Reviewer #1:

Scientific Quality: Grade A (Excellent)

Language Quality: Grade A (Priority publishing)

Conclusion: Minor revision

Specific Comments to Authors: I would like to thank the editor and the journal office for giving us the opportunity to review an interesting manuscript. After spending a considerable amount of time reviewing the requested manuscript (The efficacy and safety of different anti-osteoporotic drugs for the spinal fusion surgery: A network meta-analysis), I have reached the following opinion. This manuscript on an important topic meets the needs of the readers of this journal and is scientifically novel. However, there are some issues that need to be addressed. In particular, I think there are a number of issues that need to be addressed before I can agree to publish the manuscript. Network meta-analysis is also a systematic review methodology. The reason why SR is different from narrative review is the reproducibility of the data collection process rather than the statistical analysis. And the most important factor for readers to judge this is whether the search strategy is transparent. Therefore, you must submit the search term used in all DBs used for the literature search in this study as a supplementary file.

Response: I have added in the Supplement S1.

More detailed information regarding search strategy can be found in **Supplement S1**.

The searcher used for each DB must be reported as it is, and in the case of a Chinese DB such as CNKI, the Chinese search term must be submitted as it is. Like the randomised controlled trial, the systematic review is an important source of evidence for clinical decision making. Therefore, it is important to register research protocols in advance in public databases such as PROSPERO or OSF to avoid bias in the process of deriving results. However, there is no mention of this in this manuscript. Therefore, at the beginning of the Methods section, please present the previously officially registered protocol and the access path to search for it. As this is essential for a systematic review, it is not acceptable to conduct a protocol without a pre-registered PROTOCOL or to register a PROTOCOL retrospectively.

Response: I have added in the Method section.

This study was registered through PROSPERO (PROSPERO Registration number: CRD42023445654).

3. In principle, systematic reviews after 2020 should use RoB2, a revised risk assessment tool. Compared to the existing RoB 1.0, this tool allows for a more robust and rigorous risk of bias assessment. Therefore, please reassess the risk of bias in this manuscript using this tool. The following references provide guidance for this work. Suggested reference doi: 10.1136/bmj.l4898.

Response: Thank you for your comments. I have revised as follows:

The revised Cochrane risk of bias tool for randomized trials was employed[26]. Risk of bias from five different domains was assessed: (1) randomization process, (2) deviations from intended interventions, (3) missing outcome data, (4) measurement of outcome and (5) selection of the reported result. Risk of bias was reported as 'low risk of bias,' 'some concerns' or 'high risk of bias'. There are specific and clear instructions in this tool to help reviewers assess the risk of bias as "high", "low", or "unclear". Divergence will be resolved by face-to-face discussion, or in case of persistent disagreement, a third experienced author will be consulted.

It is unclear what the primary outcome representing the conclusions of this manuscript is and why it was chosen. Is osteoprotic change an outcome directly related to ODI? To avoid confusion for the reader, please state the primary outcome and the secondary outcome in separate paragraphs and explain why you have chosen them as evaluation index. I hope that my views will help improve the manuscript and successfully publish it.

Response: I have revised as follows:

The primary outcome will be defined as the fusion rate, which is predominantly influenced by the increase in bone mineral density resulting from these anti-osteoporotic drugs, leading to an improved fusion rate. The secondary outcomes will include the assessment of Oswestry disability index (ODI) and adverse events. The inclusion of ODI in our analysis will help evaluate dysfunction related to back pain.