

Aseptic loosening: A bibliometric analysis of the 50 most cited studies from 2013 to 2023

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INTRODUCTION: Aseptic loosening (AL) is one of the main causes of revision surgery in total joint arthroplasty (TJA). Revision surgery brings more financial and mental burden to patients, as well as a higher risk of implant failure compared to primary surgery. By 2023, it's estimated that 570,000 total knee arthroplasties (TKA) and 1.28 million total hip arthroplasties (THA) will be performed in the USA. With an aging population increasing, the tendency is for the number of TJA to also increase, evidencing a serious concern with AL. This review aims to identify the 50 most cited studies on AL to guide researchers and surgeons to select influential articles on this topic, facilitating the study in this body of literature.

METHODS: Web of Science (WoS) was the database used to identify the most cited articles within scientific articles and review articles in the English language from 2013 to 2023. The search was performed using: aseptic loosening (Title) and English (Language); average citations per year from 2 to 18 and document type Article and Review. The number of citations of each article was ranked in descending order, from the most cited to the least cited, and the journals with the most citations to those with the least citations. The Journal Impact Factor (JIF) of the articles (journal-level metric calculated from data indexed in the WoS Core Collection, that influence citation rates, such as the volume of publication and citation characteristics of the subject area and type of journal.) was considered in this study. The Rbibliometrix software was used for bibliometric analysis.

RESULTS SECTION: The initial search yielded 225 articles, of which 50 were identified to meet the criteria of this work. Figure 1 shows 10 of the most cited authors among the 50 articles analyzed. The article by Cherian, JJ., *et al* (2015) with the highest citation (114), concluded that for Total Hip Arthroplasty (THA), male sex and high activity level were associated with AL, while for Total Knee Arthroplasty (TKA) there were no host factors associated with AL. This article was published in the USA in the journal Clinical Orthopedics and Related Research, with a JIF of (4.2). The second more cited article (106) Apostu, D *et al.*, (2018) from Romania, cited that among many factors studied: the physical characteristics of the implant; implant surface treatments; surgical factors; the patient's health condition; avoiding medications that impair osseointegration of implants and having an adequate rehabilitation protocol are important to avoid AL. This article was published in the Journal of International Medical Research with JIF of (0.33). The article of Randau TM *et al.*, (2014) from Germany was the third most cited (91), they recommend the use of synovial fluid biomarker IL-6 for the preoperative differentiation between septic and aseptic loosening. This article was published in Plos One journal with JIF of (0.91). Two less cited articles (18) were Kajetanek, C *et al.*, (2016) and Grayson, CW *et al.*, (2016), published in France and the USA respectively. The article published in France in Orthopedics & Traumatology-Surgery & Research has a JIF of (2.3), and the article published in the USA in the Journal of Arthroplasty has a JIF of (3.5). The journal with the highest JIF (28.2) "Journal of Infection", had the article with 37 citations, while the journal with the lowest JIF (0.4) "Acta Orthoped Belgica", presented the article with 87 citations. The journal with the highest production per year was the Journal of Arthroplasty (see Figure 2). The most productive years between 2013 and 2023 were 2014 and 2017 with 8 articles, considering the 50 articles (see Figure 3). However, when the analysis considers the total of 225 documents, the most productive year about aseptic loosening was 2022, with 37 articles published. The country with the highest citation was the USA (36%), and the second most cited was China (12%).

DISCUSSION: The bibliometric study for citations showed that articles related to aseptic loosening have an increasing trend. The Journal Clinical Orthopedics and Related Research had the highest number of citations. The Journal of Arthroplasty was the most productive in the study period. The newspaper with the greatest impact was not the one with the greatest production and citation. The country that most publishes on the subject and also the most cited is the USA. The JIF should be used with caution to identify the most cited articles because the journal with the highest JIF is not necessarily the most cited journal. From the 3 most cited articles, we can conclude that AL has a huge contend to research since factors that contribute to AL to methods to identify and avoid AL. This work is limited to WoS database and considers articles based on the number of citations only.

SIGNIFICANCE/CLINICAL RELEVANCE: This work guides researchers and surgeons to identify the most cited articles, the most cited authors, and the journals that publish the most on aseptic loosening in the WoS database. Facilitating their study and helping them to identify the trend of growth and relevance of the subject in the period of 10 years.

IMAGES AND TABLES:

Figure 1 - The 10 most cited authors

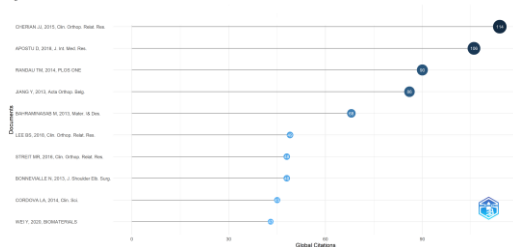


Figure 2 - Production of articles on aseptic loosening per year

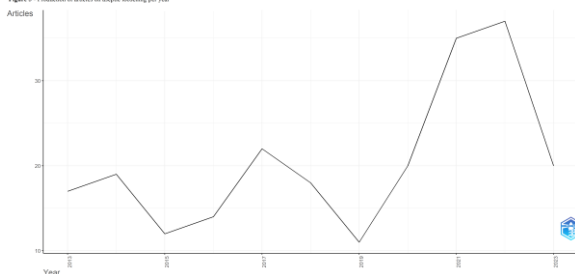


Figure 3 - Journals with the highest production per year

