Supplement of J. Bone Joint Infect., 7, 259–267, 2022
https://doi.org/10.5194/jbji-7-259-2022-supplement

JBJI Journal of Bone and Joint Infection Open Access

Supplement of

The concordance between preoperative synovial fluid culture and intraoperative tissue cultures in periprosthetic joint infection: a systematic review

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Supplemental material 1: Search Strategies.

	Cochrane	Embase	PubMed	Web of Science
#1 *PJI*	([mh "Prosthesis-Related Infections"] OR ("Periprosthetic joint" NEXT infection*) OR ("Prosthetic joint" NEXT infection*) OR PJI OR PJIs OR ("prosthesis" NEXT infection*))	(exp prosthesis infection/ OR "Periprosthetic joint infection*".af. OR "Prosthetic joint infection*".af. OR PJI.af. OR PJIs.af. OR "prosthesis infection*".af.)	("Prosthesis-Related Infections"[MeSH] OR "Periprosthetic joint infection*"[All Fields] OR "Prosthetic joint infection*"[All Fields] OR PJI[All Fields] OR PJIs[All Fields] OR "prosthesis infection*"[All Fields])	(ALL="periprosthetic joint infection*" OR ALL="prosthetic joint infection*" OR ALL="prosthesis infection*" OR ALL=PJI OR ALL=PJIs)
#2 *Hip/knee*	([mh "arthroplasty, replacement, hip"] OR [mh "arthroplasty, replacement, knee"] OR [mh "Hip Prosthesis"] OR [mh "Knee Prosthesis"] OR Hip OR Knee)	(exp hip arthroplasty/ OR exp knee arthroplasty/ OR exp hip prosthesis/ OR exp knee prosthesis/ OR Hip.af. OR Knee.af.)	("arthroplasty, replacement, hip"[MeSH] OR "arthroplasty, replacement, knee"[MeSH] OR "Hip Prosthesis"[MeSH] OR "Knee Prosthesis"[MeSH] OR Hip[All Fields] OR Knee[All Fields])	(ALL=hip OR ALL=knee)
#3 *Preoperative aspiration*	([mh "Synovial Fluid"] OR [mh Arthrocentesis] OR aspirat* OR arthrocentesis OR ("synovial" NEXT fluid*) OR ((Preoperative OR pre-operative) AND (culture* OR "pathogen detection")))	(synovial fluid/ OR arthrocentesis/ OR joint aspiration/ OR aspirat*.af. OR arthrocentesis.af. OR "synovial fluid*".af. OR ((Preoperative.af. OR pre-operative.af.) AND (culture*.af. OR "pathogen detection".af.)))	("Synovial Fluid"[MeSH] OR "Arthrocentesis"[MeSH] OR aspirat*[All Fields] OR arthrocentesis[All Fields] OR "synovial fluid*"[All Fields] OR ((Preoperative[All Fields] OR pre-operative[All Fields]) AND (culture*[All Fields] OR “pathogen detection”[All Fields])))	(ALL="synovial fluid*" OR ALL=arthrocentesis OR ALL=aspirat* OR ALL=((preoperative OR pre-operative) AND (culture* OR "pathogen detection")))
#4 *Intraoperative culture*	([mh "Synovial Fluid"] OR [mh "Culture Techniques"] OR [mh "Microbiological Techniques"] OR ("Tissue" NEXT culture*) OR ("Intraoperative" NEXT specimen*) OR ("Intra-operative" NEXT specimen*) OR ("deep" NEXT sample*) OR ("Intraoperative" NEXT sample*) OR ("Intra-operative" NEXT sample*) OR microbiolog* OR ((Intraoperative OR intra-operative) AND culture*) OR ((Intraoperative OR intra-operative) AND ("synovial" NEXT fluid*)))	(exp "cell, tissue or organ culture"/ OR synovial fluid/ OR exp microbiological examination/ OR "Tissue culture*".af. OR "Intraoperative specimen*".af. OR "Intra-operative specimen*".af. OR "deep sample*".af. OR "Intraoperative sample*".af. OR "Intra-operative sample*".af. OR microbiol*.af. OR ((Intraoperative.af. OR intra-operative.af.) AND culture*.af.) OR ((Intraoperative.af. OR intra-operative.af.) AND "synovial fluid*".af.))	("Synovial Fluid"[MeSH] OR "Culture Techniques"[MeSH] OR "Microbiological Techniques"[MeSH] OR "Tissue culture*"[All Fields] OR "Intraoperative specimen*"[All Fields] OR "Intra-operative specimen*"[All Fields] OR "deep sample*"[All Fields] OR "Intraoperative sample*"[All Fields] OR "Intra-operative sample*"[All Fields] OR microbiolog*[All Fields] OR ((Intraoperative[All Fields] OR intra-operative[All Fields]) AND culture*[All Fields]) OR ((Intraoperative[All Fields] OR intra-operative[All Fields]) AND "synovial fluid*"[All Fields]))	(ALL="tissue culture*" OR ALL="intraoperative specimen*" OR ALL="intra-operative specimen*" OR ALL="deep sample*" OR ALL="intraoperative sample*" OR ALL="intra-operative sample*” OR ALL=microbiol* OR ALL=((intraoperative OR intra-operative) AND "synovial fluid*") OR ALL=((intraoperative OR intra-operative) AND culture*))
AND (#1/#2/#3/#4)	**n = 11**	**n = 822**	**n = 613**	**n = 340**

Supplemental material 2: JBI's Critical Appraisal Checklist for Case Series including the amended scoring criteria used during this review.

Scoring items	Yes (+)	No (-)	Unclear (?)	Judgement score
1. Were there clear criteria for inclusion in the case series? *Original manual: The authors should provide clear inclusion (and exclusion criteria where appropriate) for the study participants. The inclusion/exclusion criteria should be specified (e.g., risk, stage of disease progression) with sufficient detail and all the necessary information critical to the study.* Our additional judgement questions: - is *clear* information provided regarding the presence of periprosthetic joint infection (PJI) in patients who have undergone revision surgery of their total hip (THA) or knee (TKA) arthroplasty? - is the information described in such a way that it is possible to exactly replicate the recruitment process? *Note: if the risk of bias remains high despite the availability of a description a 'no' score may be considered.*				If both questions can be answered with yes, the judgement should be **yes**. If the eligibility criteria allow for inclusion of patients other than those with PJI and with revision surgery after THA/TKA the judgement should be **unclear**. If both questions are answered with no, the judgement should be **no**.
2. Was the condition measured in a standard, reliable way for all participants included in the case series? *Original manual: The study should clearly describe the method of measurement of the condition. This should be done in a standard (i.e., same way for all patients) and reliable (i.e., repeatable and reproducible results) way.* Our additional judgement questions: - is *clear* information provided regarding *both* the preoperative and intraoperative procedures used to confirm the presence of PJI? - is the information described in such a way that it is possible to exactly replicate those diagnostic procedures? - does the paper specifically report that *all* included participants were measured in a standard, reliable way? *Note: if details of patients who were lost to follow-up are reported a 'yes' score may be considered.*				If all three questions can be answered with yes, the judgement should be **yes**. If only partial information is provided, the judgement should be **unclear**. If all three questions are answered with no, the judgement should be **no**.
3. Were valid methods used for identification of the condition for all participants included in the case series? *Original manual: Many health problems are not easily diagnosed or defined, and some measures may not be capable of including or excluding appropriate levels or stages of the health problem. If the outcomes were assessed based on existing definitions or diagnostic criteria, then the answer to this question is likely to be yes. If the outcomes were assessed using observer-reported or self-reported scales, the risk of over- or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity.* Our additional judgement questions: - was PJI diagnosed based on the European Bone and Joint Infection Society (EBJIS) or Musculoskeletal Infection Society (MSIS) criteria? - is the information described in such a way that it is possible to exactly replicate the PJI diagnostic procedure? - does the paper specifically report that *all* included participants were diagnosed using the EBJIS/MSIS criteria? *Note: if other than the EBJIS or MSIS criteria have been used to diagnose PJI, then a 'no' score may be considered.*				If all three questions can be answered with yes, the judgement should be **yes**. If only partial information is provided, the judgement should be **unclear**. If all three questions are answered with no, the judgement should be **no**.
4. Did the case series have consecutive inclusion of participants? *Original manual: Studies that indicate a consecutive inclusion are more reliable than those that do not. For example, a case series that states, 'We included all patients (24) with osteosarcoma who presented to our clinic between March 2005 and June 2006' is more reliable than a study that simply states, 'We report a case series of 24 people with osteosarcoma.'* Our additional judgement questions: - does the paper report *anything at all* about which inclusion procedure was followed? - does the paper specifically report that there was *consecutive* inclusion of participants?				If the first question is answered with no, the judgment should be **no**. If the first two questions are answered with yes, the judgement should be **yes**. If the first question is answered with yes and the second answered with no, then the judgement should be **unclear**.
5. Did the case series have complete inclusion of participants? *Original manual: The completeness of a case series contributes to its reliability. Studies that indicate a complete inclusion are more reliable than those that do not. A stated above, a case series that states, ''We included all patients (24) with osteosarcoma who presented to our clinic between March 2005 and June 2006'' is more reliable than a study that simply states, ''We report a case series of 24 people with osteosarcoma."* Our additional judgement questions: - does the paper report *anything at all* about how patients with the condition reporting to the presenting site(s)/clinic(s) in the study period were included in the study? - does the paper *specifically* report that *all* patients with the condition reporting to the presenting site(s)/clinic(s) in the study period were included in the study?				If the first question is answered with no, the judgment should be **no**. If the second question is answered with yes, the judgement should be **yes**. If the first question is answered with yes and the second answered with no, then the judgement should be unclear.

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Scoring items	Yes (+)	No (-)	Unclear (?)	Judgement score
6. Was there clear reporting of the demographics of the participants in the study? *Original manual: The case series should clearly describe relevant participants' demographics such as the following information where relevant: participant's age, sex, education, geographic region, ethnicity and time period.* Our additional judgement questions: - is *any* information provided regarding the participant's demographics? - is *clear* information provided regarding the participant's age & gender?				If the first question is answered with no, the judgment should be **no**. If the second question is answered with yes, the judgement should be **yes**. If only partial information is provided, the judgement should be **unclear**
7. Was there clear reporting of clinical information of the participants? *Original manual: There should be clear reporting of clinical information of the participants such as the following information where relevant: disease status, comorbidities, stage of disease, previous interventions/treatment, results of diagnostic tests, etc.* Our additional judgement questions: - is *any* clinical information provided of the participants? - is *clear* clinical information provided of the participants regarding antibiotics use and the time between preoperative and intraoperative culture.				If the first question is answered with no, the judgment should be **no**. If the second question is answered with yes, the judgement should be **yes**. If only partial information is provided, the judgement should be **unclear**
8. Were the outcomes or follow-up results of cases clearly reported? *Original manual: The results of any intervention or treatment should be clearly reported in the case series. A good case series should clearly describe the clinical condition post-intervention in terms of the presence or lack of symptoms. The outcomes of management/treatment when presented as images or figures can help in conveying the information to the reader/clinician.* *It is important that adverse events are clearly documented and described, particularly when a new or unique condition is being treated or when a new drug or treatment is used. In addition, unanticipated events, if any that may yield new or useful information should be identified and clearly described.* Amendment to the scoring criterion: In this review no studies reporting on interventions or treatments are critically appraised. Adverse events are therefore not expected nor judged. Our additional judgement questions: - does the paper report *any* results regarding the concordance between PJI-causing micro-organisms found *both* during the preoperative and the intraoperative diagnostic procedures? - are *clear* results reported regarding the concordance between PJI-causing micro-organisms from both the preoperative and the intraoperative diagnostic procedures?				If both questions can be answered with yes, the judgment should be **yes**. If one of the two questions are answered with no, the judgment should be **unclear**. If both questions are answered with no, the judgment should be **no**.
9. Was there clear reporting of the presenting site(s)/clinic(s) demographic information? *Original manual: Certain diseases or conditions vary in prevalence across different geographic regions and populations (e.g., women men, sociodemographic variables between countries). The study sample should be described in sufficient detail so that other researchers can determine if it is comparable to the population of interest to them.* Our additional judgement questions: - is *any* sociodemographic information regarding [regions & populations] provided about the presenting site(s)/clinic(s)? - is *clear* sociodemographic information regarding [regions & populations] provided about the presenting site(s)/clinic(s)? *Note: author affiliations/information should not be considered as providing sociodemographic information.*				If the first question is answered with no, the judgment should be **no**. If the second question is answered with yes, the judgement should be **yes**. If only partial information is provided, the judgement should be **unclear**.
10. Was statistical analysis appropriate? *Original manual: As with any consideration of statistical analysis, consideration should be given to whether there was a more appropriate alternate statistical method that could have been used. The methods section of studies should be detailed enough for reviewers to identify which analytical techniques were used and whether these were suitable.* Our additional judgement questions: - is *any* information provided about the analytical techniques used in the Methods section to analyse the concordance between the preoperative and the intraoperative diagnostic results? - Was the statistical method used appropriate to answer the research question? (*"What is the concordance between the preoperative synovial cultures and the intraoperatively collected tissue cultures in patients with a PJI undergoing knee or hip revision arthroplasty?")* - Was any of the statistical methods used not appropriate, or could more suitable statistical methods have been used to answer the research question?				If the first question is answered with no, the judgment should be **no**. If the second question is answered with yes, the judgement should be **yes**. If the third question is answered with yes, the judgement should be **unclear**.