponding author country affiliations identified 30 contributing nations. Articles with a USA corresponding author accounted for the largest share (n = 128, 29.3%), with 102 single-country publications (SCP) and 26 multiple-country publications (MCP; MCP rate = 20.3%). Austria ranked second (n = 31, 7.1%), showing a balanced distribution between intra-national and international collaborations (15 SCP vs. 16 MCP; MCP rate = 51.6%). China (n = 27, 6.2%; MCP rate = 7.4%), France (n = 23, 5.3%; MCP rate = 69.6%), and Poland (n = 18, 4.1%; MCP rate = 5.6%) rounded out the top five productive countries (Fig. 2A). The USA began its sustained publishing in the late 1980s, which took a sharp momentum after 2000 to reach a cumulative total of 534 Country-attributed publications (all-author country count). Secondary national outputs (China, France, Austria, and Poland) initiated upward trajectories around 2000–2004, reaching 129, 129, 127, and 66 cumulative articles through mid-2026, respectively (Fig. 2B). Citation impact metrics showed that the USA had the highest total citations (n = 3,499; average = 27.3 cita-

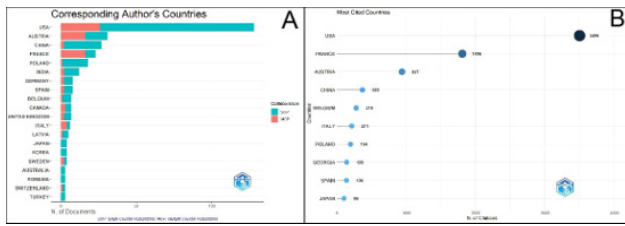


Figure 2. Country-level productivity, longitudinal growth, and citation impact in hand transplantation research (1966 – July 2026). (A) Top corresponding author countries categorised by Single Country Publications (SCP) and Multiple Country Publications (MCP). (B) Top 10 most cited countries displaying total citations and mean citation per article.

tions/article), followed by France (n = 1,806), Austria (n = 937), China (n = 365), and Belgium (n = 275). Among the top cited nations, France had the highest mean citation per article (78.5 citations/article), followed by Georgia (69.5 citations/article) and Belgium (39.3 citations/article).

G. Most productive organizations

Globally, Medical University of Innsbruck (Austria) was at the top of the list with 73 (62+11) publications, followed by the University of Pennsylvania (USA) with 48 publications (Fig. 3). Duke University Medical Centre (n=22), Harvard Medical School (n=20), and the Amrita Institute of Medical Sciences (India, n=19) rank among the top five most productive affiliations.

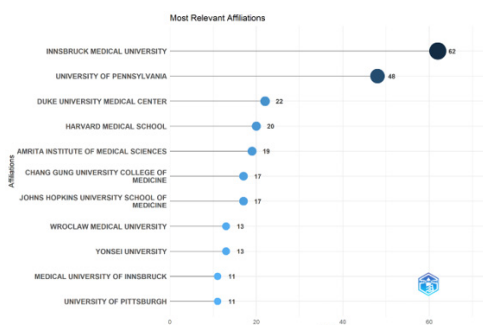


Figure 3. Most Relevant Affiliations

H. Thematic focus and word dynamics in hand transplantation research

Analysis of keyword frequencies and word dynamics from 1966 to mid-2026 identified the most prominent terms and their temporal trajectories. The top ten most relevant words in the literature were “human” (n=357), “article” (n=298), “humans” (n=278), “hand transplantation” (n=267), male (n=211), “adult” (n=187), “hand (n=146), “priority journal” (n=145), “transplantation” (n=133), and “female” (n=129). Cumulative word occurrences remained minimal until approximately 1998, thereafter a marked growth is observed between 2002 and mid-2026.

F. Temporal Trend Topics

Trending topics show a shift in research focus over time (Fig. 4). Early studies (1978–2000) concentrated on foundational surgical techniques and basic immunology, such as microvascular surgery, allo-transplantation, and finger/

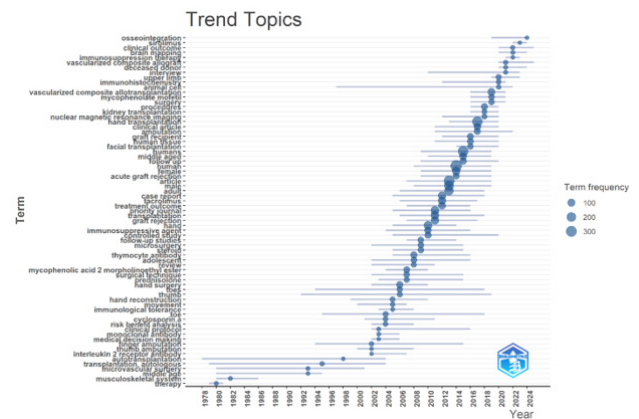


Figure 4. Trend Topics

thumb amputation. The middle phase (2001–2018) shifted toward clinical protocols, immunosuppressive regimens (tacrolimus, cyclosporin A), and acute rejection monitoring. In contrast, the most recent trending topics (2019– mid-2026) highlight advanced clinical outcomes and targeted therapeutic modalities, including osseointegration (median year 2024, n=5), sirolimus (median year 2023, n=5), brain mapping (median year 2022, n=6), clinical outcome (median year 2022, n=8), immunosuppression therapy (median year 2022, n=5), and vascularized composite allograft (median year 2021, n=9).

G. Thematic Strategic Map

Word Dynamics and Cumulative Occurrences of Top Terms over Time (1966– mid-2026) is presented in figure 5. Conceptual structure analysis using Callon's centrality and density metrics categorized the research themes into distinct strategic quadrants:



Figure 5. Word cloud

a. Basic / Motor Themes (High Centrality, Moderate Density): Defined by the core cluster (human, article, humans; Centrality = 21.26, Density = 28.23, Cluster Frequency = 4,781).

b. Niche / Well-Developed Themes (High Density, Moderate Centrality): Anchored by priority journal, graft rejection, and immunosuppressive treatment (Centrality = 17.41, Density = 38.40, Cluster Frequency = 2,320).

c. Emerging / Declining Themes (Low Centrality, Low Density): Comprising terms such as controlled study, nonhuman, and time factors (Centrality = 6.29, Density = 23.57, Cluster Frequency = 560).

DISCUSSIONS

A. Yearly growth in hand transplantation research

The use of immunosuppression and its success in halting organ rejection was only recognized in the late eighties, hence coinciding with the low rates of HT publications thereafter.¹¹ According to Park et al. almost 100 HTs have been performed up until 2018.¹² The rates of HTs fluctuate over the years. This variation may reflect the first attempt by most surgeons around the world, in addition to the advanced healthcare that each recipient requires.¹³ Additionally, patient selection and the ethical considerations surrounding the harm and benefit of HT play a role in the advancement of the field.¹³ The more challenging element is the immunoregulation following transplantation, which is still evolving.^{14,15} However, in comparison to other transplantations, i.e., liver transplantations, there is a clear incremental increase in the number of transplants and also in publications in the recent years.¹⁶⁻¹⁹ Similarly, in comparison to other surgical procedures in the field of plastic surgery, transgender health, breast reconstruction, and rhinoplasty had incremental increases in publications, with transgender health being the most dramatic in the past decade.²⁰⁻²² This further implicates the need for investigations and funding for HT research and publications.

B. Most cited documents

Prof. Dubernard's 1999 Lancet report of the world's first successful human hand transplant published is now the most cited document in the field, reflecting its status as the historic benchmark that opened the modern era of HT.² Jones and his colleagues' 1-year follow-up of the second successful case, detailing patient selection, surgical approach, immunosuppression, and outcomes ranked second.⁵ After summarizing a decade's worth of human HT attempts (49 hands total), 'Petruzzo P, 2010, Transplantation' ranked third.²³ Shores et al. updated summary of the world's experience (107 hands) ranked fourth.²⁴ Dubernard's second benchmark, the first double HT (ranked eighth), also remains among the ten most cited works.⁶ Although not among the ten most-cited documents, Francois and colleagues, conducted a study comparing the first four hand transplants performed worldwide in terms of transplant preparation, reconstructive procedure, immunosuppression, functional recovery, complications of immunosuppression, rejection, and immunological assessment.²⁵ This benchmark study is discussed here for its historical significance in the spread of HT worldwide rather than its citation ranking.²⁵ Due to the dilemma of long-term immunosuppression of hand transplant recipients, which is considered a non-life-saving procedure, Schneeberger and his colleagues (ranked fifth) investigated the use of low-dose tacrolimus monotherapy as a protocol for HT which was reported as successful as of 2013.²⁶ Ranking sixth, Buncke and Schulz's 1966 report of microminiature vascular anastomosis in the rabbit ear is not

itself a hand transplantation study.²⁷ Its enduring citation count illustrates how foundational microsurgical technique literature continues to be cited and captured by literature searches of the HT field, given the shared reliance on small-vessel anastomosis.²⁷ As a centre that performed six HTs as of 2012, Kaufman and colleagues (ranked seventh) came across the finding that both arteries and veins were the main site of rejection, which was otherwise not reported in the literature.²⁸ In addition, they suggested the use of ultrasound bio-microscopy for monitoring.²⁸ From 1998 to 2006, only 24 hand, forearm, or digit transplantations were performed.^{29,30} This number has increased to more than 150 in 2024.⁷ Considering that Lyon, France, is the city where it all started, it is worthwhile to take a look at the French experience in their attempts in HT in the tenth most cited paper.³¹

C. Most prolific scholars, most productive organizations, and countries

The geographical distribution of hand transplantation research underscores strong centralisation in North America and Western Europe. While the USA dominates total volume (29.3%) and cumulative citations (n = 3,499), European nations exhibit distinct collaborative strategies. France and Austria demonstrate high multi-country publication rates (69.6% and 51.6%, respectively), indicating reliance on multinational research networks. Conversely, primary Asian contributors such as China display low international collaboration (7.4% MCP), relying predominantly on domestic single-country publications. France's leading mean citation impact (78.5 citations/article) could partly reflect the foundational weight of pioneering early clinical protocols originating from European centres, such as the Lyon group; The USA scaled these concepts globally, generally becoming the most productive country in the field of Plastic Surgery.³² Regarding organizations, the Austrian Medical University of Innsbruck was the most productive, followed by American Universities, i.e., the University of Pennsylvania, Duke University Medical Centre, Harvard Medical School and Amrita Institute of Medical Sciences in India. The HT surgeries that were mostly confined to American and European institutes has seen remarkable change in recent times with countries such as China and India appearing into the list. India has increased its representation in the field of HT recently.³³

D. Authorship pattern

By definition, HT requires close collaboration between at least two surgical teams such as plastic/reconstructive surgery and transplantation. This is reflected in the co-authorship network, where the field's output clusters tightly around a small number of pioneering, high-volume centres (Lyon, Innsbruck, Boston, Johns Hopkins) rather than being distributed broadly across independent groups. The dominance of a few large, densely connected clusters rather than many small, disconnected ones suggests

that collaboration in HT research has historically been concentrated among the centres actually performing transplants, consistent with the procedure's technical complexity and low global case volume.

E. Thematic focus of the field of hand transplantation

The thematic evolution reflects a paradigm shift in hand transplantation research from early feasibility and surgical mechanics to long-term functional recovery and targeted immunomodulation. While high-frequency terms such as human, hand transplantation, and immunosuppression form the core basic themes of the field, the emergence of osseointegration as a leading trend (median year 2024) points toward innovative skeletal fixation and prosthetic integration methods. Furthermore, the increased focus on brain mapping (median year 2022) highlights the attention toward cortical neuroplasticity and cortical remap following sensory-motor reinnervation. The parallel emergence of sirolimus and vascularized composite allograft (VCA) reflects ongoing efforts to refine maintenance immunosuppressive protocols that aim at minimizing calcineurin inhibitor-related toxicities while achieving donor-specific tolerance.

The current bibliometric analysis has a few limitations. Since it is based on a single database, the Scopus, it is possible that relevant publications in the field exclusively indexed in other databases may have been omitted. Notably, one of the most-cited records retrieved by the search 'Buncke and Schulz (1966)' is an animal (rabbit) study on microvascular anastomosis technique rather than a human hand transplantation study. Its retention in the corpus illustrates that title/abstract/keyword screening cannot fully guarantee topical specificity, and readers should

interpret corpus-level citation metrics with this caveat in mind. In addition, inclusion of papers in this bibliometric analysis was established through screening papers by title, keywords, and abstracts. There is a possibility that some publications were missed due to this process. Because the primary analysis was restricted to journal articles, other document types, including reviews, book chapters, conference papers, and editorials, were excluded and may represent additional perspectives on the development of the field.

CONCLUSION

This study provides a comprehensive bibliometric analysis of scientific literature on HT from 1966 to July 2026 using the Scopus database. Research in hand transplantation has progressed non-uniformly, peaking in publication output in 2019 and citation impact in 1999. Contributions are predominantly concentrated in the USA and Europe (notably Austria). Prominent journals such as *Journal of Hand Surgery* and prolific authors like Brandacher G and Schneeberger S have significantly shaped the field. Authorship patterns highlight a strong collaborative trend, with thematic focus centred on immunosuppression and vascularized composite allotransplantation. Nevertheless, the field faces ongoing challenges, including limited global participation, high economic costs, and ethical concerns surrounding non-life-saving procedures. Targeted research funding, specialized centres, and international interdisciplinary collaborations remain essential to advancing clinical outcomes and broadening global access to hand transplantation.

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