

Responses to reviewer's comments

Manuscript No.: 89739. Which approach of THA is the best efficacy and least complication? Umbrella review of systematic reviews and meta-analyses

General comments

1.Revised version of MN must send back to editor within 21 Dec 2023 (14 days)

Have only 2 chances to revise

2.Login with Email that registered via this link; <https://www.f6publishing.com>, use author login, then go to MN needing revision then click handle and choose revise MN

3. Resolve all issues and highlight in revised version

4.After finish revision should ask Stephen to do grammar correction and provide certificate for grammar approval for revision version.

They also suggest for Company that correct language;
<https://www.wjgnet.com/bpg/gerinfo/240>

5. Abbreviation must be concerned

6. Revise follow Editorial office rule

Arrange figure use powerpoint (Editor can reprocess)

Save in Figure.pptx and Table.docx

7.Follow 7 steps for revised MN submission

8.Declare for conflict of interest

Response: Thank you so much for provided details. We followed all 8 steps as mentioned above.

Reviewer's comments

Nitiwarangkul et al. conclude DSA/SuperPath had better early functional outcome than PA but still cannot overcome the result of DAA. This technique might be the other preferred option with acceptable complications.

The manuscript was good, well written, and have potential to publish after address some issue as follows:

1. What is the novel of present review? Can authors giving the clarification since there is several establish PA of systematic review in total hip prosthesis.

Responses: Thank you so much for your query. The novel of our study is the comparison between various hip approaches, particularly DSA/SuperPath to PA, and also our study considered not only major clinical outcomes, but also clinical important complications, which have not yet been in previous network meta-analyses.

Although a recent network meta-analysis (Yan L, et al. 2022) included the 2-incision approach, direct anterior approach (DAA), direct lateral approach (DLA), minimally invasive direct lateral approach (MIS-DLA), minimally invasive anterolateral approach (MIS-ALA), posterior approach (PA), minimally invasive posterior approach (MIS-PA), and supercapsular percutaneously assisted total hip arthroplasty (SuperPath). This study did not include clinical important complications including hip dislocation, intraoperative fracture, wound complications and nerve injury were not taken into account. We, therefore, performed an umbrella review to compare various hip approaches to PA and cover these outcomes.

Reference

Yan L, Ge L, Dong S, et al. Evaluation of Comparative Efficacy and Safety of Surgical Approaches for Total Hip Arthroplasty: A Systematic Review and Network Meta-analysis. *JAMA Netw Open*. 2023;6(1):e2253942.
doi:10.1001/jamanetworkopen.2022.53942

Revision: Revision has been made in the Introduction part

From

Many systematic reviews and meta-analyses (MA) of THA^[6, 20-46] mentioned that DAA could benefit for early hip function, and post-operative pain than other techniques^[6, 23, 28, 30, 34-36, 42, 44, 45]. Contradictorily, it came up with a higher incidence of nerve injury^[28, 32, 42, 45, 47], and inconsistent issues of other complications^[6, 31, 37, 39, 44]. In addition, the DSA/SuperPath approach has not been taken into account among the previous MAs.

To

Many systematic reviews and meta-analyses (MA) of THA^[6, 20-46] mentioned that DAA could be more beneficial for early hip function, and post-operative pain than other techniques^[6, 23, 28, 30, 34-36, 42, 44, 45]. Contradictory, it came up with a higher incidence of nerve injury^[28, 32, 42, 45, 47], and inconsistent issues of other complications^[6, 31, 37, 39, 44]. PA may be inferior to DAA, and other various hip approaches including DSA/SuperPath. A recent network meta-analysis reported conventional PA contributed to poorer hip function, insignificant complications, but has the advantage in shorter operative time when compared to DAA, DSA/SuperPath and MIS direct LA/ anterolateral/PA^[48]. Nevertheless, important clinical outcomes including hip dislocation, intra-operative

fracture and wound complications were not considered. A comprehensive review of relevant MAs should lead to properly identify the best hip approach.

2. Introduction just 2 paragraph and too short, please more elaborate it, especially regarding basic concept of total hip prosthesis and related explanation to clearly understanding.

Response: Thank you so much for your suggestion. We have added more details about total hip prosthesis for alleviating hip pain and improving hip function. In addition, the prosthesis development and materials were also emphasized and cited relevant references as per your recommendation.

Revision: Revision was made by adding total hip prosthesis and material issues in the Introduction part

From

Total hip arthroplasty (THA) is as an effective intervention to relieve pain and improve hip function [1-4]. More than 1.4 million hip replacements are annually performed worldwide. Meanwhile, bleeding, wound complication, abductor muscle disruption and dislocation/instability were considered as common complications [2].

To

Total hip arthroplasty (THA) is as an effective intervention for improvement of pain and hip function [1-4]. More than 1.4 million hip replacements are annually performed worldwide. Hip prosthesis has been established since the 1950s^[5]. Porous structure or bottom profile dimples of the ball type promote longevity, osteointegration and medullary revascularization [6-9]. Various bearing surfaces (i.e., titanium on polyethylene, cobalt chromium molybdenum, ceramic, and polycrystalline diamond [10]), have been applied to optimize corrosive quality, stress reduction, contact pressure^[11] and prevent osteolysis^[2-4]. Survival of total hip replacement is not only influenced by deformation of prosthesis [2], acetabular cup inclination, body mass index [3] and effects of pressure during walking^[12,13], but it also depends on surgical approaches to the hip joint. Meanwhile, bleeding, wound problems, abductor muscle disruption and dislocation/instability were considered as common complications [7].

3. Total hip arthroplasty (THA) is as an effective intervention to relieve pain and improve hip function, please replace/add with relevant literature as follows:

- Hidayat, T.; Ismail, R.; Tauviqirrahman, M.; Saputra, E.; Ammarullah, M. I.; Lamura, M. D. P.; Bayuseno, A. P.; Jamari, J. Investigation of Mesh Model for a Finite

Element Simulation of the Dual-Mobility Prosthetic Hip Joint. Jurnal Tribologi 2023, 38, 118–40.

- Ammarullah, M. I.; Hidayat, T.; Lamura, M. D. P.; Jamari, J. Relationship between Deformation and Running-in Wear on Hard-on-Hard Bearings from Metal, Ceramic, and Diamond Materials for Total Hip Prosthesis. *Jurnal Tribologi* 2023, 38, 69–81.
- Ammarullah, M. I.; Santoso, G.; Sugiharto, S.; Supriyono, T.; Kurdi, O.; Tauviqirrahman, M.; Winarni, T. I.; Jamari, J. Tresca Stress Study of CoCrMo-on-CoCrMo Bearings Based on Body Mass Index Using 2D Computational Model. *Jurnal Tribologi* 2022, 33, 31–8.

Response: Thank you so much for your comments and recommended valuable articles for citation. We have cited these references as below.

Revision: All three provided references were added to these relevant sentences, and also elaborated accordingly in the Introduction part.

From

Total hip arthroplasty (THA) is as an effective intervention to relieve pain and improve hip function [1-4]. Meanwhile, bleeding, wound complication, abductor muscle disruption and dislocation/instability were considered as common complications [2].

To

Total hip arthroplasty (THA) is as an effective intervention for improvement of pain and hip function [1-4]. More than 1.4 million hip replacements are annually performed worldwide. Hip prosthesis has been established since the 1950s^[5]. Porous structure or bottom profile dimples of the ball type promote longevity, osteointegration and medullary revascularization [6-9]. Various bearing surfaces (i.e., titanium on polyethylene, cobalt chromium molybdenum, ceramic, and polycrystalline diamond [10]), have been applied to optimize corrosive quality, stress reduction, contact pressure^[11], and prevent osteolysis^[2-4]. Survival of total hip replacement is not only influenced by deformation of the prosthesis^[2], acetabular cup inclination, body mass index^[3] and effects of pressure during walking^[12-13], but it also depends on surgical approaches to the hip joint. Meanwhile, bleeding, wound problems, abductor muscle disruption and dislocation/instability were considered as common complications [7].

4. Please recheck if author already perfectly follow PRISMA 2020.

Response: Thank you so much for your suggestion. We have checked that our study complied with the PRISMA 2020. This has been updated.

Revision: Revision was made by using PRISMA 2020 checklist and uploaded in the revision submission (PRISMA 2020 hip approaches).

5. Give the explanation in general, such as gait is the most common patient activity that have undergo total hip replacement. Encouraged to read and incorporated as follows: <https://doi.org/10.1016/j.heliyon.2022.e12050>,
<https://doi.org/10.3390/biomedicines11030951>, <https://doi.org/10.3390/ma14247554>,
<https://doi.org/10.3390/su142013413>, and <https://doi.org/10.3390/ma16093298>

Responses: Thank you so much for your comments. Your suggested references were important and more relevant to state in the Introduction part. We therefore, cited the related studies and elaborated gait or basic of normal walking as follows.

Revision: Introduction was revised

From

Total hip arthroplasty (THA) is as an effective intervention to relieve pain and improve hip function [1]. Meanwhile, bleeding, wound complication, abductor muscle disruption and dislocation/instability were considered as common complications [2].

To

Total hip arthroplasty (THA) is as an effective intervention for improvement of pain and hip function [1-4]. More than 1.4 million hip replacements are annually performed worldwide. Hip prosthesis has been established since the 1950s[5]. Porous structure or bottom profile dimples of the ball type promote longevity, osteointegration and medullary revascularization [6-9]. Various bearing surfaces (i.e., titanium on polyethylene, cobalt chromium molybdenum, ceramic and polycrystalline diamond [10]), have been applied to optimize corrosive quality, stress reduction, contact pressure[11] and prevent osteolysis[2-4]. Survival of total hip replacement is not only influenced by deformation of prosthesis[2], acetabular cup inclination, body mass index[3] and effects of pressure during walking[12, 13], but it also depends on surgical approaches to the hip joint. Meanwhile, bleeding, wound problems, abductor muscle disruption and dislocation/instability were considered as common complications [7].

6. For more broader discussion, explaining the role of computational simulation (in silico) to support surgery of total hip replacement, even in direct anterior approach and direct superior approach and incorporate relevant reference as follows:

<https://doi.org/10.1038/s41598-023-30725-6>, <https://doi.org/10.3390/met12081241>,

<https://doi.org/10.3390/jfb13020064>, <https://doi.org/10.3390/jfb12020038>, and
<https://doi.org/10.1016/j.matpr.2022.02.055>

Response: Thank you so much for your suggestion. We added more about relevant computational simulation (in silico) along with citation of references in the Introduction part.

Revision: Revision was made in the Introduction part

From

Total hip arthroplasty (THA) is as an effective intervention to relieve pain and improve hip function [1]. Meanwhile, bleeding, wound complication, abductor muscle disruption and dislocation/instability were considered as common complications [2].

To

Total hip arthroplasty (THA) is as an effective intervention for improvement of pain and hip function [1-4]. More than 1.4 million hip replacements are annually performed worldwide. Hip prosthesis has been established since the 1950s[5]. Porous structure or bottom profile dimples of the ball type promote longevity, osteointegration and medullary revascularization [6-9]. Various bearing surfaces (i.e., titanium on polyethylene, cobalt chromium molybdenum, ceramic, and polycrystalline diamond [10]), have been applied to optimize corrosive quality, stress reduction, contact pressure[11] and prevent osteolysis[2-4]. Survival of total hip replacement is not only influenced by deformation of prosthesis[2], acetabular cup inclination, body mass index[3] and effects of pressure during walking[12, 13], but it also depends on surgical approaches to the hip joint. Meanwhile, bleeding, wound problems, abductor muscle disruption and dislocation/instability were considered as common complications [7].

7. Please include limitations of present review article.

Responses: Thank you so much for your suggestion. We summarized our limitations of the study in the Discussion part. Furthermore, we would like to add another limitation due to exclusion of some hip approaches - mini-posterior, modified posterior techniques.

Revision: Limitations of the study have additionally been stated in the Discussion part,

From

However, limitations could not be avoided. The quality assessment of included MAs and RCTs indicated that some of them were at high risk of bias. The results cannot be

considered as independent set of evidence due to the number of CCA almost in range of high degree of overlap, CCA 11-15% (14.90%).

To

However, limitations could not be avoided. The quality assessment of included MAs and RCTs indicated that some included RCTs were at high risk of bias. The results cannot be considered as independent set of evidence due to high degree of overlap with CCA of 11-15% (14.90%). Exclusion of mini-posterior and modified posterior techniques precludes application of the results among these approaches.

8. the authors should proofread the work due to grammatical problems and linguistic style.

Response: Thank you so much for your recommendation. After responses to previous comments, the revised manuscript has been reviewed and English proofreading by Mr. Stephen Pinder, native British English speaker experienced in medical English.

Thank you so much for your consideration and kindness. We trust that our revised manuscript fulfills requirements for publication.

Yours Sincerely,

Patarawan Woratanarat, MD, PhD