9:45 am:
Level of Evidence and Quality of Studies on Surgical Repair of Osteochondral Lesions of the Ankle

Presenting:
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Summary:
It is not known whether studies analyzing outcomes surgical treatment for osteochondral lesions (OCL) of the ankle have strong methodological quality. A literature search was performed using PUBMed, Medline, Embase, and the Cochrane Databases, identifying studies whose primary intention was to examine the outcome of OCL of the ankle. Coleman Methodology Score and Level-of-evidence were assigned to each of eighty-nine reviewed studies. Investigators should exercise caution when interpreting results from OCL of the ankle as many of these studies are of low methodological quality.

Introduction:
There are many surgical techniques that attempt to repair osteochondral lesions of the ankle. It is not known whether the studies analyzing the outcomes of these surgical options have strong methodological quality.

Methods:
A search was performed using the PUBMed, Medline, Embase, and Cochrane databases for all studies in which the primary objective was to report the outcome after surgical treatment of cartilage damage in the ankle. Studies reporting outcomes of microfracture, bone marrow stimulation, autologous osteochondral transplantation (AOT), osteochondral allograft transplantation, and autologous chondrocyte implantation (ACI) were the focus of the current as they are most commonly reported in the literature. Two independent investigators scored each paper from 0 to 100 based on ten criteria from the modified Coleman methodology score. The studies were also assigned a level of evidence using the criteria established by JBJS. We collected data on the study type, year of publication, number of surgical procedures, mean follow-up, preoperative and postoperative AOFAS Score, measures used to assess outcome, geography and institution, and conflict of interest.

Results:
Eighty-nine studies reporting the results of 2,543 patients who underwent 2,586 surgical procedures for osteochondral lesions of the ankle were included for analysis. The mean Coleman score for all studies was a 53.8 out of 100. Five areas were identified as methodologically weak: study size, the type of study, description of postoperative rehabilitation, procedure for assessing outcome, and description of the selection process. The studies were separated by surgical technique, yielding a mean Coleman score of 55.1 for allograft, 50.8 for ACI procedures, 56.8 for bone marrow stimulation, and 52.7 for AOT. There was no statistical difference found between the Coleman scores and individual surgical technique (p=0.2638). Of the eighty-nine studies scored, forty studies were identified as prospective and forty-nine studies were classified as retrospective. The mean prospective Coleman score was 54.7 and the mean retrospective Coleman score was 52.6. There was a significant difference in the reported post-operative AOFAS score between each surgical technique (p=0.0060). There was no significant correlation between the AOFAS
outcome score and Coleman score weighted by patient number ($r=0.21$, $p=0.0879$). Studies with different levels of evidence did not have significantly different Coleman scores ($p=0.1016$). Publication year correlated positively with the Coleman methodology score ($r=0.4299$, $p<0.0001$).

**Conclusion:**
Investigators should exercise caution when interpreting results from studies assessing the surgical treatment of osteochondral lesions of the ankle as many of these studies have a relatively low Coleman Methodology Score, which is indicative of poor methodological quality. It would be beneficial to create a uniform, validated clinical outcome score to assess post-operative success of surgical treatment of osteochondral lesions of the ankle. With more attention paid to study design and the reporting of results, a higher methodological quality may be attained enabling practitioners to draw more meaningful conclusions from the data.