The 50 most cited articles in ankle surgery

Sean Lobo,1 David Zargaran,2 Alexander Zargaran1
1King’s College, London; 2St. Thomas’ Hospital, London, UK

Abstract

This paper aims to establish a ranking of the 50 most cited research articles pertaining to ankle surgery in the field of orthopaedics. In addition, the demographic features such as the date of publications, location of primary author and country of the publisher were all analysed. Studies similar to these have been completed in other subspecialties, however we were not able to find studies relevant to ankle surgery. The Web of Science Cor Collection Database was utilised to identify the target articles. The most cited article was cited 394 times and the least was cited 120 times, and the majority of articles were published in the United States of America. This research will benefit the scientific community in identifying popular research topics, identifying lacking fields and identifying key hubs in the field of ankle surgery.

Introduction

The vast majority of research projects begin with a literature review to ascertain the current knowledge on a topic, gauge relevance and identify research questions. With the movement of science into a digital age, there has been a degree of improvement in the structure of digital libraries, providing a user-centred and pragmatic way to access the information of interest.1 Bibliometrics enables us to quantitatively analyse the large amount of research currently available in the Orthopaedic field, particularly in ankle surgery, which is our focus of this project, and identify key relationships between citations. By ranking articles by citations, country of origin, institution and other indicators, we are able to gain a snapshot of the most cited articles, which can be interpreted as their importance in the field.2 In addition, by analysing the demographic data, key institutions and journals can be highlighted by relevance for particular fields. This will further pragmatize the information available to the general population, creating a more user-centred and accessible format for scientific research in this digital age. By primarily ranking the articles by the number of citations we are able to ascertain the popularity of an article within the scientific community. Furthermore, by refining the results by a particular field, orthopaedics, we are able to gauge the amount of interest garnered within a target population and this may in turn provide a snapshot of the key articles within this subspecialty. We have identified that this has been a method utilised in a number of subspecialties such as wrist surgery and shoulder surgery.3,4 However, we have no identified a paper analysing the most cited articles in ankle surgery that employ this methodology.

Materials and Methods

This bibliometric analysis aimed to identify and analyse the key papers in the field of ankle surgery, by identifying the most cited articles.

In April 2020, the Web of Science Core Collection Database (Clarivate Analytics) was searched for articles with the key terms ‘ankle AND surgery’ within the field of orthopaedics. This initial search returned 5288 publications, and the top 50 publications were chosen when ranked by number of citations. The inclusion criteria for the bibliometric analysis required that each analysed paper had to refer to an ankle surgical intervention, either in its title or its abstract. This was detailed by the first two authors, whilst the third author would arbitrate, if required, for any incongruities in the inclusion.

Results

Of the 5288 publications, the top 100 cited articles were chosen, 6 of the top cited articles did not meet the inclusion criteria and were hence removed to produce the 50 most cited articles (Table 1).5-54 The most cited article was a systematic review titled Intermediate and long-term outcomes of total ankle arthroplasty and ankle arthrodesis - A systematic review of the literature,1 which was cited 394 times as of 10/04/2020. The most cited article found at this time interval was Intermediate and long-term outcomes of total ankle arthroplasty and ankle arthrodesis - A systematic review of the literature by Haddad et al.,3 which was cited 394 times since publication. The vast majority of the articles found were published in the United States of America (92%, n=46), with only 4 other articles, which were published in the United Kingdom, depicted in Figure 1. However, there was a greater variety in the location affiliated to the primary author, which is highlighted in Figure 2. Just under half of the articles (n=23) were published in the United States of America, followed by Sweden (n=5) and from Switzerland (n=4). The journals in which the most cited articles is tabulated in Figure 3, it demonstrates the most cited journals were Journal of Bone and Joint Surgery-American Volume and American Journal of Sports Medicine (both n=12). All of the journals that published the cited articles had a focus on orthopaedics on general, with only Foot and Ankle International having a sole focus on the ankle and lower limb. Of the 50 results attained, the articles had a range of publication year from 1993-2013 with the median date of publication being 2004.

Discussion and Conclusions

Musculoskeletal illnesses are a disease burden that is continuing to grow worldwide, causing disability and death, particularly with ageing populations.55 This represents an increasing burden in societal and economic challenges that our current and future population will encounter. Hence, to combat the growing burden of disease research must be completed in the fields or...
orthopaedics and allied specialties to understand the normal physiology and underlying pathologies that can guide clinical practice. This will require a cohesive input from the understanding the molecular pathogenesis of disease to the surgical interventions that may innovate treatment.

Hence by completing literature analysis we are able to appreciate where research is condensed in the field. Furthermore, this may enable to identify areas in which research is lacking, enabling bodies to focus research efforts in areas of need and interest by gauging the number of citations an article achieves. Whilst, an article which has been cited a large number of times, this may not be directly correlated to the quality of an article, it will highlight the popularity of the article within the scientific community.

By identifying the location of authors and articles which are cited extensively, it may be key in identifying areas which have a particular focus on a subject of interest. For example, in this literary analysis, we identified that the majority of the articles were published in the United States of America, which has also been other papers as being at the forefront of the orthopaedic research. However, when analysing the location of affiliations of the primary author we see a greater variance in countries, which may provide more detailed information on the hubs of ankle research.

Substantial research has been completed on the citations of key articles in orthopaedics and associated subspecialties. Papers were identified on the subsets of hand, shoulder and wrist surgery, though we weren’t able to find a paper on ankle surgery, hence we identified the topic area as imperative.

Whilst this type of research is useful in interpreting the impact of certain articles and the demographics associated. However, it does have its pitfalls. For instance, newly published articles which may be pivotal in understanding areas of clinical significance or may challenge pre-existing hypotheses in scientific literature. However, we conclude that bibliometric analyses are integral in a rapidly changing scientific world, where there is an increasing demand, particularly in orthopaedics where the global population faces a growing burden of disease.

Table 1. The 50 most cited articles which relate to ankle surgery in the field of orthopaedics, with author, publication year and the citations.

| Rank | Authors               | Publication year | Citations |
|------|-----------------------|------------------|-----------|
| 1    | Haddad et al.         | 2007             | 394       |
| 2    | Sanchez et al.        | 2007             | 362       |
| 3    | Wood & Deakin         | 2003             | 261       |
| 4    | Khan                  | 2005             | 260       |
| 5    | Coughlin & Shurnan    | 2003             | 224       |
| 6    | Astephen et al.       | 2008             | 218       |
| 7    | Knecht et al.         | 2004             | 218       |
| 8    | Chuckpalwong et al.   | 2008             | 209       |
| 9    | Anderson et al.       | 2003             | 205       |
| 10   | Bell et al.           | 2002             | 202       |
| 11   | Saltzman et al.       | 2009             | 199       |
| 12   | Corry et al.          | 1998             | 196       |
| 13   | Teeny & Wiss          | 1993             | 194       |
| 14   | Hintermann et al.     | 2004             | 190       |
| 15   | Hangody et al.        | 2001             | 184       |
| 16   | Doets et al.          | 2006             | 182       |
| 17   | Darrow et al.         | 2009             | 176       |
| 18   | Loomer et al.         | 1993             | 169       |
| 19   | Abidi et al.          | 1998             | 164       |
| 20   | Nilsson-Helander et al.| 2010          | 162       |
| 21   | Giannini et al.       | 2009             | 159       |
| 22   | SooHoo et al.         | 2007             | 152       |
| 23   | Valderrabano et al.   | 2004             | 152       |
| 24   | Maffulli et al.       | 2003             | 152       |
| 25   | Saxena & Eakin        | 2007             | 151       |
| 26   | Thomas                | 2006             | 147       |
| 27   | SooHoo et al.         | 2003             | 145       |
| 28   | Mandelbaum et al.     | 1995             | 144       |
| 29   | Henriesson et al.     | 2007             | 142       |
| 30   | Sadoghi et al.        | 2013             | 140       |
| 31   | Blauth et al.         | 2001             | 140       |
| 32   | DiGiovanni et al.     | 2000             | 140       |
| 33   | O’Loughlin et al.     | 2010             | 137       |
| 34   | Ferkel & Scranton     | 1993             | 136       |
| 35   | Ippolito et al.       | 2003             | 135       |
| 36   | Minami et al.         | 2000             | 135       |
| 37   | Button & Pinney      | 2004             | 134       |
| 38   | Schepull et al.       | 2011             | 133       |
| 39   | Kofod                | 2004             | 128       |
| 40   | van Dijk et al.       | 1997             | 128       |
| 41   | Myerson et al.        | 2004             | 127       |
| 42   | Borowski et al.       | 2008             | 126       |
| 43   | Rodeo et al.          | 1993             | 126       |
| 44   | Pagenstert et al.     | 2007             | 125       |
| 45   | Eneroth et al.        | 1997             | 123       |
| 46   | Giannini et al.       | 2008             | 121       |
| 47   | Bibbo et al.          | 2004             | 121       |
| 48   | Ferkel et al.         | 1996             | 121       |
| 49   | Valderrabano et al.   | 2007             | 120       |
| 50   | Egoi et al.           | 2006             | 120       |
References

1. Schaer P. Applied informetrics for digital libraries: an overview of foundations, problems and current approaches. Historic Soc Res 2013;38:267-81.

2. Cheek J, Garnham B, Quan J. What’s in a number? Issues in providing evidence of impact and quality of research(ers). Qual Health Res 2006;16:423-35.

3. Piolanti N, Poggetti A, Nucci A, et al. The 50 most cited articles about wrist surgery. Orthop Rev 2018;10.

4. Namdari S, Baldwin K, Kovatch K, et al. Fifty most cited articles in orthopedic shoulder surgery. J Shoulder Elb Surg 2012;21:1796-802.

5. Haddad S, Coetzee J, Estok R, et al. Intermediate and long-term outcomes of total ankle arthroplasty and ankle arthrodesis. J Bone Joint Surg 2007;89:1899-905.

6. Sánchez M, Anitua E, Azofra J, et al. Comparison of surgically repaired achilles tendon tears using platelet-rich fibrin matrices. Am J Sports Med 2007;35:245-51.

7. Wood P, Deakin S. Total ankle replacement. J Bone Joint Surg Br 2003;85-B:334-41.

8. Khan R. Treatment of acute achilles tendon ruptures. A meta-analysis of randomized, controlled trials. J Bone Joint Surg Am 2005;87:2202.

9. Coughlin M, Shumars P. Hallux rigidus. J Bone Joint Surg Am 2003;85:2072-88.

10. Knecht S, Estin M, Callaghan J, et al. The agility total ankle arthroplasty. J Bone Joint Surg Am 2004;86-A:1161-71.

11. Astephen J, Deluzio K, Caldwell G, Dunbar M. Biomechanical changes at the hip, knee, and ankle joints during gait are associated with knee osteoarthritis severity. J Orthop Res 2008;26:332-41.

12. Chuckpaiwong B, Berkson E, Theodore G. Microfracture for osteochondral lesions of the ankle: outcome analysis and outcome predictors of 105 cases. Arthroscopy 2008;24:106-12.

13. Anderson T, Montgomery F, Carlsson A. Uncemented star total ankle prostheses. J Bone Joint Surg Am 2003;85:1321-9.

14. Bell K, Ounpuu S, DeLuca P, Romness M. Natural progression of gait in children with cerebral palsy. J Ped Orthop 2002;22:677-82.

15. Saltzman C, Mann R, Ahrens J, et al. Prospective controlled trial of STAR total ankle replacement versus ankle...
fusion: initial results. Foot Ankle Int 2009;30:579-96.
16. Corry I, Cosgrove A, Duffy C, et al. J Ped Orthop 1998;18:304-11.
17. Teeny S, Wiss D. Open reduction and internal fixation of tibial plafond fractures. Clin Orthop Related Res 1993;292:108-17.
18. Hinternann B, Valderrabaro V, Dereymaeker G, Dick W. The HINTERGRA ankle: rationale and short-term results of 122 consecutive ankles. Clin Orthop Related Res 2004;424:57-68.
19. Hangody L, Feczko P, Bartha L, et al. Vascularised fibular grafts. J Bone Joint Surg 2007;89-B:1272-84.
20. Doets H, Brand R, Nelissen R. Total ankle arthroplasty. J Bone Joint Surg 2007;35:1680-7.
21. Abidi N, Dhawan S, Gruen G, et al. Mosaicplasty for the treatment of articular defects of the knee and ankle. Clin Orthop Related Res 2001;391:S328-36.
22. Maffulli N, Tallon C, Wong J, et al. Scandinavian total ankle replacement. Am J Sports Med 2004;32:331-5.
23. Blauth M, Bastian L, Krettek C, et al. Vascularised fibular grafts. J Bone Joint Surg 2007;89-B:153-60.
24. Sadoghi P, Liebensteiner M, Agreiter M, et al. Revision surgery after total joint arthroplasty: a complication-based analysis using worldwide arthroplasty registers. J Arthroplasty 2013;28:3292-32.
25. O’Loughlin P, Heyworth B, Kennedy J. Current concepts in the diagnosis and treatment of osteochondral lesions of the ankle. Am J Sports Med 2010;38:392-404.
26. Ferkel R, Scarron P. Arthroscopy of the ankle and foot. J Bone Joint Surg 1993;75:1233-42.
27. Ferkel R, Scarron P. Arthroscopy of the ankle and foot. J Bone Joint Surg 1993;75:1233-42.
28. Teeny S, Wiss D. Open reduction and internal fixation of calcaneal fractures. Foot Ankle Int 2000;21:809-15.
29. Blauth M, Bastian L, Krettek C, et al. Surgical operations for the treatment of severe tibial pilon fractures: a study of three techniques. J Orthop Trauma 2001;15:153-60.
30. Giannini S, Buda R, Vannini F, et al. Arthroscopic autologous chondrocyte implantation in osteochondral lesions of the talus. Am J Sports Med 2008;36:873-80.
31. Minami A, Kasashima T, Iwasaki N, et al. Vascularised fibular grafts. J Bone Joint Surg Br 2000;82-B:1022-5.
32. Valderrabaro V, Nigg B, von Tscharner V, et al. Gait analysis in ankle surgery: is there a valid, reliable, and responsive system? Foot Ankle Int 2004;25:521-5.
33. Valderrabaro V, Nigg B, von Tscharner V, et al. Gait analysis in ankle surgery: is there a valid, reliable, and responsive system? Foot Ankle Int 2004;25:521-5.
34. Schepull T, Kvist J, Norrman H, et al. Neurological complications due to autologous platelets have no effect on healing complications after elective orthopaedic foot and ankle surgery during tumor necrosis factor-alpha inhibition therapy. Foot Ankle Int 2004;25:331-5.
35. Valderrabaro V, Nigg B, von Tscharner V, et al. Gait analysis in ankle surgery: is there a valid, reliable, and responsive system? Foot Ankle Int 2004;25:521-5.
36. Schepull T, Kvist J, Norrman H, et al. Neurological complications due to autologous platelets have no effect on healing complications after elective orthopaedic foot and ankle surgery during tumor necrosis factor-alpha inhibition therapy. Foot Ankle Int 2004;25:331-5.
37. Minami A, Kasashima T, Iwasaki N, et al. Vascularised fibular grafts. J Bone Joint Surg Br 2000;82-B:1022-5.