

Peer Review File

Article information: <http://dx.doi.org/10.21037/atm-20-4043>

Reviewer comments:

Comment 1: There were similar reports (*Arch Orthop Trauma Surg.* 2020 Jun 22. doi: 10.1007/s00402-020-03519-y) and (*BMJ Open.* 2018 Sep 21;8(9):e021649) in the PubMed. What is the novel idea in the paper? Please elaborate in the introduction.

Reply 1:

(1) Compared with the *Arch Orthop Trauma Surg.* 2020 Jun 22. doi: 10.1007/s00402-020-03519-y, our paper has the following advantages: ① Our meta-analysis is based on the RCTs, the level of evidence is I, but above article is only retrospective study, the level of evidence is IV. ② The sample size in our paper is 731 hips in the SS group and 755 hips in the CS group, but in above article only 50 hips in each group.

(2) Compared with the *BMJ Open.* 2018 Sep 21;8(9):e021649, the novel ideas in the our paper are as follows: ① When we discussed bone mineral density, we divided the SS into a femoral neck-preserving prostheses group and a non-preserving femoral neck prostheses group, this movement reduces the data heterogeneity and makes the results more accurate, but above article did not conduct the further subgroup analysis. ② Thigh pain is a serious postoperative complication of THA, we conducted a analysis on thigh pain, but above article did not analyze. ③ The above article included 12 RCTs, on this basis, we included 4 recently published RCTs, bringing the number of included articles to 16, more data made the conclusion more convincing.

Position in the text: See Page 4, line 21 to Page 5, line 13.

Comment 2: The background of abstract was too long. Please shorten it.

Reply 2: We have modified our manuscript as advised.

Changes in the text: See Page 2, line 6–10, marked in red.

Comment 3: In the introduction, please enrich the progress of the applications of THA.

Reply 3: We have modified our text as advised.

Changes in the text: See Page 4, line 11–16, marked in red.

Comment 4: Are there any complications after THA? Please supplement in the introduction.

Reply 4: We have modified our manuscript as advised.

Changes in the text: See Page 3, line 19–21, marked in red.

Comment 5: Are there any difference between SS and CS?

Reply 5: Compared with CS, the lengths of SS are usually <120 mm, and SS are designed to preserve the proximal femoral bone stock, prevent the distal medullary

cavity from being invaded and reduce stress shielding. We have added the above content in our manuscript.

Changes in the text: See Page 4, line 16–20, marked in red.

Comment 6: How to perform the quality assessment of collected literatures? How to perform heterogeneity test?

Reply 6:

(1) We used the Cochrane Collaboration tool to evaluate the methodological quality of each study by the risk of bias, including randomization, allocation of concealment, blinding methods, selective reporting, population similarity at baseline, incomplete results data, etc.

(2) When $I^2 \geq 50\%$, we conducted the sensitivity analysis to detect the impact of each data set on the overall effects of the analyses, assess the stability of the results and access potential sources of heterogeneity by sequentially deleting a single study involved in the meta-analysis. We also conducted subgroup analyses to verify the source of heterogeneity.

Position in the text:

(1) See Page 7, line 3–9

(2) See Page 7, line 20 to Page 8, line 3.

Comment 7: How to handle with publication bias and location bias? How to perform sensitivity analysis? How to calculate the thigh pain?

Reply 7:

(1) We used funnel plot to evaluate publication bias, the funnel plots of thigh pain, BMD, revision rate, HHS and maximum total point motion all show a sharp head and a big bottom, which indicated low publication bias. We will upload all the funnel plots as attachments. We used three electronic databases (PubMed, Embase and Web of Science) to screen the included studies, in order to decrease the location bias.

(2) We performed sensitivity analysis by sequentially deleting a single study involved in the meta-analysis.

(3) Although the methods to quantify thigh pain are different, we calculated the total number of patients who complained thigh pain, to measure the thigh pain rate.

Changes in the text:

(1) See Page 7, line 7–9, and Page 9, line 7–9, marked in red.

(2) See Page 7, line 22 to Page 8, line 3

(3) See Page 10, line 1–3