

Review

A historical review of classic articles in surgery field



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Abstract

BACKGROUND: Surgery is one of the most rapidly developing specialties in the past century. Diagnostic methods, operation technique, and knowledge of the diseases are changing continuously. In the academic history, lots of classic papers brought advances for surgery. They were accepted and cited numerously by the medical specialists all over the world. Citation analysis reflects the recognition a work has received in the scientific community by its peers.

DATA SOURCES: The articles in the field of surgery have been cited at least 1,000 times since its publication to 2011 were analyzed. By categorizing the publication year, journals, authors, institutions, countries, life citation cycles, level of evidence provided, and characteristics of the topmost articles, we intended to determine what qualities make the articles important to the specialty. The methodology used in this study was based on the Science Citation Index Expanded database of Web of Science from Thomson Reuters. According to Journal Citation Reports of 2011, it indexes 8,336 journals with citation references across 176 Web of Science categories in science edition. Level of evidence of these articles was graded according to the standard provided by Oxford Centre for Evidence-Based Medicine.

CONCLUSION: Totally 36 articles have been cited at least 1,000 times since their publication to the year 2011. According to their citation histories, 35 articles were further evaluated. These topmost articles covered 8 subspecialties of surgery and were published in 17 journals. The publication year varied from 1940 to 1999 and the articles provided different level of evidence, most of which are retrospective studies of case series. Six articles were research articles including animal model, histology analysis, and laboratory research. The others were clinical articles. From the results of citation analysis, the classic articles are not always in top citations. In addition, some of these articles have no citations after several years post their publication. The introduction of a commonly used classification or scoring system is a major factor in propelling citation by other authors. The most cited articles in surgery present their long academic life in spite of their level of evidence and journal impact factor in which they were published.
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The first published paper in the field of surgery might be originated to 1841.¹ Dr John Hunter and Thomas Shute gave the “First course or lecture on physiology and surgery” on May 1, 1841, then published the lecture in *Provincial Medical and Surgical Journal*. In the lecture, they presented several surgical cases that survived or died of operation. Since then,

numerous scientific papers have been published for the purpose of global communication between surgeons,^{2,3} whether orthopedic surgery,^{4,5} pediatric surgery,^{6,7} plastic surgery,^{8,9} neurosurgery,^{10,11} and other specialties.

Number of articles cited was often used as an indicator of their scientific performance. Top cited articles were commonly listed to provide a basic source of information and were usually categorized according to publication year, journal, authors, countries, and institutions.¹² However, the number of citations of an article is not sufficient to show its impact in the research field. Indicators such as numbers of authors cited, numbers of institutions cited, numbers of countries cited, numbers of subject areas cited, citations per year, and total number of citations of a paper to date have been applied to analyze the high-impact papers.¹³ Citation life cycles of highly cited articles are also considered to be important.¹⁴ The citation histories of papers could give more details of the impact characteristics.¹⁵

Classic papers,¹⁶ also called top cited articles¹⁷ or top publications,¹⁸ have been studied in various medical fields in the last decade, such as orthopedic surgery,¹⁹ ophthalmology,²⁰ critical care medicine,²¹ urology,²² pediatric surgical research,²³ occupational medicine,²⁴ periodontology,²⁵ traumatic spinal cord injury,²⁶ trauma,²⁷ anesthesia and pain,²⁸ obstetrics and gynecology,¹² and plastic surgery.²⁹ Scientific specialties have also used the method of bibliometric analysis to evaluate certain operations, for example, wrist arthroscopy,³⁰ breast reconstruction surgery,³¹ and functional neurosurgery.³² Further evaluations have been applied by data mining of the published papers, including levels of evidence in foot and ankle surgery literature,³³ and trend of India's contribution to the field of plastic and reconstructive surgery.³⁴

It has been reported that because of the presence of many most cited papers, there have been influential subsequent advances in molecular biology resulting in helping a great number of people.³⁵ Highly cited articles nevertheless provide an interesting and useful insight into which authors, articles, and topics are influencing the profession over time.³⁶ Furthermore, using classic papers to teach physiology³⁷ and capillary filtration³⁸ were presented. It was also found that Nobelists are consistently highly cited, while only a small percentage of most cited authors won the prize. It would be expected that a large percentage of the latter are elected to national academies of science.³⁹

This article analyzed those articles in the field of surgery in Science Citation Index with at least 1,000 citations since their publication to the year of 2011. In this study, all journal articles with at least 1,000 total citations since publication to 2011 were selected as top cited works and analyzed with regard to citation histories, total citation, citation in 2011, journals, level of evidence, and Web of Science categories.

Methodology

The methodology used in this study was based on the Science Citation Index Expanded (SCI-Expanded) database

of Web of Science from Thomson Reuters. According to Journal Citation Reports (JCR) of 2011, it indexes 8,336 journals with citation references across 176 Web of Science categories in science edition. In total, 199 journals were listed in the Web of Science categories of surgery in 2011. Within the publication years from 1900 to 2011, 1,059,132 documents were published in 326 journals in the Web of Science categories of surgery based on SCI-Expanded (updated on March 29, 2013). Document type of article was further considered. Altogether 740,982 articles were found. Another filter, TC2011, was used to retrieve the articles. The total number of times an article being cited from its publication to the end of 2011 was recorded as TC2011.^{13,40} Articles with TC2011 greater than or equal to 1,000 were selected out as the classic articles. The advantage of this indicator was its invariance, not updating as time goes on.⁴¹ Likewise, C2011, an article's total number of citations in 2011, and C0, an article's total number of citations in its publication year, were employed to characterize the classic articles. The records were downloaded into spreadsheet software, and manipulated using Microsoft Excel 2007. The impact factor (IF2011) of a journal was determined for each document as reported in the JCR 2011.

Because of changes in country names or institution name over the years, some countries were grouped together. The Federal Republic of Germany, Germany Democratic Republic, West Germany, and Germany were grouped together as Germany. The USSR and Russia were also reclassified as Russia. England, Scotland, Northern Ireland, and Wales were grouped together as the United Kingdom.⁴² Articles from Hong Kong published before 1997 were included in the Chinese category.

Each article with TC2011 greater than 1,000 was reviewed and basic information was collected, including authors, year of publication, source journal of the article, institute of the authors and article type (basic science article or clinical article), and level of evidence for clinical articles based on the standard provided by Oxford Centre for Evidence-Based Medicine on March 2009 (<http://www.cebm.net/>).

Results and Discussion

A total of 36 articles published in the Web of Science categories of surgery have been cited at least 1,000 times since their publication until the end of 2011. All these articles' content and their cited life and history were reviewed. The top one is "A rating scale for depression" published in *Journal of Neurology, Neurosurgery and Psychiatry* by Hamilton in 1960.⁴³ The cited history of this article was further analyzed and it was found that although the article was published in a journal related with the surgery specialty, the article was most cited by neurological and psychiatric articles. Thus, the analysis below excludes

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