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Citation classics: the 50 most cited articles in surgery in Asia

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ABSTRACT

Objective: The term 'citation classics' is used for highly cited papers in the scientific literature. It was aimed to understand the current landscape of academic surgery and the quality of the scientific contribution of authors belonging to Asia using citation classics.

Material and Methods: We searched the WoS core collection database under the category 'surgery' to include the 50 most cited articles whose lead author was affiliated to an Asian country during the research period. We noted the following characteristics for each article: total citations, average citations per year, year of publication, publishing journal, institution and country, journal quartile and impact factor, authorship, field of surgical research. Results were analyzed using IBM SPSS Statistics v26.

Results: The number of citations ranged from 447 to 1170 (mean +/- SD is 616.9 +/- 150.16) and citations per year ranged from 10.04 to 98.17 (mean +/- SD is 30.87 +/- 17.27). Most productive decade was 1991-2000 (n= 19 articles). Majority of the articles were published in 'Annals of Surgery' (28%). Four authors contributed two or more articles as lead author with 'Poon RTP' taking the lead. Japan's contribution was highest (60%) followed by China and its dependents' (26%). University of Hong Kong was the leading institution (n= 7). Observational study was the most commonly used design (n= 24). Most papers belonged to gastrointestinal surgery (n= 28) and surgical oncology (n= 26). 66% articles originated from a single institution, 22% had inter-institutional collaboration and 12% had national collaboration from countries outside Asia.

Conclusion: The study identified the most influential papers in surgery from Asia. This should provoke interest in academic surgery and research collaboration with other nations in Asia and the rest of the world.

Keywords: Citation classics, citations, bibliometrics, surgery, Asia

INTRODUCTION

Asia harbors 60% of the world's population and carries a substantial burden for surgically treatable disorders (1). Moreover, the distribution of currently available surgical services is inequitable. A good way to approach this problem is to understand the current situation of academic surgery in Asia.

The term 'citation classics' was coined by Garfield who used the term for highly cited papers in the Web of Science (WoS) database (2). Bibliometric study using citation counts is an important tool to measure scientific impact and/or significance of the published literature from an individual or a region (3,4). Citation classics help in understanding the current research status and serve as a guide for future direction in a field. They can also estimate the quality of research output from a region, which can influence decisions regarding the allocation of funds and research priorities (5).

Previous reviews have looked at citation classics in different surgical specialties such as general surgery (6), plastic surgery (7,8), gastrointestinal surgery (9), neurosurgery (5), orthopedic surgery (4) et cetera. However, there has been no previous report of citation classics in surgery originating from Asia. It was aimed to understand the current landscape of academic surgery and the quality of the scientific contribution of authors belonging to Asia using citation classics determined through the Web of Science core collection database.

MATERIAL and METHODS

Our study was based on the Science Citation Index Expanded (SCI-EXPANDED) database of the Clarivate Analytics (formerly known as the Thomson Reuters and the

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Institute for Scientific Information) Web of Science (WOS) Core Collection database. According to the Journal Citation Reports (JCR) of 2019 (InCites Journal Citation Reports dataset updated June 20th, 2019), it indexes 11,877 journals with citation references across 236 disciplines. Search conducted in May, 2020 revealed a total of 1,911,690 documents in the WOS category of 'surgery'. This search was further refined by countries to include at least one author from Asian countries and their dependencies: Afghanistan, Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Brunei, Cambodia, China, Cyprus, Georgia, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Laos, Lebanon, Malaysia, Maldives, Mongolia, Myanmar, Nepal, North Korea, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, South Korea, Sri Lanka, State of Palestine, Syria, Tajikistan, Thailand, Timor-Leste, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan, Vietnam, Yemen, Taiwan, Hong Kong, Macao revealing a total of 349,326 documents. Search results were then arranged in descending order of the total number of citations received from WOS core collection.

These results were manually searched by the author to include only those publications whose lead author was affiliated to one of these Asian countries during the period of research. Results related to dental surgery were excluded. We selected the top 50 most cited papers which satisfied the above criteria. We searched the PubMed or Google Scholar database to obtain the full texts/abstracts of these articles. For each article, we extracted the following characteristics: article title, total number of citations in WoS core collection, average citations per year, year of publication, publishing journal, publishing institution, publishing country, journal quartile, journal impact factor (IF), authorship, area of surgical research and type of research. We inserted all data for each included article into a spreadsheet software and used descriptive statistics to quantitatively describe the features of the sample using IBM SPSS Statistics v26.

RESULTS and DISCUSSION

Our analysis of the citation classics of surgical research originating from Asia revealed the following findings.

Citation and Timeline Characteristics

The list of top 50 articles is provided in Table 1. The number of citations ranged from 447 to 1170 (mean +/- SD was 616.9 +/- 150.16). Eight papers were cited more than 800 times. The average number of citations per year ranged from 10.04 to 98.17 (mean +/- SD was 30.87 +/- 17.27). The paper published by Shigeyuki et al. (10) received the highest number of total citations (1170 times). It was entitled, "Mesenchymal Cell-based Repair of Large, Full-thickness Defects of Articular-cartilage." published in 1994. This basic science study attempted to repair articular cartilage defects using osteochondral progenitor cells in rabbits. This is the only paper in the list which has been cited >1000 times. The paper ranked lowest in this list (cited 447 times) was, "Intrahepatic recurrence after curative resection of hepatocellular carcinoma – Long-term results of treatment and prognostic factors" published in 1999 (11).

All papers in the list were published between 1976 to 2015. Figure 1 depicts this timeline trend. Highest number of articles were published in 1991-2000 decade (n= 19 articles) followed by the 2001-2010 decade (n= 15 articles). The most productive decade for citation classics has been variable in medical literature (1980s in Hand surgery (12), 1990s in Aesthetic surgery, Neurosurgery and Otolaryngology (5,7,13), 2000s in Ophthalmology and GI surgery (9,14) et cetera. In the list of 35 most cited articles in surgery published by Long et al., the most productive decade was 1970 (15). Since citations take time to accumulate, it is expected that even the 'landmark' papers recently published will not be able to make it into this list. According to Garfield et al. even older papers are cited less often as they become 'common concept' over time. This is termed as Obliteration by incorporation (2). Thus, when we looked at the number of citations per year, it produced significant shifts in rank when compared to the rank based on the total number of citations (mean absolute rank change 14.44 ± 10.07; range -33 to +32). The paper with the highest number of average annual citations among the top 50 list was produced by Wakabayashi et al. (16) This was a consensus statement on laparoscopic liver resection.

Journals and Authors

Journals publishing top 50 cited papers are listed in Table 2. These include a total of 25 journals. Largest number of top-cited papers were published by 'Annals of Surgery' (n= 14 articles) followed by 'Journal of Bone and Joint Surgery-American Volume' (n= 4 articles). Impact factors of these journals varied from 1.29 to 10.13 according to JCR 2019. Most of these journals belong to the 1. quartile in surgery and related sub-specialties. Six journals belong to the 2. quartile and two journals 'ActaNeurochirurgica' and 'Aesthetic Plastic Surgery' belong to the 3. quartile. Top cited articles are more likely to be published in journals of high impact. This in turn increases the impact factor of these journals (17). On the other hand, landmark papers, even if published in journals with low impact, could be highly cited if they are considered important in the field. Most of the journals in our list have an origin in the US or UK. There is a reluctance of highly cited authors to publish papers in native journals as many of them are not included in major bibliographic databases.

Authors

Four authors contributed two or more articles as a lead author. The list was led by Poon RTP who contributed to four articles as a lead author. This was followed by Makuuchi T (n= 3 articles), Naruke, T and Kitano S (n= 2 articles each).

Table 1. The 50 most cited surgery articles from Asian surgeons

Rank	Lead author (year of publication)	Title	Total number of citations in WoS core collection	Average citations/year
1	Wakitani, Shigeyuki (1994)	Mesenchymal cell-based repair of large, full-thickness defects of articular-cartilage	1170	43.33
2	Chen, Ms (2006)	A prospective randomized trial comparing percutaneous local ablative therapy and partial hepatectomy for small hepatocellular carcinoma	910	60.67
3	Kitano, S (1994)	Laparoscopy-assisted billroth-I gastrectomy	892	33.07
4	Inoue, K (1984)	Clinical-application of transvenous mitral commissurotomy by a new balloon catheter	859	23.22
5	Inoue, H (2010)	Peroral endoscopic myotomy (POEM) for esophageal achalasia	839	76.27
6	Makuuchi, M (1990)	Preoperative portal embolization to increase safety of major hepatectomy for hilar bile-duct carcinoma - a preliminary-report	819	26.42
7	Todani, T (1977)	Congenital bile-duct cysts-classification, operative procedures, and review of 37 cases including cancer arising from choledochal cyst	811	18.43
8	Benabid, Al (1996)	Chronic electrical stimulation of the ventralis ıntermedius nucleus of the thalamus as a treatment of movement disorders	809	32.36
9	Song, Ye-Guang (1984)	The free thigh flap - a new free flap concept based on the septocutaneous artery	792	21.41
10	Atiyeh, Bishara S (2007)	Effect of silver on burn wound infection control and healing: review of the literature	748	53.43
11	Wei, FC (2002)	Have we found an ideal soft-tissue flap? An experience with 672 anterolateral thigh flaps	740	38.95
12	Koshima, I (1989)	Inferior epigastric artery skin flaps without rectus abdominis muscle	687	21.47
13	Akiyama, H (1994)	Radical lymph-node dissection for cancer of the thoracic esophagus	686	25.41
14	Kiuchi, T (1999)	Impact of graft size mismatching on graft prognosis in liver transplantation from living donors	650	29.55
15	Kajitani, T (1981)	The general rules for the gastric-cancer study in surgery and pathology. 1. clinical classification	648	16.2
16	Makuuchi, M (1985)	Ultrasonically guided subsegmentectomy	629	17.47
17	Poon, RTP (2002)	Long-term survival and pattern of recurrence after resection of small hepatocellular carcinoma in patients with preserved liver function - implications for a strategy of salvage transplantation	621	32.68
18	Nakajima, T (1982)	An Immunoperoxidase study of s-100 protein distribution in normal and neoplastic tissues	618	15.85
19	Poon, RTP (2000)	Risk factors, prevention, and management of postoperative recurrence after resection of hepatocellular carcinoma	611	29.1
20	Maruyama, K (1987)	Progress in gastric-cancer surgery in Japan and its limits of radicality	609	17.91
21	Kudo, S (1993)	Endoscopic mucosal resection of flat and depressed types of early colorectal-cancer	603	21.54
22	Naruke, T (1978)	Lymph-node mapping and curability at various levels of metastasis inn resected lung-cancer	595	13.84

Table 1. The 50 most cited surgery articles from Asian surgeons (continue)

Rank	Lead author (year of publication)	Title	Total number of citations in WoS core collection	Average citations/year
23	Fan, ST (1999)	Hepatectomy for hepatocellular carcinoma: toward zero hospital deaths	592	26.91
24	Wakabayashi, GO (2015)	Recommendations for laparoscopic liver resection a report from the second international consensus conference held in Morioka	589	98.17
25	Jaffe, ES (1996)	Report of the workshop on nasal and related extranodal angiocentric t natural killer cell lymphomas-definitions, differential diagnosis, and epidemiology	584	23.36
26	Naruke, T (1988)	Prognosis and survival in resected lung-carcinoma based on the new international staging system	580	17.58
27	Imamura, H (2003)	One thousand 56 hepatectomies without mortality in eight years	578	32.11
28	Goel, A (1994)	Plate and screw fixation for atlantoaxial subluxation	576	57.5
29	Ando, Nobutoshi (2012)	A randomized trial comparing postoperative adjuvant chemotherapy with cisplatin and 5-fluorouracil versus preoperative chemotherapy for localized advanced squamous cell carcinoma of the thoracic esophagus (Jcog9907)	561	62.33
30	Yoshimura, Kotaro (2008)	Cell-assisted lipotransfer for cosmetic breast augmentation: supportive use of adipose-derived stem/stromal cells	557	42.85
31	Makuuchi, M (1993)	Surgery for small liver cancers	550	19.64
32	Wong, Ch (2003)	Necrotizing fasciltis: clinical presentation, microbiology, and determinants of mortality	538	29.89
33	Kim, Hyung-ho (2010)	Morbidity and mortality of laparoscopic gastrectomy versus open gastrectomy for gastric cancer an interim report-a phase iii multicenter, prospective, randomized trial (klass trial)	536	48.73
34	Minagawa, M (2000)	Extension of the frontiers of surgical indications in the treatment of liver metastases from colorectal cancer–long-term results	527	25.1
35	Wada, N (2003)	Lymph node metastasis from 259 papillary thyroid microcarcinomas-frequency, pattern of occurrence and recurrence, and optimal strategy for neck dissection	524	29.11
36	Yoo, Ch (2000)	Recurrence following curative resection for gastric carcinoma	523	24.9
37	Kitano, Seigo (2007)	A multicenter study on oncologic outcome of laparoscopic gastrectomy for early cancer in Japan	522	37.29
38	Yang, Zhe (2011)	Overexpression of long non-coding RNA HOTAIR predicts tumor recurrence in hepatocellular carcinoma patients following liver transplantation	514	51.4
39	Ko, Yc (1995)	Betel quid chewing, cigarette-smoking and alcohol-consumption related to oral-cancer in Taiwan	512	19.69
40	Poon, RTP (2004)	Improving perioperative outcome expands the role of hepatectomy in management of benign and malignant hepatobiliary diseases-analysis of 1222 consecutive patients from a prospective database	502	29.53
41	Utsunomiya, J (1980)	Total colectomy, mucosal proctectomy, and ileoanal anastomosis	492	12
42	Jayne, Dg (2002)	Peritoneal carcinomatosis from colorectal cancer	490	25.79

Table 1. The 50 most cited surgery articles from Asian surgeons (continue)

Rank	Lead author (Year of publication)	Title	Total number of citations in WoS core collection	Average citations/year
43	Tanaka, K (1993)	Surgical techniques and innovations in living related liver-transplantation	469	16.75
44	Milgrom, C (1995)	Rotator-cuff changes in asymptomatic adults-the effect of age, hand dominance and gender	463	17.81
45	Itoi, E (2000)	The effect of a glenoid defect on anteroinferior stability of the shoulder after bankart repair: a cadaveric study	459	21.86
46	Matsutani, M (1997)	Primary intracranial germ cell tumors: a clinical analysis of 153 histologically verified cases	457	19.04
47	Sugaya, Hiroyuki (2007)	Repair integrity and functional outcome after arthroscopic double-row rotator cuff repair-a prospective outcome study	456	32.57
48	Harii, K (1976)	Free gracilis muscle transplantation, with microneurovascular anastomoses for treatment of facial paralysis-preliminary-report	452	10.04
49	Poon, RTP (2001)	Improving survival results after resection of hepatocellular carcinoma: a prospective study of 377 patients over 10 years	449	22.45
50	Poon, RTP (1999)	Intrahepatic recurrence after curative resection of hepatocellular carcinoma–long-term results of treatment and prognostic factors	447	20.32

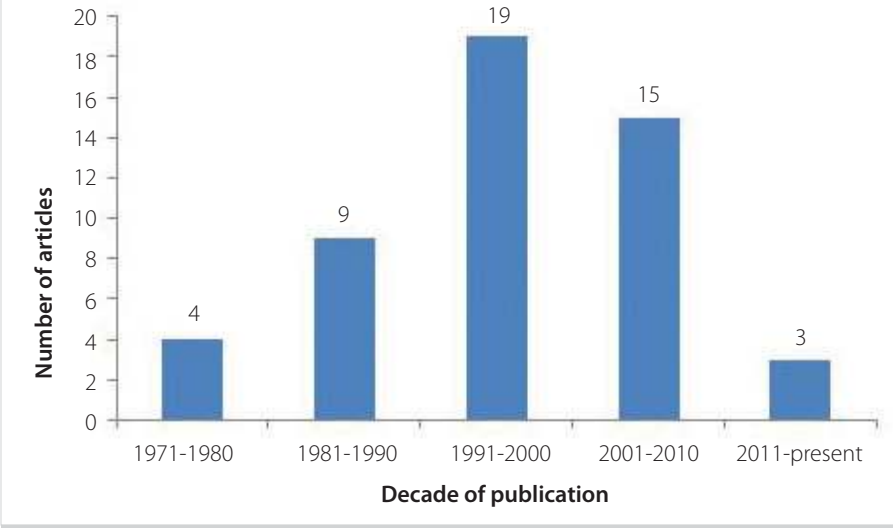

Figure 1. Number of highly cited papers published by decade.

Countries and Institutions

A total of six countries in Asia contributed these top 50 papers (Figure 2). Japan's contribution was the highest (60% of total papers) followed by China and its dependent's Taiwan and Hong Kong (26% of total papers). Next in line were Singapore and South Korea (4% each) and India, Israel and Lebanon (2% each). The institutions producing three or more papers are enlisted in Table 3. University of Hong Kong produced the highest number of articles (n= 7) followed by National Cancer Center Hospital in Japan (n= 6) and University of Tokyo in Japan (n= 3). The remaining institutions produced one article each. These findings are similar to citation classics in other specialties where the top-cited papers are concentrated in a few institutions and countries (5,7,8,12,14). The US predominates in the world's quality research output (18,19). The reason for this has been attributed to large research funding and diverse scientific community and also in part due to bias of American authors and reviewers towards the articles published locally which falsely amplifies citation counts

Table 2. Journals in which 50 most cited surgery papers of Asian origin were published

Journal name	Journal impact factor (IF)	Number of papers published
Annals of Surgery	10.13	14
Journal of Bone and Joint Surgery-American Volume	4.578	4
Journal of Thoracic and Cardiovascular Surgery	4.451	3
American Journal of Surgical Pathology	4.958	2
Annals of Surgical Oncology	4.061	2
British Journal of Plastic Surgery	1.291	2
British Journal of Surgery	5.676	2
Endoscopy	7.341	2
Journal of Neurosurgery	3.968	2
Plastic and Reconstructive Surgery	4.209	2
Acta Neurochirurgica	1.817	1
Aesthetic Plastic Surgery	1.798	1
American Journal of Surgery	2.125	1
Archives of Surgery	4.926	1
Burns	2.066	1
Diseases of the Colon & Rectum	3.991	1
Japanese Journal of Surgery 1	1.878	1
Journal of Bone and Joint Surgery-British Volume 2	4.306	1
Journal of Oral Pathology & Medicine	2.495	1
Seminars in Surgical Oncology*	2.05	1
Surgery	3.356	1
Surgery Gynecology & Obstetrics 3	4.59	1
Surgical Laparoscopy & Endoscopy 4	1.36	1
Transplantation	4.264	1
World Journal of Surgery	2.234	1

*The names of these journals have been changed. 1, 2, 3 and 4 are now called 'Surgery Today', 'The Bone & Joint Journal', 'Journal of American College of Surgeons' and 'Surgical Laparoscopy Endoscopy & Percutaneous Techniques' respectively.

Impact factor values are based on Journal Citation Reports (JCR) of 2019 except *. 'Seminars in Surgical Oncology' has ceased to exist. It's IF value is based on JCR of 2002.

(20,21). It has also been found that even among top journals, papers published by high-income countries are more frequently cited than low and middle-income countries (22).

Japan and China are the main contributors to classical surgical research output from Asia. This is also observed for other medical disciplines such as Ophthalmology (14), Orthopaedics (23,24) and Transplantation (25). This could be largely attributed to their better research and development expenditure compared to other Asian countries and their focus on basic science research lately. Favorable national policies in Japan for healthcare research and high productivity of human resources have contributed to its success in academic surgery across the globe (26). However, none of the papers in the list were able to make it to the list of the top 35 cited papers in surgery by Long et al. (15). This could be due to a few reasons. First, studies have shown a strong positive correlation between GDP and number of publications (25,27). While the US spends 17% of its GDP on healthcare, Japan and China spend 11 and 5% respectively according to the World Bank (28). This amounted to 120 billion dollars spent on biomedical research by the US alone compared to only 62 billion dollars spent in Asia in 2012 (29). However, the amount of GDP spent on healthcare research has grown significantly in the last two decades in some of the Asian countries (29,30). The effect of this measure is beginning to be seen. Second, English is being used for the majority of scientific publications and bibliometric search engines. This becomes a problem particularly for Asian non-native English-speaking countries such as China where most of the papers are published in Chinese. Besides, papers written in English from these countries take more time to publish and incur higher costs due to language editing services. This could deter young academic surgeons from publishing in these journals. Third, lack of com-

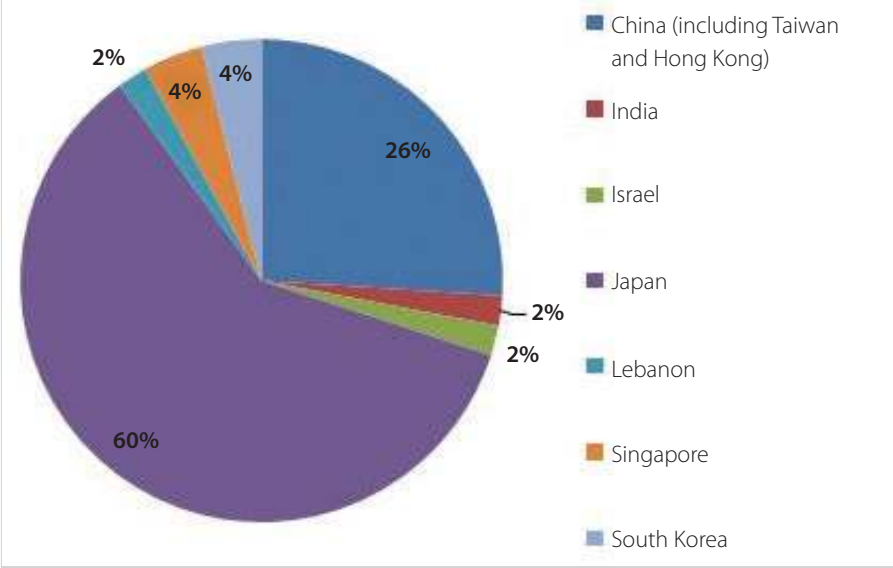

Figure 2. Contribution of countries to the Asian Surgical research output.

Table 3. Institutions which contributed 3 or more of the 50 most cited surgery articles of Asian origin.

Institution (country)	Number of articles
University of Hong Kong (Hong Kong)	7
National Cancer Center Hospital (Japan)	6
University of Tokyo (Japan)	3

prehensive national healthcare databases in many low and middle-income countries in Asia(1) do not encourage research for endemic surgically treatable diseases in Asia.

Type of Research and Surgical Field

A total of seven different study designs/research types were included in the top 50 list (Figure 3). Observational study was the most commonly used design (n= 24). Three papers reported interventional studies (randomized trials). The predominance of observational studies have been observed in other surgical disciplines' classics as well including aesthetic surgery (7), Urogynaecology (31) and eye surgery (14). The reason for such observation could be due to their role in hypothesis testing (14) and ethical concerns with interventional studies. Of note, only 4 review articles were present in our list contrary to the expectation since reviews are more likely to be cited by authors (32).

The most common studied topics was gastrointestinal (GI) surgery (n= 28) and surgical oncology (n= 26) (Figure 4). GI surgery and GI cancer remain the most studied topics even among top cited surgical and gastroenterology literature in the world respectively (6,33). This is not surprising, since the incidence of gastrointestinal cancer is highest in Asia (34) and it is the fifth most frequently diagnosed cancer worldwide (35). Japan has been a pioneer in the development of GI surgery. The concept of Billroth gastrectomy, extended lymphadenectomy and lymph node metastasis in gastric cancer and right hepatectomy for hepatocellular carcinoma were all developed in Japan (36).

Research Collaboration

Thirty-three articles (66%) in this list originated from a single institution, 11 (22%) had inter-institutional collaboration and 6 (12%) had national collaboration from countries outside Asia. None of the articles in this list had solely intra continental collaboration. These numbers are similar when compared to citation classics from surgery and its subspecialties around the world (6,8,15). It is widely accepted that international collaboration in surgical research can facilitate the conduction of research studies and improve the generalizability and applicability of the results (37). Asian countries should look at strengthening international research cooperation particularly with low and middle-income Asian countries to establish global standards for surgically treatable diseases.

There are limitations to this research. First, we used the WoS database to determine citation classics but excluded PubMed and Scopus, where the results may vary. Second, we did not correct for self-citations. However, self-citations have been shown to account for only <1% of total citations among top-cited papers (38). In addition, biases such as journal bias and omission bias

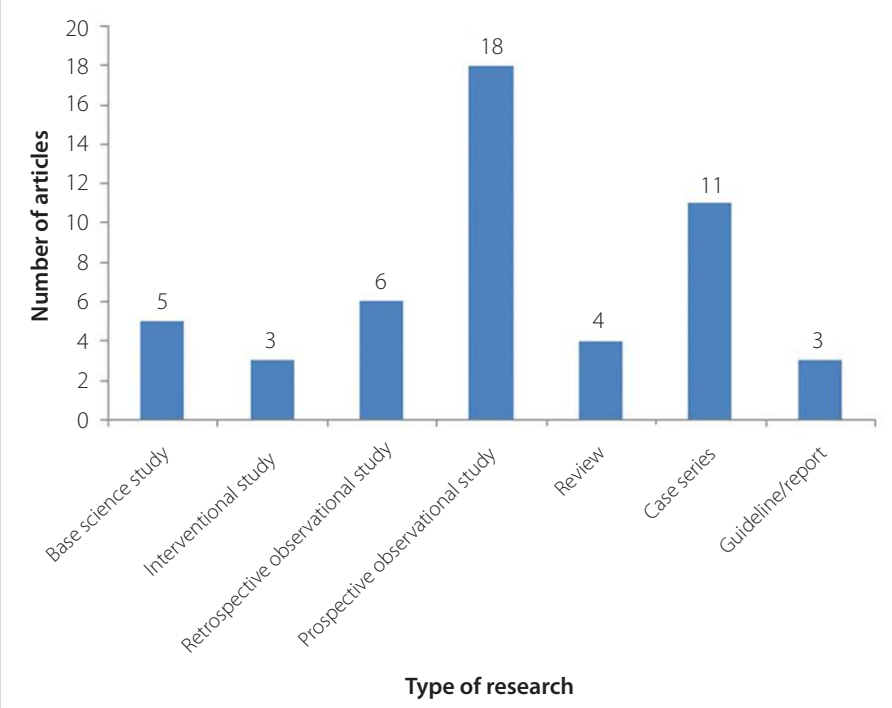

Figure 3. Type of research/study design of the 50 most cited papers of Asian origin.

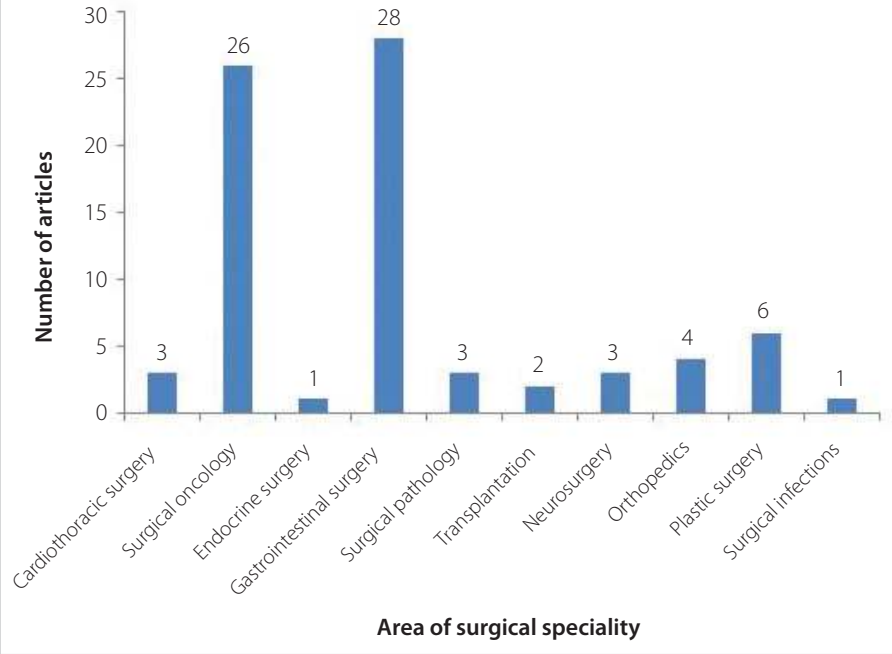

Figure 4. Surgical area of the top-cited papers.

exist in this type of study which may exclude deserving articles. Third, citation classics exclude recently published landmark papers as accumulation of citations takes time, so the results may vary over time. Despite these limitations, we believe this analysis gives a fair idea about the history and landscape of Academic surgery in Asia.

CONCLUSION

Citation classics remain the best way of looking at the most influential papers in the field of surgery. This paper highlights some of the most important contributions from the academic surgeons of Asia to the world. It offers an insight into the deve-

lopment of surgical specialty in Asia over time. This list should help early career surgeons for classical reading and experts in the field for having working knowledge of seminal contributions. In addition, this list should provoke interest in academic surgery and research collaboration with other nations in Asia and the rest of the world.

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ORİJİNAL ÇALIŞMA-ÖZET
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Alıntı klasikleri: Asya'da cerrahide en çok alıntı yapılan 50 makale

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ÖZET

Giriş ve Amaç: "Alıntı klasikleri" terimi, bilimsel literatürde çok alıntı yapılan makaleler için kullanılmaktadır. Atıf klasiklerini kullanarak akademik cerrahinin mevcut manzarasını ve Asya'ya ait yazarların bilimsel katkılarının kalitesini anlamayı amaçladık.

Gereç ve Yöntem: WoS çekirdek koleksiyon veritabanını "cerrahi" kategorisi altında araştırarak baş yazarı araştırma döneminde bir Asya ülkesine bağlı en çok alıntı yapılan 50 makaleyi dahil ettik. Her makale için şu özellikleri not ettik: toplam alıntılar, yıllık ortalama atıflar, yayın yılı, yayın yapan dergi, kurum ve ülke, dergi çeyreği ve etki faktörü, yazarlık, cerrahi araştırma alanı. Sonuçlar IBM SPSS Statistics v26 kullanılarak analiz edildi.

Bulgular: Alıntı sayısı 447 ile 1170 (ortalama +/- SD 616.9 +/- 150.16) ve yıllık atıflar 10.04 ile 98.17 (ortalama +/- SS 30.87 +/- 17.27) arasında değişmiştir. En verimli on yıl 1991-2000 yıllarıydı (n= 19 makale). Makalelerin çoğu "Annals of Surgery"de yayınlandı (%28). Dört yazar, baş yazar olarak iki veya daha fazla makaleye katkıda bulundu ve "Poon RTP" başı çekti. Japonya'nın katkısı en yüksek (%60) oldu ve onu Çin ve bakmakla yükümlü olduğu kişiler (%26) izledi. Hong Kong Üniversitesi lider kurumdu (n= 7). Gözlemsel çalışma en yaygın kullanılan tasarımdı (n= 24). Makalelerin çoğu gastrointestinal cerrahiye (n= 28) ve cerrahi onkolojiye (n= 26) aitti. Makalelerin %66'sı tek bir kurumdan geliyor, %22'si kurumlar arası işbirliğine ve %12'si Asya dışındaki ülkelerden ulusal işbirliğine sahipti.

Sonuç: Çalışma, Asya'dan cerrahide en etkili makaleleri belirledi. Bu, akademik cerrahiye ve Asya'daki ve dünyanın geri kalanındaki diğer ülkelerle araştırma işbirliğine olan ilgiyi uyandırmalıdır.

Anahtar Kelimeler: Alıntı klasikleri, alıntılar, bibliyometri, cerrahi, Asya

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