

What is the ultimate fate of presented abstracts? The conversion rates of presentations to publications over a five-year period from three North American plastic surgery meetings

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BACKGROUND: Advancements in clinical decision-making are influenced by presentations made at scientific conferences or publications in journals with extensive readership. However, many ideas shared at annual conferences fail to be published, and most surgeons attend these meetings only sporadically.

OBJECTIVE: To quantify the conversion rates of meeting presentations to publications in North American plastic surgery.

METHODS: MEDLINE (OvidSP) and PubMed databases were cross-referenced with abstracts accepted for podium presentation at the Canadian Society of Plastic Surgeons, American Society of Plastic Surgeons, and American Association of Plastic Surgeons annual meetings from 2003 to 2007. Parameters reviewed included publication rate, time to publication, subspecialty, trial type, publication journal and journal impact factor.

RESULTS: Over the five-year study period, 45.00% of the 888 presentations were published in peer-reviewed journals. The mean time to publication was 22 months (range 1.00 to 85.90 months). In total, 57.00% of the 400 publications appeared in *Plastic and Reconstructive Surgery*; 47.20% of publications were case series study design. The majority of publications were of the reconstruction subspecialty (31.00%). Abstracts from the American Society of Plastic Surgeons had the highest conversion rate (57.70%). Publications based on abstracts presented at the American Association of Plastic Surgeons had the highest mean journal impact factor (2.33). The Canadian Society of Plastic Surgeons had the highest total number of publications (n=161).

CONCLUSIONS: From the three North American annual general meetings reviewed, there was a modest conversion rate of mainly reconstructive case series published predominantly in a single journal, *Plastic and Reconstructive Surgery*. Several years often pass from the genesis of a research hypothesis to final publication, and because the majority of presentations fail to be published, presentations should be observed with a critical eye given the more stringent peer review process and time required for final publication. In an effort to improve conversion rates, departments and faculty members must foster a culture that prioritizes publication.

Key Words: Abstract publication rates; Conversion rates presentation to publication

Therapeutic advances are reliant on sound research published in reputable journals with wide readership. The goal of any research is to provide a lasting, retrievable record of the work in the form of a published article (1). Research is often first presented to a peer group in abstract form at an annual meeting; this semiformal information-sharing venue is a critical medium for the communication of new concepts, and enables the presentation of novel or confirmatory information to glean peer feedback. However, many of these presentations are based on partial results, which are modified after final data analysis or during the more rigorous peer-review process required

Quel est le destin des résumés présentés? Le taux de conversion des présentations en publications sur une période de cinq ans, d'après trois congrès nord-américains de chirurgie plastique

HISTORIQUE : Les progrès des prises de décision cliniques sont influencés par les présentations faites lors de congrès scientifiques ou les publications dans des revues au lectorat important. Cependant, de nombreuses idées partagées dans le cadre de congrès annuels ne sont pas publiées, et la plupart des chirurgiens participent à ces congrès seulement de manière sporadique.

OBJECTIF : Quantifier le taux de conversion des présentations lors de congrès en publications nord-américaines liées à la chirurgie plastique.

MÉTHODOLOGIE : Les chercheurs ont procédé à des références croisées dans les bases de données de MEDLINE (OvidSP) et de PubMed à l'égard de résumés acceptés en vue d'être présentés dans le cadre de séances des congrès annuels de la Société canadienne des chirurgiens plasticiens, de l'American Society of Plastic Surgeons et de l'American Association of Plastic Surgeons tenus entre 2003 et 2007. Les paramètres analysés incluaient le taux de publications, le délai avant la publication, la subsécialité, le type d'essai, la revue de publication et le facteur d'impact de la revue.

RÉSULTATS : Pendant la période d'étude de cinq ans, 45,00 % des 888 présentations ont été publiées dans des revues révisées par des pairs. Le délai moyen était de 22 mois avant la publication (plage de 1,00 à 85,90 mois). Au total, 57,00 % des 400 publications ont été publiées dans *Plastic and Reconstructive Surgery*. Dans 47,20 % des cas, la méthodologie de l'étude se fondait sur des séries de cas. La majorité des publications portaient sur la subsécialisation de la chirurgie reconstructive (31,00 %). Les résumés de l'American Society of Plastic Surgeons affichaient le plus fort taux de conversion (57,70 %). Les publications découlant de résumés présentés au congrès de l'American Association of Plastic Surgeons ont obtenu le facteur d'impact moyen le plus élevé (2,33). La Société canadienne des chirurgiens plasticiens présentait le plus grand nombre de publications (n=161).

CONCLUSIONS : Après l'analyse de trois congrès annuels nord-américains, les chercheurs ont constaté un taux de conversion modeste, surtout à l'égard de séries de cas de chirurgie reconstructive publiées principalement dans une seule revue, *Plastic and Reconstructive Surgery*. Il s'écoule souvent plusieurs années entre la genèse d'une hypothèse de recherche et la publication définitive, et puisque la majorité des présentations ne sont pas publiées, il faut percevoir ces présentations d'un œil critique compte tenu du processus plus rigoureux de révision par les pairs et du délai avant la publication définitive. Dans un effort pour améliorer les taux de conversion, les membres des départements et les conférenciers doivent favoriser une culture qui priorise la publication.

for successful publication. Moreover, these ideas are not effectively disseminated because most surgeon members attend annual general meetings sporadically, if at all (2-4).

Unfortunately, many presentations are never published. A 2007 Cochrane review of nearly 30,000 abstracts suggested that 44.5% of abstracts successfully reached publication (4). Data from transplant, orthopedic and urology literature since 2006 have yielded conversion rates of presentation to publication of 33% to 59% (3,5-10). Failure to publish is due to many factors, including inadequate time or resources, lower level study design or poor methodology, and coauthor

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relationship challenges, as well as publication bias toward significant results (8). This failure to publish hinders advances in clinical practice and promotes research redundancy; furthermore, selective publishing creates publication bias that overestimates treatment effect (2).

In response to an identified gap in the plastic surgery literature regarding North American abstract conversion rates, the primary aim of the present study was to quantify rates of publication from three major annual general North American plastic surgery meetings. Secondary interests included the time interval from presentation to publication, research study design type, identifiable trends in research according to subspecialty area, publication journal and associated journal impact factor (JIF). The present analysis will serve as a first step in evaluating the effectiveness with which plastic surgeons publish novel information first presented in abstract form. It will also estimate time requirements for successful research publications and determine which plastic surgery journals are final destinations for presented abstracts. Conclusions will be drawn regarding the importance of conversion to final publication from a clinical and academic perspective.

METHODS

Abstracts presented at the annual general meetings of the Canadian Society of Plastic Surgeons (CSPS), American Society of Plastic Surgeons (ASPS) and American Association of Plastic Surgeons (AAPS) from 2003 to 2007 were retrieved either electronically (ie, online) or in hard copy format. Abstract inclusion required an oral presentation at the abovementioned meetings, while poster presentations were excluded. MEDLINE (OvidSP) and PubMed literature searches were performed to determine conversion rates.

Search strategies included title of abstract, names of author(s) and key words. The initial search identified publications with identical titles, and author lists were then compared with the original abstracts. Additionally, author searches combined with abstract-specific key word searches were used to identify further conversions to publication. Criteria for successful conversion required that the publication included at least one author from the group and content similar to the original abstract. Dates of abstract presentations and final publications were recorded to determine time to publication. Minimum follow-up was three full years, but was variable because the publication analysis was performed in a cross-sectional fashion in 2010. Research study design, subspecialty areas, journal of publication and JIF were also documented. Two independent evaluators reviewed published articles to ensure precise documentation of the data points. Any discrepancies were reviewed by all authors and resolved by consensus.

Descriptive observational studies including case reports, case series and cross-sectional studies were classified as low-level research due to the absence of a comparison group for statistical analysis and the inability to demonstrate causal relationships. Analytical observational studies including cohort and case-control studies were classified as intermediate-level research because they, despite their limitations, provide a comparison group for statistical analysis and can determine relationships between exposure and outcome. Basic science and clinical trials were deemed to be the highest level of research due to their ability to compare groups, determine causal relationships and limit bias through blinding.

RESULTS

Over the study period (2003 to 2007), 45.00% of the 888 oral presentations were published in peer-reviewed journals. The highest mean conversion rate by meeting was that of the ASPS (57.70%), followed by the AAPS (49.40%) and the CSPS (36.00%). In total, CSPS abstracts generated 161 publications, ASPS abstracts produced 151 publications and AAPS abstracts yielded 88 publications (Table 1). The mean time to publication was 22 months (range 1.00 to 85.90 months). The shortest mean time to publication by meeting was that of the ASPS (19 months, range 1.00 to 54.30 months), followed by the AAPS (22 months, range 1.00 to 85.90 months) and finally the CSPS (24 months, range 2.00 to 79.00 months).

The majority of publications, based on study design, were low-level research (case reports, case series and cross-sectional studies). These were responsible for 61.10% of publications, and the predominant low-level research was case series study design (47.20%). The conversion rates for higher-level research included basic science (17.20%) and clinical trials (5.50%). The majority of publications were of the reconstruction subspecialty (31.50%). The craniofacial subspecialty was responsible for 17.50% of publications, followed by experimental (17.20%) and breast (16.20%) subspecialties.

The majority of presentations (57.00%) were published in *Plastic and Reconstructive Surgery* (PRS), followed by *Annals of Plastic Surgery* (8.00%) and the *British Journal of Plastic Surgery/Journal of Plastic, Reconstructive, and Aesthetic Surgery* (3.00%). The mean JIF according to specific meeting were as follows: AAPS 2.33 (range 0.077 to 3.82), ASPS 2.31 (range 0.38 to 7.82) and CSPS 2.21 (range 0.72 to 3.92). See Table 1 for summarized data points.

DISCUSSION

Why are publication rates low?

The overall conversion rates in our study (45.00%) were similar to the 44.5% conversion rate reported by Scherer et al (4) in an extensive Cochrane review published in 2007. We were unable to find published data on North American plastic surgery publication rates; however, two articles from the British Association of Plastic, Reconstructive and Aesthetic Surgeons annual meetings suggest conversion rates of only 32% (11) and 20% (1), respectively, which were lower than those found in our analysis. Nonetheless, these British publications, as well as our data on North American rates of publication, leave much room for improvement.

Why are rates of publication so low? The same Cochrane review (4) found that manuscripts were never submitted for publication as a result of lack of time or lack of priority and, hence, not published. Additionally, it has been suggested that abstracts could have failed the critical review process required for publication and, are therefore, never published (8). Finally, in a study specifically addressing why there were failures to publish in orthopedic surgery, identified barriers included time constraints, studies were ongoing and not completed, and difficulties with coauthor relationships (12). These data suggest that to improve publication rates, plastic surgery needs to foster a research culture that develops sound research skills through mentorship by experienced research teams (7) with sufficient protected time for faculty and trainees to generate publications.

Research study design

The published works were predominantly low-level, retrospective research consisting of small patient groups. Although randomized controlled trials often used in experimental research yield the highest level of information, they are not often feasible for research in surgery. Therefore, to enhance research quality and patient care, efforts to increase prospective analytical observational study designs in plastic surgery must be promoted. A recent study on levels of evidence in published plastic surgery indicated that low-level research (levels III and IV) were being published (13), supporting our findings of low-level research in abstracts that were ultimately published.

Subspecialty

The predominance of reconstructive subspecialty publications speaks to the complex and multifaceted nature of plastic surgery, but may be misleading as a research trend. We only evaluated three general plastic surgery meetings, and two-thirds of the abstracts were published in general plastic surgery journals (PRS, *Annals of Plastic Surgery*, and *British Journal of Plastic Surgery/Journal of Plastic, Reconstructive, and Aesthetic Surgery*). It would be of interest to see the final publication destination for abstracts presented at subspecialized plastic surgery meetings (ie, microsurgery meetings, burn meetings) to determine whether these abstracts were published predominantly in subspecialty journals.

TABLE 1
Data from three North American plastic surgery meetings (2003–2007)

Parameter analyzed	CSPS	ASPS	AAPS	Overall
Abstract presentations, n (%)	453 (51.00)	262 (29.50)	173 (19.50)	888 (100.00)
Publication, n (% conversion)	161 (36.00)	151 (57.70)	88 (49.40)	400 (45.00)
Months to publication, n (range)	24 (2.00–79.00)	19 (1.00–54.30)	22 (1.00–85.90)	22 (1.00–85.90)
Mean journal impact factor (range)	2.21 (0.72–3.92)	2.31 (0.38–7.82)	2.33 (0.77–3.82)	2.28 (0.38–7.82)
Subspecialty, n (%)				
Craniofacial	30 (18.63)	20 (13.20)	20 (22.70)	70 (17.50)
Reconstruction	45 (27.95)	53 (35.00)	28 (31.80)	126 (31.50)
Breast	37 (22.98)	13 (8.60)	15 (17.00)	65 (16.20)
Cosmetic	8 (4.96)	19 (12.50)	8 (9.09)	35 (8.70)
Hand/Peripheral nerve	15 (9.31)	10 (6.60)	10 (11.30)	35 (8.70)
Experimental	26 (16.14)	36 (23.80)	7 (7.90)	69 (17.20)
Trial type, n (%)				
Clinical trial	10 (6.20)	11 (7.30)	1 (1.10)	22 (5.50)
Basic science	26 (16.10)	36 (23.80)	7 (7.90)	69 (17.20)
Cohort	8 (4.90)	7 (4.60)	3 (3.40)	18 (4.50)
Case control	9 (5.50)	7 (4.60)	5 (5.60)	21 (5.20)
Cross sectional	16 (9.90)	12 (7.90)	9 (10.20)	37 (9.20)
Case series	66 (40.90)	70 (46.30)	53 (60.20)	189 (47.20)
Case report	11 (6.80)	4 (2.60)	4 (4.50)	19 (4.70)
Review (systematic and meta-analysis)	15 (9.30)	4 (2.60)	6 (6.80)	25 (6.20)
Journal of publication, n (%)				
<i>Plastic and Reconstructive Surgery</i>	79 (49.10)	88 (58.30)	59 (67.10)	226 (56.50)
<i>Annals of Plastic Surgery</i>	11 (6.80)	11 (7.20)	10 (11.50)	32 (8.00)
<i>JPRAS/British Journal of Plastic Surgery</i>	4 (2.50)	6 (3.90)	2 (2.30)	12 (3.00)
<i>Journal of Craniofacial Surgery</i>	5 (3.10)	5 (3.30)	1 (1.10)	11 (2.75)
<i>Canadian Journal of Plastic Surgery</i>	8 (5.00)	1 (0.70)	0 (0.00)	9 (2.25)
<i>Journal of Reconstructive Microsurgery</i>	3 (1.90)	2 (1.30)	1 (1.10)	6 (1.50)
<i>Journal of Hand Surgery</i>	4 (2.50)	1 (0.70)	1 (1.10)	6 (1.50)
<i>Aesthetic Surgery Journal</i>	0 (0.00)	5 (3.30)	0 (0.00)	5 (1.25)
<i>Aesthetic Plastic Surgery</i>	1 (0.60)	3 (2.00)	0 (0.00)	4 (1.00)
<i>Ann Chir Plast Esthet</i>	2 (1.20)	1 (0.70)	0 (0.00)	3 (0.75)
<i>Cleft Palate-Craniofacial Journal</i>	2 (1.20)	1 (0.70)	0 (0.00)	3 (0.75)
<i>Clinics in Plastic Surgery</i>	1 (0.60)	1 (0.70)	1 (1.10)	3 (0.75)
<i>Journal of Applied Physiology</i>	3 (1.90)	0 (0.00)	0 (0.00)	3 (0.75)
<i>Microsurgery</i>	1 (0.60)	1 (0.70)	1 (1.10)	3 (0.75)
<i>Transplantation</i>	1 (0.60)	1 (0.70)	1 (1.10)	3 (0.75)
Other	36 (22.40)	24 (15.80)	11 (12.50)	71 (17.75)

AAPS American Association of Plastic Surgeons; Ann Chir Plast Esthet Annales de Chirurgie Plastique et Esthétique; ASPS American Society of Plastic Surgeons; CSPS Canadian Society of Plastic Surgeons; JPRAS Journal of Plastic, Reconstructive & Aesthetic Surgery

Time to publication

Most scientific meeting abstracts are published within three years, and 90% are published within four years after original presentation (14), which is consistent with the findings of the Scherer et al's work from 2007 (4). The findings of the present study suggest that some abstracts are being published more than four years after presentation, with the mean time to publication of slightly less than two years. As such, what becomes clear is that several years often pass from research idea genesis to final publication, which we estimate conservatively at four to five years, given the fact that idea generation, data collection, analysis, abstract preparation and presentation often add 12 or more months to this three- to four-year lag. This infers that published research in journals is in fact not 'new', and information in textbook chapters, which often stems from peer-reviewed publications, is even less current. A more efficient journal review process and subsequent publication turnover interval could reduce publication lag time. Solutions to publication delays would be for journals to increasingly place their accepted publication content as electronic publications ahead of print publications, or meeting organizing committees could only accept abstracts that were accompanied by a manuscript for review; although this might be a radical notion and reduce the number of abstracts submitted, the result would be an increased publication yield.

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Impact factor

Consistent with most surgical subspecialty journals, we observed JIFs in the 1 to 3 range. There were no significant differences in JIF across meetings. If an analysis of meeting quality is to be performed based on JIF data alone, an argument can be made that meeting quality could be considered equivalent because JIFs were almost equal among meetings (likely a result of the majority of abstracts being published in PRS). Perhaps JIF is a less meaningful statistic within plastic surgery in the context of abstract presentations, and it might be a more significant metric when plastic surgery is compared with other surgical disciplines.

Limitations

Although we performed a thorough literature search via MEDLINE and PubMed, it is possible that we failed to document all conversions. This may be due to failure of these two databases to include specific publications, or that the original research was completed under a different title or by different authors. In addition, our results suggest that some abstracts convert to publication over four years after presentation and, therefore, the complete list will only be available at some future date outside of our study window. We commenced the present study three full years after 2007 abstract presentations and, therefore, could have missed some abstracts that were ultimately published (14).

Finally, although presented abstracts are supposed to be unpublished work, some papers were published before presentation, biasing our time to publication data.

CONCLUSIONS

1. Despite similar conversion rates relative to other surgical disciplines, plastic surgeons should strive for expedient and successful journal publication. Publication success not only propagates advances in our field, but also minimizes redundant research and delays in the dissemination of advances in patient-care strategies.
2. The total number and frequency of publications are metrics that are used by academic departments to evaluate surgeons. However, the conversion rate of presentations to publication is not often analyzed; it can be argued that this calculation is a valuable tool that may be used by department chairs to foreshadow a successful research career for new recruits or junior faculty, as well as by promotion and tenure committees during deliberations for promotion. A high conversion rate is not only a value-add for our patients, it also puts the surgeon in favourable light when their academic record is being evaluated.

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