DOI: http://dx.doi.org/10.1590/1413-785220212903238274

WHICH CLINICAL OUTCOME SCORES ARE MORE FREQUENTLY USED IN THE LITERATURE ON OSTEOCHONDRAL LESIONS OF THE TALUS? A SYSTEMATIC REVIEW

QUAIS ESCORES DE DESFECHOS CLÍNICOS SÃO USADOS COM MAIS FREQUÊNCIA NA LITERATURA LESÕES OSTEOCONDRAIS DO TÁLUS? UMA REVISÃO SISTEMÁTICA

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ABSTRACT

Objective: This study aimed to identify the most used scales in the assessment of the clinical outcomes for the treatment of osteochondral lesions of the talus. Methods: We performed a systematic review of the PubMed/MEDLINE databases from September 1999 to September 2019, based on the guidelines established by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The research strategy was: osteochondral [All Fields], AND ("talus" [MeSH Terms] OR "talus" [All Fields]) AND lesion [All Fields]. Of the 364 articles found in the literature, 166 (45%) were included in the study and 198 (55%) excluded. In total, 23 clinical assessment tools were used in the studies. Results: We found 49.4% of the studies to use the American Orthopaedic Foot and Ankle Society Ankle-Hindfoot Scale (AOFAS Ankle-Hindfoot Scale) and 29.5% the Visual Analogue Scale (VAS). Conclusion: The use of AOFAS increased in relation to VAS in the last 6 years ($p = 0.046$), and these two scales, either alone or combined, were the most used for studying osteochondral lesions of the talus. ***Level of Evidence III, Systematic Review of Level II studies.***

Keywords: Talus. Cartilage, Articular. Arthroplasty, Subchondral. Treatment Outcome.

RESUMO

Objetivo: Este estudo propõe revisar sistematicamente a literatura para identificar as escalas mais utilizadas da avaliação clínica de resultados do tratamento das LOTs. Métodos: Foi realizada revisão sistemática das bases de dados do PubMed/MEDLINE, desde setembro de 1999 a setembro 2019 baseado nas diretrizes PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses). A estratégia de pesquisa foi: osteochondral [All Fields], AND ("talus" [MeSH Terms] OR "talus" [All Fields]) AND lesion [All Fields]. De 364 artigos, foram incluídos no estudo 166 (45%) e excluídos 198 (55%). Foram observadas 23 escalas de avaliação clínica utilizadas. Resultados: A escala AOFAS e EVA de dor foram as mais utilizadas, ocorrendo em 49,4% e 29,5% dos artigos, respectivamente. Foi observado aumento de uso de AOFAS e diminuição EVA nos últimos 6 anos ($p = 0,046$). Conclusão: As ferramentas Escala AOFAS e EVA para dor demonstraram ser as mais usadas na literatura para avaliação de resultados do tratamento da lesão osteocondral de tálus, tanto isoladamente, quanto combinadas. ***Nível de Evidência III, Revisão Sistemática de Estudos de Nível II.***

Descritores: *Tálus. Cartilagem Articular. Artroplastia Subcondral. Resultado do Tratamento.*

Citation: Sato GEN, Pagnano RG, Duarte MPM, Dinato MCM. Which clinical outcome scores are more frequently used in the literature on osteochondral lesions of the talus? A systematic review. Acta Ortop Bras. [online]. 2021;29(3):167-170. Available from URL: http://www.scielo.br/aob.

INTRODUCTION

Osteochondral lesions are injuries with articular surface and/or subchondral bone involvement.[1-4] Osteochondral lesion of the talus (OLT) is a broad term used to describe injuries or abnormalities of the talar articular cartilage and adjacent bone.[5] The term "osteochondritis dissecans" was first used by Franz König in 1888 to describe the presence of free

All authors declare no potential conflict of interest related to this article.

The study was conducted at the Universidade de Campinas, Faculty of Medical Sciences, Department of Orthopedics and Traumatology.
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Article received on 05/19/2020, approved on 08/13/2020.

bodies in the knee joint, which the surgeon believed to be fragments of an avascular bone lesion.[6] In 1932, Rendu reported an intra-articular lesion of the talus that matched this description,[7] and in 1959 Berndt and Harty coined the term "transcondral fracture of the talus".[8]
People diagnosed with OLT are often active, with previous history of ankle sprain.[9] Fong et al.[2] conducted a study with 70 sports modalities and found ankle injuries, especially sprains, to be the most common in 24 of them. In a systematic review conducted by Ramponi et al.[10] on lesion size as a predictor of clinical outcomes after bone marrow stimulation, the authors reported that no evaluation method was maintained throughout studies with a significant correlation between them, regardless of the several good and optimal short-term results. Dahmen et al. performed a systematic review on the treatment for primary osteochondral talar lesions[11] and verified the use of 25 different clinical evaluation systems. As a limitation to the study, the authors emphasized the impossibility of performing the conventional measurement of efficacy estimates, which precluded comparisons between studies. Despite the lack of a scoring system validated for evaluating the clinical outcomes of OLT, some studies also report the decrease in the use of existing scores over time.[12]
Thus, our study aims to perform a systematic review of the literature to identify the most used tools in the evaluation of clinical outcomes for osteochondral lesions of the talus, assisting further research to decide on which scales to use. We also sought to evaluate the most appropriate scales in enabling the comparison and reproducibility of future studies on the theme.

MATERIALS AND METHODS

This study included a systematic review of the PubMed/MEDLINE databases from September 1999 to September 2019, based on the guidelines established by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[13] The protocol was registered on the international prospective register of systematic reviews (PROSPERO) database, under the number 130017. The study design means there is no need for its analysis and approval by the Research Ethics Committee.
The research strategy was: osteochondral [All Fields], AND ("talus" [MeSH Terms] OR "talus" [All Fields]) AND lesion [All Fields]. Complete articles, conducted with patients with osteochondral lesion of the talus, evaluating clinical outcome using scale/score, published between 1999 and 2019, and written in English were eligible for this study. Case reports, review articles, and studies conducted on cadavers or animal models were excluded. Two authors screened the publications for the eligibility criteria, agreeing with the number of articles shown in Figure 1.

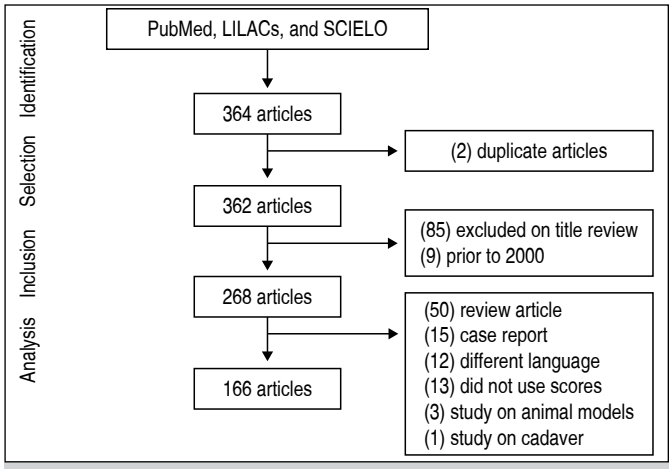

Figure 1. PRISMA flowchart illustrating the eligibility criteria applied to publications.

Information on the used clinical outcome score was collected for each article included in the study. The data were tabulated in Excel spreadsheets (Office 16; Microsoft) and statistically analyzed using the 16.0 Statistical Package for Social Sciences (IBM SPSS), with descriptive and comparative methods. Two-tailed Fisher's exact test was used to compare the frequency of use of scales between two arbitrarily chosen intervals of time. The significance level was set at 95%.

RESULTS

The electronic database search identified 364 articles, of which 166 (45%) met the eligibility criteria and were included in the study and 198 (55%) were excluded (Figure 1).
Eighty-nine of the included articles described their level of evidence within the text body: 46 with evidence level IV (four), 25 with level III (three), and 18 with level II (two). The remaining articles (n = 77) did not indicate the level of evidence.
In total, 23 clinical assessment tools were used in the studies, mostly in combination. Most studies used either the American Orthopedic Foot and Ankle Society: Ankle-Hindfoot score (AOFAS; 49.3%) or the Visual Analog Scale (VAS; 29.5%) for pain, as shown in Figure 2.

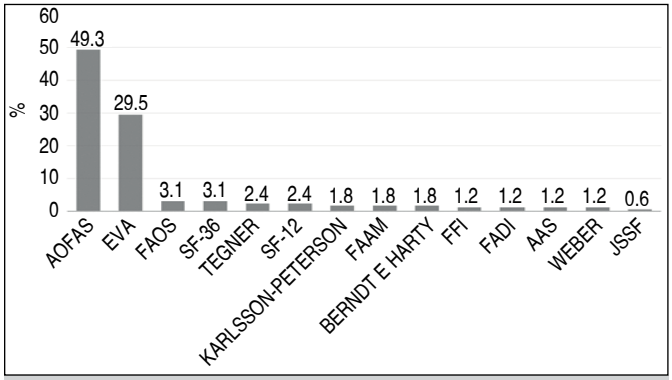

Figure 2. OLT assessment scales used in the articles included in the analysis. The use of each scale is presented in percentage of studies.

We performed an extra analysis of articles published during the last six years to verify whether they presented a new trend in the use of clinical questionnaires in relation to previous years. This analysis verified a significant different (p = 0.046) pattern in the two most used scales, indicating an increase in the use of AOFAS and a decrease in the use of pain VAS (Figure 3).

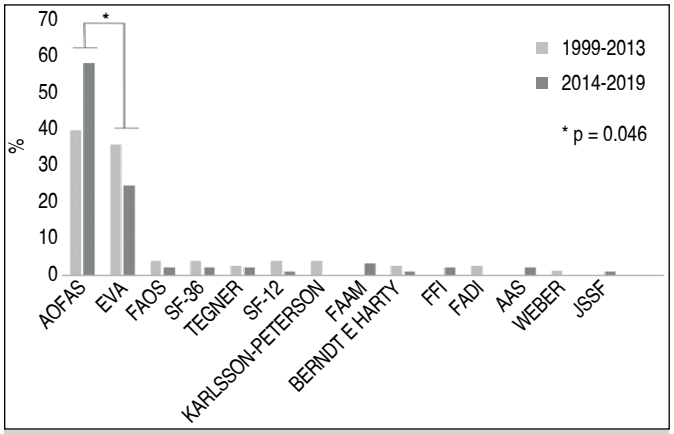

Figure 3. Comparison of the use of OLT assessment scales in articles included in the analysis published between 1999 and 2013 and between 2014 and 2019.

DISCUSSION

Validated tools for assessing outcomes are useful not only for research, but also for orthopedic clinical practice in evaluating the effects of intervention on patients.

Our systematic review found the American Orthopedic Foot and Ankle Society (AOFAS) Ankle-Hindfoot scale to be the most commonly used by studies assessing the treatment of osteochondral lesions of the talus (OLT). Developed by Kitaoka et al. in 1994, the AOFAS Ankle-Hindfoot scale assesses function (0-50 points), pain (0-40 points), and joint alignment (0-10 points) in the ankle, subtalar, talonavicular, and calcaneocuboide joints, obtaining a maximum sum of 100 points.[14] Guyton described several limitations of this scale, such as the small number of available answers per item and the use of negative options (none, no limitations, no difficulty) to reach higher scores in some categories.[15] Combining multiple concepts into a single numerical score may also lead to non-informational conclusions. In pathologies where functional limitation or stiffness play a more crucial role, focusing on pain assessment may likewise lead to erroneous interpretations. The authors did attempt to create arbitrary cutoff points, but the indication of acceptable outcomes in AOFAS varies.[14] Despite these facts, AOFAS has been the most used scale for assessing ankle and hindfoot injuries – a result corroborated in this review. We attribute its widespread use in the investigated studies to its wide dissemination and validation in different languages, as well as to comprising the pain and joint alignment domains, important in the assessment of OLT treatment.

First used in 1923 by Freyd, the pain Visual Analog Scale (VAS) consists of a subjective representation of the patient's pain portrayed by a straight line whose extremities denote "painless" to "the worst pain ever felt".[16] Several studies showed VAS to be sensitive to treatment effects and positively related to other pain measurement tools.[17] However, although frequently used by studies approaching OLT, VAS score is insufficient to characterize treatment outcomes by itself. This explains why its association with other scales is common in the literature – as demonstrated in our study, which found 45 articles (28.1%) to use VAS in combination with other assessment tools.

Macaulay et al.[18] found a strong negative correlation between AOFAS and EVA, indicating the questionnaire ability to quantify symptoms. In 2011, AOFAS published a position statement indicating that their clinical rating system was not considered valid or reliable, advising against its continued use.[19] However, a study conducted in 2017 by Hasenstein et al.[20] found AOFAS to be the clinical outcome assessment tool most used by authors and published in medical journals.

The Foot and Ankle Outcome Score (FAOS) is a 42-item questionnaire divided into five categories: pain, other symptoms, function in daily life, sports and recreation, and quality of life. Each category has five possible answers (absent, mild, moderate, severe, and extreme), scored from zero to four, and the sum of the results is transformed into a worst to best scale, ranging from zero to 100.[21] Veltman, Hofstad, Witteveen[22] conducted a meta-analysis and concluded that FAOS was the best assessment tool for ankle osteoarthritis. However, only patients with ankle reconstruction were assessed for its validation, hampering the generalization of its use for other diseases or intervention methods, including those related to OLT.[8] Combining multiple evaluation systems may provide a better characterization of the clinical progress of treated patients. Yet, comparing studies and treatment methods for OLT remains a challenge.

Our search identified the use of 23 assessment tools – none of which was developed specifically for assessing the treatment and follow-up of osteochondral lesions of the talus. This review does not intend to prove that the most used instrument is necessarily the best. However, we stress the importance of the use of a common tool for assessing the clinical outcomes of osteochondral lesions of the talus by studies from different parts of the world, thus enabling comparison among results. We also verified a reversal in the most used scale during the last six years, whereby the use of the pain VAS scale decreased while that of AOFAS increased. AOFAS is a functional scale when compared to VAS, which offers more simplistic information based solely on the pain reported by the patient. Considering that, such a reversal is an interesting advance. This systematic review may help future trials to decide which clinical assessment tools are most appropriate for osteochondral lesions of the talus until a validated score is available with this end.

CONCLUSION

Our results indicate that AOFAS and pain VAS scale, either alone or combined, were the most used in the literature for assessing the outcomes of osteochondral lesions of the talus. However, we did not find a specific score validated for assessing the treatment of patients with this condition.

AUTHORS' CONTRIBUTIONS: Each author contributed individually and significantly to the development of this article. GENS: literature search, data analysis, and writing of the article; RGP: study design and approval of the final article; MPMD: literature search, data analysis, and writing of the article; MCMD: study design, data analysis, and approval of the final article.

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