

Comparing Hip Dislocation Rates in Total Hip Arthroplasty Direct Anterior Versus Posterior or Posterolateral Approaches: A Systematic Review

Domy Pradana Putra¹, Edi Mustamsir¹, Krisna Yuarno Phatama¹,
Ananto Satya Pradana¹, Raymond Pangestu Halim¹

¹Department of Orthopedic and Traumatology, Faculty of Medicine,
Universitas Brawijaya – Dr. Saiful Anwar General Hospital, Malang, Indonesia

Corresponding Author: Domy Pradana Putra

DOI: <https://doi.org/10.52403/ijrr.20251253>

ABSTRACT

Introduction: Total hip arthroplasty (THA) is a widely used treatment for hip osteoarthritis, providing significant pain relief and improved mobility. The choice of surgical approach, including posterior (PA), lateral (LA), and direct anterior (DAA), can influence the risk of dislocation. While the PA approach is the most commonly used, the DAA is gaining popularity due to its potential to reduce soft tissue trauma and dislocation risk. However, there is no consensus on the approach with the lowest dislocation rate. This study aims to systematically review dislocation rates between the direct anterior and posterior/posterolateral approaches in THA.

Methods: Following PRISMA guidelines, a comprehensive search of PubMed, the Cochrane Library, and Embase was conducted to identify high-quality studies published over the last 10 years. Studies included patients undergoing primary THA and reporting dislocation rates for DAA and posterior/posterolateral approaches. Data extraction and quality assessment were conducted independently by two reviewers. Eight studies met the inclusion criteria.

Results: Subgroup analyses revealed that most dislocations occurred in the posterior approach group. The DAA showed a lower,

though not statistically significant, risk of dislocation. The risk varied based on patient characteristics, including surgeon experience, component size, and patient positioning. Approaches performed in a supine position (e.g., DAA) provided better control over inclination and anteversion, potentially reducing the risk of dislocation.

Conclusion: The DAA may pose a lower risk of dislocation compared to posterior approaches, but the difference was not statistically significant.

Keywords: direct anterior approach, hip dislocation rates, posterolateral approach, total hip arthroplasty

INTRODUCTION

Total hip arthroplasty (THA) is widely recognized as the most effective intervention for end-stage hip osteoarthritis (OA).^[1] Nonetheless, selecting the optimal surgical technique remains contentious. The predominant approaches include direct anterior, anterolateral, direct lateral, posterior, and posterolateral techniques. Each approach dictates which tissues—muscles and tendons—must be dissected to access the joint, which anatomical structures should be preserved, and how challenging it is for the surgeon to position the implants correctly.^[2,3]

In THA, the most commonly used surgical approaches are the posterior approach (PA), the direct anterior approach (DAA), and the direct lateral approach (DLA). The choice among these techniques depends on various considerations, including surgeon experience, prior surgical incisions, patient-specific factors such as obesity and dislocation risk, implant selection, and the degree of joint deformity.^[4,5] The PA is widely used in the United States and globally, being the most common THA technique. Conversely, the DAA is increasingly favored within the hip arthroplasty community, with supporters highlighting its benefits, such as faster gait recovery and lower dislocation rates. The LA, however, is noted for having the lowest dislocation rates, while the PA is associated with the fewest overall complications.^[6]

The direct anterior approach (DAA; Smith–Petersen; Hueter) is often considered the least invasive. It employs the intermuscular plane between the sartorius, rectus femoris, and tensor fasciae latae muscles, thus avoiding the need for dissection of these muscles. Despite its introduction many years ago, the DAA has seen a resurgence in popularity, aligning with the broader trend towards minimally invasive surgical techniques. The approach is lauded for its potential benefits, including enhanced prosthesis stability and increased patient satisfaction.^[7] Proponents of the DAA argue that it offers several advantages over other methods, such as quicker rehabilitation and reduced postoperative pain. Nevertheless, significant variations in clinical outcomes are typically observed only within the initial months following surgery, and there is insufficient scientific evidence to support the long-term superiority of the DAA. The DAA approach is not without drawbacks, including a steep learning curve, a higher complication rate, and potentially less favorable functional outcomes compared to other methods.^[6]

Dislocation remains a significant complication in total hip arthroplasty (THA), ranking as the third most common

reason for revision THA after loosening and infection, and it is often the primary cause of early revision THA. Dislocation rates in primary THA have been reported as 1.7%, 4.8% (in a study of 6623 cemented THAs with 22.2-mm femoral heads), and have ranged from 0.3% to 10%. Revision THA tends to have higher dislocation rates, with one study reporting rates of 5.1% to 14.4% and another reporting a rate of 28%. Including episodes of subluxation—often difficult to diagnose and frequently overlooked—would yield even higher dislocation rates, estimated at 2%–5.5%.^[8–11] Several factors, including the surgical approach and the size of the femoral head, influence dislocation rates. Additionally, the duration of follow-up affects dislocation rates: 6% after 20 years and 7% after 25 years.^[12] Other contributing factors include female gender, advanced age, specific conditions like avascular necrosis or proximal femoral fractures, obesity, comorbidities with an ASA score of 3 or higher, neuromuscular disorders (e.g., Parkinson's disease or stroke-related impairments), neuro-cognitive issues (e.g., psychiatric disorders or mental disabilities), and exposure to neurotoxins such as alcohol. Patients with a history of prior surgery on the same hip, particularly previous THA procedures, also have a higher dislocation rate.^[13]

There is currently no definitive conclusion on the dislocation rates between the direct anterior approach (DAA) and the posterior/lateral approach (PA/LA) in total hip arthroplasty (THA). Studies comparing these approaches show mixed results. While the DAA is often associated with lower dislocation rates due to its technique, some evidence suggests that the PA approach, which is more commonly used, may also have comparable or lower dislocation rates under certain conditions. This systematic review aimed to provide a comprehensive comparison of hip dislocation rates across different surgical approaches in THA, helping inform clinical decision-making and future research in the field.

METHODS

Study Design

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We conducted a comprehensive literature review to identify high-quality studies evaluating hip dislocation rates after total hip arthroplasty (THA) using the direct anterior approach (DAA) versus the posterior/posterolateral approaches.

Inclusion and Exclusion Criteria

Studies were included if they involved patients undergoing primary total hip arthroplasty (THA) and reported dislocation rates for either the direct anterior approach (DAA) or the posterior/posterolateral approaches. The studies needed to provide a comparison of dislocation rates between these approaches and include relevant data on dislocation outcomes following THA. Studies were excluded if they focused on non-primary or revision THA procedures, or if they were not published in English or Indonesian. Additionally, studies with incomplete data or those lacking relevant outcome measures were excluded. Qualitative studies and those with methodological issues were also excluded to ensure only high-quality quantitative research was included.

Search Strategy and Study Selection

A comprehensive search was conducted across major databases, including PubMed, Cochrane Library, and Embase, to identify high-quality studies published over the past 10 years (2014-2024). The search strategy utilized MeSH terms and relevant keywords related to hip dislocation rates and surgical approaches. Boolean operators "AND" and "OR" were used to refine the search. Furthermore, a manual search of the reference lists of selected articles was conducted to identify additional relevant studies. Studies meeting the inclusion criteria were selected based on their relevance and methodological quality. A

detailed search strategy was employed using MeSH terms and keywords pertinent to the study, including "Direct Anterior Approach", "Posterior Approach", "Posterolateral Approach", and "Hip Dislocation Rates". Boolean operators "AND" and "OR" were used to refine searches. In addition to electronic database searches, a manual search of the reference lists of relevant articles was conducted to identify additional studies.

Assessment Study Quality

Two independent reviewers assessed the quality of the included studies using standardized abstraction forms. The assessment focused on study design, methodological rigor, and relevance to the research question. Discrepancies between reviewers were resolved through discussion or consultation with a third reviewer.

Data Extraction

Data extraction was performed independently by two reviewers, who collected detailed information on several key aspects of the studies. This included the study design and methodological details, the number of patients and their characteristics, the duration of follow-up, the specifics of the interventions, and the reported dislocation rates for each surgical approach. Additionally, efficacy measures and other relevant comments were noted.

Data Synthesis

Due to the heterogeneity of study designs, populations, and interventions, a quantitative synthesis was not conducted. Instead, a narrative summary of findings was provided, highlighting the comparative dislocation rates and other relevant outcomes for the DAA versus the posterior/posterolateral approaches.

RESULT

Initially, a total of 182 studies were retrieved from the databases and manual searching. From this, 39 duplicates were found and removed. The remaining 118

articles were screened based on their titles and abstracts, and 52 irrelevant studies were removed. Sixty-six full-text articles were assessed for eligibility, and 58 of them were

excluded due to not reporting the outcome of interest. Finally, eight studies met the inclusion criteria and were included in the survey (Fig. 1).

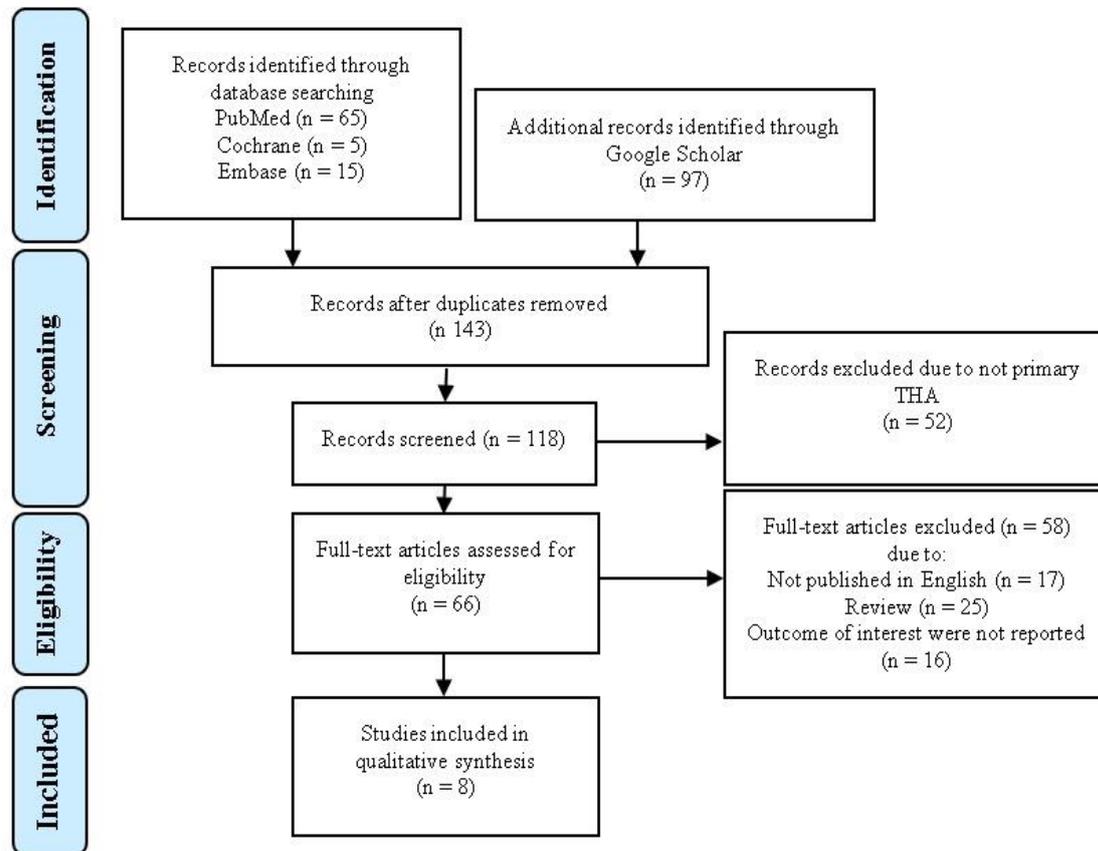


Figure 1. PRISMA flowchart of the study

Patient Characteristics of the Study

Table 1 summarizes studies comparing outcomes of the direct anterior approach (DAA) and the posterolateral/posterior approach (PA/PLA) in total hip arthroplasty. The studies included are from China, the USA, Australia, and Japan, and include a mix of prospective randomized, nonrandomized, and retrospective studies. The studies vary in terms of demographic characteristics, such as gender distribution, BMI, and average age. For instance, studies by Cao (2020) in China and Rodriguez (2014) in the USA report similar gender distributions and age ranges across the DAA and PA groups, while Barret (2019) highlights a significant gender difference

between the groups. Tsukada (2015) in Japan and Balasubramaniam (2016) in Australia emphasize differences in BMI and age, with the latter reporting significant differences in the average age between the groups. There are notable differences in follow-up duration, particularly in studies such as Haynes (2022) and Tsukada (2015), where the follow-up periods differ significantly between groups. Overall, while the studies share some similarities in demographic characteristics and outcomes, they also exhibit distinct differences that highlight the variability in patient populations and study designs across regions and methodologies.

Table 1. Characteristics of Patients Included in The Study

Author, Year	Gender	BMI	Mean Age	Others
Cao, 2020 ^[14]	DAA: 27 males/38 females PLA: 28 males/37 females (PLA) (p = 0.859)	DAA: 24.7 ± 1.9 kg/m ² PLA: 25.1 ± 1.8 kg/m ² (p = 0.180)	DAA: 61.4 ± 12.8 years PLA: 62.4 ± 8.3 years (p = 0.564)	Hemoglobin (Hb): 131.7 ± 9.9 g/L (DAA) vs. 133.4 ± 6.3 g/L (PLA), p = 0.228 Harris Hip Score (HHS): 45.8 ± 4.0 (DAA) vs. 46.8 ± 6.5 (PLA), p = 0.272 Visual Analog Scale (VAS): 5.9 ± 1.3 (DAA) vs. 6.2 ± 1.1 (PLA), p = 0.085
Cheng, 2017 ^[15]	NA	NA	NA	
Rodriguez, 2014 ^[16]	DAA: 28 men, 32 women PA: 26 men, 34 women	DAA: BMI 27 ± 4 PA: 28 ± 4	DAA: 60 ± 10 years PA: 59 ± 6 years	
Taunton, 2018 ^[17]	DAA: 49 females MPA: 49 females (p = 0.46)	DAA: 29 ± 22 kg/m ² MPA: 30 ± 4 kg/m ² (p = 0.44)	DAA: 65 ± 10 years PA: 64 ± 11 years	
Barret, 2019 ^[18]	DAA: 29 males /14 females PA: 19 males/25 females (p = 0.0313)	DAA: 30.7 ± 5.4 PA: 29.1 ± 5.0 (p = 0.1462)	DAA: 61.4 ± 9.2 PA: 63.2 ± 7.7 p = 0.3159	
Haynes, 2022 ^[19]	NA	NA	NA	Follow-up: DAA: 1.7 ± 2.0 years PA: 3.1 ± 3.3 years
Tsukada, 2015 ^[20]	DAA: 125 females/14 (males) PA: 147 females/30(males) (p = 0.08)	DAA: 23.0 ± 3.0 PA: 23.9 ± 3.7 (p = 0.03)	DAA: 66.7 ± 9.8 PA: 61.7 ± 10.3 (p = <0.0001)	Follow up: DAA: 5.3 ± 1.2 years PA: 9.2 ± 2.5 years
Balasubramaniam, 2016 ^[21]	DA: 25 males/ 25 females PA: 14 males/ 28 females	DAA: 31.3 (5.2) PA: 29.9 (6.7) (p = 0.27)	DAA: 62.5 (9.01) PA: 57.0 (12.84) (p = 0.02)	

Outcome of Dislocation Rate after Procedure

The studies outlined investigate the dislocation rates associated with different surgical approaches, specifically the direct anterior approach (DAA) and the posterolateral/posterior approach (PA), in total hip arthroplasty (Table 2). In the majority of studies, the dislocation rates for the DAA were either very low or non-existent. For instance, Cao (2020) reported no dislocations in the DAA group, compared with 2 in the PA group. Similarly, Rodriguez (2014) and Tsukada (2015) found no dislocations in the DAA groups,

whereas the PA groups experienced 1 and 3 dislocations, respectively. Other studies, such as Cheng (2017), Taunton (2018), and Barret (2019), reported a single dislocation in both the DAA and PA groups. Haynes (2022) reported the most significant sample, with significantly more dislocations in the PA group (126) than in the DAA group (26). In contrast, Balasubramaniam (2016) found no dislocations in the DAA group and one in the PA group. Overall, these studies suggest that the DAA may be associated with a lower risk of dislocation than the PA, though results vary by study design and sample size.

Table 2. Outcomes of the Dislocation Rate of The Study

Author, Year	Study Design	Country	Intervention	Comparison	Outcome
Cao, 2020 ^[14]	Prospective randomized study	China	DAA (n= 65 patients)	PA (n=65 patients)	Dislocation rates outcome: DAA (0) PA (2)
Cheng, 2017 ^[15]	Prospective randomized study	Australia	DAA (n=35 patients)	PA (n=38 patients)	Dislocation rates outcome: DAA (1) anterior dislocation, PA (1) posterior dislocation
Rodriguez, 2014 ^[16]	Non-randomized study	USA	DAA (n=28 patients)	PA (n=27 patients)	Dislocation rates outcome: DAA (0) PA (1)
Taunton, 2018 ^[17]	Randomized clinical trial	USA	DAA (n=52 patients)	Mini-posterior approach total hip arthroplasty (MPA-THA) n = 49 patients	Dislocation rates outcome: DAA (1) MPA (1)
Barret, 2019 ^[18]	Prospective randomized study	USA	DAA (n= 43 patients)	PA (n=44 patients)	Dislocation rates outcome: DAA (1) PA (1)
Haynes, 2022 ^[19]	Prospective randomized study	USA	DAA (n= 5065 patients)	PA (n=3775 patients)	Dislocation rates outcome: DAA (26) PA (126)
Tsukada, 2015 ^[20]	Retrospective Study	Japan	DAA (n=139 patients)	PA (n= 77 patients)	Dislocation rates outcome: DAA (0) PA (3)
Balasubramaniam, 2016 ^[21]	Retrospective Study	Australia	DAA (n= 50 patients)	PA (n= 42 patients)	Dislocation rates outcome: DAA (0) PA (1)

DISCUSSION

The studies analyzed demonstrate a consistent trend favoring the DAA in terms of lower dislocation rates. For instance, Cao (2020), Rodriguez (2014), and Tsukada (2015) reported no dislocations in patients who underwent DAA, whereas the PA groups in these studies experienced dislocations. Specifically, Tsukada's analysis showed a significant difference: three dislocations in the PA group versus none in the DAA group. This pattern suggests that DAA may offer superior joint stability, potentially due to the preservation of the posterior capsule and surrounding musculature, which are often compromised in the PA.

However, some studies present a more nuanced picture. For example, Cheng (2017) and Taunton (2018) found equal dislocation rates between DAA and PA, with one dislocation reported for each group. These findings indicate that while DAA may generally reduce the risk of dislocation, other factors, such as surgical

expertise, patient selection, and postoperative care, play critical roles in determining outcomes. The most extensive study by Haynes (2022), with over 8,000 patients, showed a significantly higher number of dislocations in the PA group (126) than in the DAA group (26). This large-scale data further reinforces the trend observed in smaller studies, suggesting that DAA may be the more favorable approach for minimizing dislocation risk at the population level.

The DAA, which utilizes an intermuscular plane for surgical exposure, theoretically preserves the periarticular muscles of the hip and reduces muscle damage. A randomized prospective study comparing muscle damage between the DAA and the lateral approach, using serum markers and MRI, demonstrated that the DAA caused less muscle damage. However, this muscle damage did not affect functional outcomes after three months post-surgery. On the other hand, the reduced postural restrictions associated with DAA may alleviate stress on

the hip joint, leading to improved patient outcomes.^[22]

In Cao's study, patients in the DAA group experienced shorter hospital stays, better pain relief, and higher functional scores in the early postoperative period.^[14] Aligning with findings from several earlier studies.^[23-25] Parvizi et al. and Nakata et al. compared DAA with other approaches and found that DAA was associated with faster recovery of hip function and less pain during early rehabilitation. Additionally, the DAA group had significantly lower VAS pain scores at 24, 48, and 72 hours postoperatively.^[26,27]

In Cheng's 2017 study, the analysis showed no significant differences between the DAA (n = 35) and PA (n = 37) groups regarding the primary outcome. However, subgroup analysis for one surgeon showed that the DAA group had a shorter hospital stay, required fewer postoperative opioids, and had more minor wounds. These benefits were counterbalanced by longer operative times, greater intraoperative blood loss, and weaker hip flexion at 2 and 6 weeks. Each group had one dislocation, and one patient in the DAA group required reoperation due to leg-length discrepancy. DAA THA shows comparable outcomes to PA THA. The choice of surgical approach should consider patient-specific factors, as well as the surgeon's preference and experience.^[15]

In Rodriguez's nonrandomized study, some functional benefits were observed with the direct anterior approach, but these advantages were short-lived, lasting no more than 6 weeks. There were no differences between the two groups in terms of general health outcomes, operative time, complications, or component alignment. The study had certain limitations, including variations in postoperative instructions related to dislocation precautions. This led to a psychological bias, making patients more comfortable with moving the limb, thereby potentially enhancing early recovery in the direct anterior approach group.^[16]

In Taunton's 2018 randomized clinical trial, both the direct anterior and posterior approaches showed excellent early

postoperative recovery with a low risk of complications. Patients in the DAA group reached certain functional milestones slightly faster and showed differences in advanced quantitative activity monitoring at 2 weeks postoperatively. However, by 8 weeks postoperatively, there were no significant differences in outcomes between the two approaches, and no differences were observed at the 1-year follow-up. Both surgical techniques effectively and accurately replicated patient anatomy, as evidenced by leg length and offset measurements. The placement of the acetabular component was consistently reliable in both groups, with abduction angles and anteversion well-maintained. No instances of component loosening, subsidence, or misalignment were observed in either group. Hamilton et al. found that 92% of DAA hips and 64% of PA hips fell within the Lewinnek safe zone for acetabular anteversion (5° to 25°). Additionally, Hamilton et al. reported that 90% of DAA hips and 79% of PA hips had acetabular abduction angles of 30° - 50°.^[28] Taunton's study showed minimal differences, with 97% of DAA and 87% of MPA hips within the safe zone, and no hips had an abduction angle of 55° or more. These results indicate that, with adequate surgical skill, both approaches yield satisfactory radiographic outcomes.^[17]

Postoperative dislocation rates are lower with the Direct Anterior Approach (DAA), mainly due to supine patient positioning, possible intraoperative C-arm use, and more precise implant placement. In Barrett's study, both the DAA and the Posterior Approach (PA) show favorable outcomes at an average 5-year follow-up, with similar rates of survivorship, function, complications, and radiographic outcomes.^[25] Numerous case series with over 1,000 total hip arthroplasties (THAs) using the Direct Anterior Approach (DAA) have reported low dislocation rates. Bhandari et al. found that out of 1,277 hips, eight (0.6%) experienced dislocation.^[29] Sariali et al. observed dislocation in 27 out

of 1,764 hips (1.5%)^[30], while Siguier et al. reported dislocation in 10 out of 1,037 hips (1.0%).^[31] Postoperative dislocation is influenced by soft tissue tension. In Haynes' single-institution cohort, the Direct Anterior Approach (DAA) demonstrated lower dislocation risk, higher survivorship with dislocation as the endpoint. It reduced the risk of revision for instability compared with the Posterior Approach (PA).^[19] The DAA preserves soft-tissue tension by avoiding detachment of the muscle or tendon during THA^[25], which may contribute to the lower dislocation rates observed in our study.

While this review provides valuable insights into the differences in dislocation rates between the DAA and PA approaches, several limitations must be acknowledged. First, there is considerable heterogeneity in the included studies regarding patient demographics, surgical techniques, and follow-up durations. Variability in surgical skill, patient selection, and postoperative care may influence outcomes, making it challenging to generalize the results across settings. Additionally, most studies included in this review have relatively short follow-up periods, which limits our understanding of the long-term effects of these surgical approaches. Moreover, several studies were nonrandomized or had small sample sizes, which may introduce bias and affect the validity of the findings. Future research should focus on large-scale randomized controlled trials with long-term follow-up to better assess the impact of DAA and PA on dislocation rates and functional outcomes. Studies should standardize surgical techniques, follow-up durations, and patient demographics to reduce variability and improve comparability. Additionally, further research is needed to explore the role of surgeon experience, patient-specific factors (such as obesity and joint deformity), and other technical variables (such as implant type and positioning) in determining dislocation rates. Finally, investigations into functional recovery and quality of life following THA with DAA

and PA would provide a more comprehensive understanding of the long-term benefits and risks of these approaches.

CONCLUSION

Approaches performed in a supine position, such as the Direct Anterior Approach (DAA), offer greater control over inclination and anteversion, which may help reduce the risk of dislocation. Although subgroup analyses indicated that most dislocations occurred in the posterior approach group and that the DAA was associated with a lower, though not statistically significant, risk of dislocation, further research is needed. Additional studies should validate these findings and explore other factors that might influence dislocation rates in total hip arthroplasty (THA).

Declaration by Authors

Ethical Approval: Not Applicable

Acknowledgement: None

Source of Funding: None

Conflict of Interest: No conflicts of interest declared.

REFERENCES

1. Fontalis A, Yassen AT, Kayani B, Luo TD, Mancino F, Magan A, et al. Two-Dimensional Versus Three-Dimensional Preoperative Planning in Total Hip Arthroplasty. *J Arthroplasty* 2024;39:S80–7. <https://doi.org/10.1016/j.arth.2024.05.054>.
2. Patel N, Golwala P. Approaches for Total Hip Arthroplasty: A Systematic Review. *Cureus* 2023. <https://doi.org/10.7759/cureus.34829>.
3. Moretti VM, Post ZD. Surgical Approaches for Total Hip Arthroplasty. *Indian J Orthop* 2017;51:368–76. https://doi.org/10.4103/ortho.IJOrtho_317_16.
4. Realyvasquez J, Singh V, Shah AK, Ortiz D, Robin JX, Brash A, et al. The direct anterior approach to the hip: a useful tool in experienced hands or just another approach? *Arthroplasty* 2022;4:1. <https://doi.org/10.1186/s42836-021-00104-5>.

5. Angerame MR, Dennis DA. Surgical approaches for total hip arthroplasty. *Ann Jt* 2018;3:43–43. <https://doi.org/10.21037/aoj.2018.04.08>.
6. Choudhary A, Pisulkar G, Taywade S, Awasthi AA, Salwan A. A Comprehensive Review of Total Hip Arthroplasty Outcomes in Post-traumatic Hip Arthritis: Insights and Perspectives. *Cureus* 2024. <https://doi.org/10.7759/cureus.56350>.
7. Connolly KP. Direct anterior total hip arthroplasty: Literature review of variations in surgical technique. *World J Orthop* 2016;7:38. <https://doi.org/10.5312/wjo.v7.i1.38>.
8. Berend KR, Sporer SM, Sierra RJ, Glassman AH, Morris MJ. Achieving Stability and Lower-Limb Length in Total Hip Arthroplasty. *JBJS* 2010;92.
9. Langlais FL, Ropars M, Gaucher F, Musset T, Chaix O. Dual Mobility Cemented Cups Have Low Dislocation Rates in THA Revisions. *Clin Orthop Relat Res* 2008;466:389–95. <https://doi.org/10.1007/s11999-007-0047-9>.
10. Berry DJ, von Knoch M, Schleck CD, Harmsen WS. The Cumulative Long-Term Risk of Dislocation After Primary Charnley Total Hip Arthroplasty. *JBJS* 2004;86.
11. Khatod M, Barber T, Paxton E, Namba R, Fithian D. An Analysis of the Risk of Hip Dislocation with a Contemporary Total Joint Registry. *Clin Orthop Relat Res* 2006;447:19–23. <https://doi.org/10.1097/01.blo.0000218752.22613.78>.
12. van Steenberg LN, de Reus IM, Hannink G, Vehmeijer SB, Schreurs BW, Zijlstra WP. Femoral head size and surgical approach affect dislocation and overall revision rates in total hip arthroplasty: up to 9-year follow-up data of 269,280 procedures in the Dutch Arthroplasty Register (LROI). *HIP International* 2023;33:1056–62. <https://doi.org/10.1177/11207000231160223>.
13. Bistolfi A, Crova M, Rosso F, Titolo P, Ventura S, Massazza G. Dislocation Rate after Hip Arthroplasty within the First Postoperative Year: 36Mm versus 28Mm Femoral Heads. *HIP International* 2011;21:559–64. <https://doi.org/10.5301/HIP.2011.8647>.
14. Cao J, Zhou Y, Xin W, Zhu J, Chen Y, Wang B, et al. Natural outcome of hemoglobin and functional recovery after the direct anterior versus the posterolateral approach for total hip arthroplasty: a randomized study. *J Orthop Surg Res* 2020;15:200. <https://doi.org/10.1186/s13018-020-01716-4>.
15. Cheng TE, Wallis JA, Taylor NF, Holden CT, Marks P, Smith CL, et al. A Prospective Randomized Clinical Trial in Total Hip Arthroplasty—Comparing Early Results Between the Direct Anterior Approach and the Posterior Approach. *J Arthroplasty* 2017;32:883–90. <https://doi.org/10.1016/j.arth.2016.08.027>.
16. Rodriguez JA, Deshmukh AJ, Rathod PA, Greiz ML, Deshmane PP, Hepinstall MS, et al. Does the Direct Anterior Approach in THA Offer Faster Rehabilitation and Comparable Safety to the Posterior Approach? *Clin Orthop Relat Res* 2014;472:455–63. <https://doi.org/10.1007/s11999-013-3231-0>.
17. Taunton MJ, Trousdale RT, Sierra RJ, Kaufman K, Pagnano MW. John Charnley Award: Randomized Clinical Trial of Direct Anterior and Miniposterior Approach THA: Which Provides Better Functional Recovery? *Clin Orthop Relat Res* 2018;476:216–29. <https://doi.org/10.1007/s11999-000000000000112>.
18. Barrett WP, Turner SE, Murphy JA, Flener JL, Alton TB. Prospective, Randomized Study of Direct Anterior Approach vs Posterolateral Approach Total Hip Arthroplasty: A Concise 5-Year Follow-Up Evaluation. *J Arthroplasty* 2019;34:1139–42. <https://doi.org/10.1016/j.arth.2019.01.060>.
19. Haynes JA, Hopper RH, Ho H, McDonald JF, Parks NL, Hamilton WG. Direct Anterior Approach for Primary Total Hip Arthroplasty Lowers the Risk of Dislocation Compared to the Posterior Approach: A Single Institution Experience. *J Arthroplasty* 2022;37:495–500. <https://doi.org/10.1016/j.arth.2021.11.011>.
20. Tsukada S, Wakui M. Lower Dislocation Rate Following Total Hip Arthroplasty via Direct Anterior Approach than via Posterior Approach: Five-Year-Average Follow-Up Results. *Open Orthop J* 2015;9:157–62. <https://doi.org/10.2174/1874325001509010157>.

21. Balasubramaniam U, Dowsey M, Ma F, Dunin A, Choong P. Functional and clinical outcomes following anterior hip replacement: a 5-year comparative study versus posterior approach. *ANZ J Surg* 2016;86:589–93. <https://doi.org/10.1111/ans.13598>.
22. De Anta-Díaz B, Serralta-Gomis J, Lizaur-Utrilla A, Benavidez E, López-Prats FA. No differences between direct anterior and lateral approach for primary total hip arthroplasty related to muscle damage or functional outcome. *Int Orthop* 2016;40:2025–30. <https://doi.org/10.1007/s00264-015-3108-9>.
23. Zhao H-Y, Kang P-D, Xia Y-Y, Shi X-J, Nie Y, Pei F-X. Comparison of Early Functional Recovery After Total Hip Arthroplasty Using a Direct Anterior or Posterolateral Approach: A Randomized Controlled Trial. *J Arthroplasty* 2017;32:3421–8. <https://doi.org/10.1016/j.arth.2017.05.056>.
24. Müller M, Tohtz S, Springer I, Dewey M, Perka C. Randomized controlled trial of abductor muscle damage in relation to the surgical approach for primary total hip replacement: minimally invasive anterolateral versus modified direct lateral approach. *Arch Orthop Trauma Surg* 2011;131:179–89. <https://doi.org/10.1007/s00402-010-1117-0>.
25. Barrett WP, Turner SE, Leopold JP. Prospective Randomized Study of Direct Anterior vs Postero-Lateral Approach for Total Hip Arthroplasty. *J Arthroplasty* 2013;28:1634–8. <https://doi.org/10.1016/j.arth.2013.01.034>.
26. Nakata K, Nishikawa M, Yamamoto K, Hirota S, Yoshikawa H. A Clinical Comparative Study of the Direct Anterior With Mini-Posterior Approach. *J Arthroplasty* 2009;24:698–704. <https://doi.org/10.1016/j.arth.2008.04.012>.
27. Parvizi J, Restrepo C, Maltenfort MG. Total Hip Arthroplasty Performed Through Direct Anterior Approach Provides Superior Early Outcome. *Orthopedic Clinics of North America* 2016;47:497–504. <https://doi.org/10.1016/j.ocl.2016.03.003>.
28. Hamilton WG, Parks NL, Huynh C. Comparison of Cup Alignment, Jump Distance, and Complications in Consecutive Series of Anterior Approach and Posterior Approach Total Hip Arthroplasty. *J Arthroplasty* 2015;30:1959–62. <https://doi.org/10.1016/j.arth.2015.05.022>.
29. Mohit Bhandari, Joel M Matta, Dave Dodgin, Charles Clark, Phil Kregor, Gary Bradley, et al. Outcomes Following the Single-Incision Anterior Approach to Total Hip Arthroplasty: A Multicenter Observational Study. *Orthopedic Clinics of North America* 2009;40:329–42. <https://doi.org/10.1016/j.ocl.2009.03.001>.
30. Sariali E, Leonard P, Mamoudy P. Dislocation After Total Hip Arthroplasty Using Hueter Anterior Approach. *J Arthroplasty* 2008;23:266–72. <https://doi.org/10.1016/j.arth.2007.04.003>.
31. Siguier T, Siguier M, Brumpt B. Mini-incision Anterior Approach Does Not Increase Dislocation Rate. *Clin Orthop Relat Res* 2004;426:164–73. <https://doi.org/10.1097/01.blo.0000136651.21191.9f>.

How to cite this article: Domy Pradana Putra, Edi Mustamsir, Krisna Yuarno Phatama, Ananto Satya Pradana, Raymond Pangestu Halim. Comparing hip dislocation rates in total hip arthroplasty direct anterior versus posterior or posterolateral approaches: a systematic review. *International Journal of Research and Review*. 2025; 12(12): 500-509. DOI: <https://doi.org/10.52403/ijrr.20251253>
