Is convention hip precaution necessary after total hip arthroplasty?

Vincent WK Chan¹, MT Chan², PK Chan¹, CH Yan¹ and KY Chiu¹

Abstract

Background: Dislocation is one of the most common causes of revision after total hip arthroplasty (THA). Standard hip precautions are thought to enhance soft-tissue healing and reduce dislocations. However, lifestyle restrictions affect a patient’s rehabilitation, quality of life (QOL), and satisfactions. We aim to compare conventional (CP) and minimal hip precautions (MP) after THA. Methods: Retrospective review of prospectively collected data in posterolateral approach THA. Chief surgeon assigns patients to CP or MP group. CP group had to sleep supine, use elevated toilet seats and chairs, avoid hip flexion greater than 90°, and no internal rotation or adduction for 6 weeks. MP group had no restrictions in hip movements, except for the combined flexion, adduction and internal rotation. All had a minimum 1-year follow-up. The number of dislocations, length of stay (LOS), time to independent toileting, Harris Hip Scores, QOL, and health perceptions, assessed by EuroQol 5D-5L, was compared between CP and MP groups. Results: Fifty-five THAs were included. CP group consisted of 17 primary and 12 revision THAs; MP group consisted of 21 primary and 5 revision THAs. There were two dislocations and both are revisions in CP group. Overall rate of dislocation was 6.9% in CP group and no dislocation in MP group (p-value > 0.05). MP group had shorter LOS (12 vs 19 days, p-value 0.04), higher EQ5D-5L health perception scores at 1-year (81.7 vs 70.9, p-value 0.01). Conclusion: MP group had shorter LOS and better health perceptions 1-year after THA with no increase in dislocation rates.

Keywords

Hip precaution, total hip arthroplasty, dislocation, rehabilitation

Introduction

Osteoarthritis is the most common type of arthritis and is one of the 10 most disabling diseases in developed countries.¹ Most patients with osteoarthritis have limitations in their joint movements and 25% cannot fulfill their major activities of daily living all across the world.¹ Although hip osteoarthritis is less common in Asian, it still has a prevalence of 3–15% in patients older than 65 years old in Asian regions.² Total hip arthroplasty (THA) is highly effective in decreasing pain, restore function, and improve quality of life (QOL) in patients with end-stage hip osteoarthritis.³,⁴ However, dislocation after THA is a catastrophic complication for both patients and surgeons. Despite all the advances in THA, dislocation remains the most common cause of revision, accounting for 17.3% in the United States.⁵ There are various risk factors for THA dislocation, including patient-specifics, surgical techniques, and postoperative factors. Traditionally, standard hip precautions avoid placing the hip in at-risk position, aims to nurture soft-tissue healing during the early postoperative phase to reduce the risk of
dislocations. However, recent studies showed that more
relaxed or minimal restrictions after posterolateral approach
THAs did not increase the rate of dislocation,6-9 while the
use of hip precautions slow down the pace of functional
recovery and reduce patient’s satisfaction.10-12

There are only several studies specifically examining
hip precautions in posterolateral approach THAs,6-10 and
even fewer exploring patient’s function and quality of with
different degrees of restrictions after THA.10 Therefore, we
design this study to investigate the role of convention and
minimal hip precautions in dislocation rate and patient’s
functional outcomes after posterolateral THA.

Patients and methods
A retrospective review of prospectively collected data in
patients undergoing total hip arthroplasties (THA) in a
tertiary-referral academic hospital. Our Institution Review
Board has approved this study with reference number UW
20-627. Patients scheduled for THA from 2016 to 2017 in
our institution were recruited. Patients were included if
they suffered from unilateral hip disease or if contralateral
hip successfully treated with THA, able to follow com-
mands for rehabilitation training, THA performed with the
posterolateral approach, and allowed full weight-bearing
walking postoperatively. Exclusion criteria include require-
ing protected weight-bearing postoperatively, known
dementia or other neuromuscular diseases, and any surgical
complications, such as wound problems, infections, frac-
tures, or nerve injuries. Patients with unsatisfactory hip
stability during the intra-operative assessment (hip disloca-
table at 90° flexion, 30° adduction and 45° internal rota-
tion) were also excluded from current study. All THA and
perioperative care were managed by the same team of sur-
geons and occupational therapists.

According to the chief surgeon’s decision, patients with
satisfactory hip stability during the intra-operative assess-
ment (hip not dislocatable at 90° flexion, 30° adduction and
45° internal rotation) were assigned to the minimal hip
precaution (MP) or convention hip precaution (CP) group.
The CP group received daily living (ADL) training by
occupational therapists, consisting of patient education and
ADL restrictions. The CP group used an abduction pillow
during the hospital stay and was advised to sleep supine,
used elevated toilet seats and chairs, avoided hip flexion to
greater than 90°, and no internal rotation or hip adduction
was allowed for 6 weeks. On the other hand, the MP group
was allowed to lean forward, cross-legs, and squat imme-
diately after THA. The MP group had no restrictions in the
hip range of movements, except for the combination of hip
flexion to greater than 90° and adduction and internal rota-
tion. MP group had no abduction pillow, no sleep restric-
tions, and no elevated toilet seats and chairs. Table 1
summarized the differences in ADL training.

Both CP and MP groups were follow-up for at least 1
year after THA. Baseline characteristics and various risk
factors for hip dislocation, such as diagnosis, femoral head
size, and intra-operative hip stability were compared. All
episodes of hip dislocation were collected via hospital
admission records and telephone interviews. Hip functions
were assessed using the Harris Hip Score (HHS, from 0 to
100). Patients’ quality of life (QOL) was assessed with the
EuroQol (EQ) 5D-5L questionnaire. EQ5D-5L consists of
six questions, and the first five questions assess five differ-
et dimensions of health, which are mobility, self-care,
usual activities, pain, and anxiety in a five-point Likert
scale, while the last question assesses the overall health
perception from 0 (extremely poor) to 100 (extremely
well). The EQ5D-5L rating from the first five questions
was transformed into an index score that ranges from
−0.281 (extreme problems) to 1 (no problem). Moreover,
patients’ length of stay (LOS) and time to achieve indepen-
dent toileting was used as a reflection of the patients’ reha-
bilitation progress. Readiness for discharge criteria was
used to minimize the psychosocial effect on the LOS.
Patients were considered fit for discharge if the medical
and wound conditions were stable with adequate pain con-
trol (visual analog scale less than 5 out of 10) and ADL
functions (independent walking and transfer).

The primary outcome is the difference in the hip dislo-
cation rate between the CP and MP groups. The secondary
outcomes include the differences in hip function and QOL
index scores.

Patients’ demographics and various risk factors were
analyzed with descriptive statistics and presented as means,
range, standard deviations (SD), and percentages. The chi-
square test was used to compare categorical variables,
while the student t-test was used to analyze parametric
variables. IBM SPSS statistic 26 software was used for
statistical analysis. A p-value of less than 0.05 was consid-
ered significant.

Results
Fifty-five THA patients with 29 and 26 in the CP and MP
group respectively were included for analysis. The mean
age in the CP and MP group was 67 years old (SD 10.1,
range 48 to 92 years old) and 65 years old (SD 14.9, range
36 to 83 years old) respectively. There were 16 females in
the CP and 18 females in the MP group. The CP group
included 19 cementless and 10 hybrid THAs, while the
MP group comprised 17 cementless and 9 hybrid THAs.
The CP group consisted of 17 primary and 12 revision
THAs, while there were 21 primary and 5 revision THAs
in the MP group. In both groups, the most and second most
common diagnosis for primary THA was avascular necro-
sis (AVN) of the femoral head and osteoarthritis of the hip
respectively. AVN accounted for 65% and 48% of the
primary THA in the CP and MP group respectively. The
12 revision THA in the CP group included eight insert
exchange for wear, one femoral and three cup revision for
loosening; while the MP group included three insert
Table 1. Summary of the differences in ADL training between conventional precaution and minimal precaution group.

| ADL                              | At-risk position for dislocation                                                                 | Conventional precaution                                                                 | Minimal precaution |
|----------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------|
| General principles               | Crossing legs & ankles. Toes turn inward.                                                        | No cross-legs/ankles & toes turn inward                                                  | No restriction     |
|                                  | Hip flex more than 90°, bending down to your feet or bringing your leg up toward you or over reaching forward | No hip bend toward chest No hip flexion more than 90°                                    | No restriction     |
|                                  | Twisting at the hip                                                                               | No twisting & ensure your body on the same direction of the toes of operated hip         | No restriction     |
| Sitting posture                  |                                                                                                  |                                                                                        |                    |
| Get on & off toilet              | Low seat causes knee above hip and leaning forward from sit to stand                             | Aids: Raised toilet seat                                                                | No restriction     |
|                                 |                                                                                                  | Skills:                                                                                |                    |
|                                 |                                                                                                  | Getting on toilet                                                                      |                    |
|                                 |                                                                                                  | Position the front of the toilet behind knees                                           |                    |
|                                 |                                                                                                  | Arm of non-operated side reach & press on the toilet frame, while hand of operated side hold against mobility aid. |                    |
|                                 |                                                                                                  | Slide operated leg in front when sitting down, while keeping the knee straight, and hip higher than knee |                    |
|                                 |                                                                                                  | Getting off toilet                                                                     |                    |
|                                 |                                                                                                  | Sit forward a little and both arms press on the toilet frame with operated leg sliding back to resume standing |                    |
| Wipe buttock from rear           | Bend over chest & both knees press one another at midline                                        | Skills: Extend knee of operated side to keep hip higher than knee                        | No restriction     |
| Wipe buttock from operated side  | Bend forward less than 90°, lean to good side with knee & toes of operated side turn inward      | Combined movement restricted as lifelong precaution                                       |                    |
| Flush toilet with body twisting to operated side | Twist body with knee of operated side turn inward                                             | Skills: Flush toilet after stand up with body & hip facing forward                       | No restriction     |
| Getting on & off a chair         | Low seat causes knee above hip and rocking body forward from sit to stand                        | Aids: Better is heavy chair with armrest and ensure the seat is recommended height that hip and knee on same level | No restriction     |
|                                 |                                                                                                  | Skills:                                                                                |                    |
|                                 |                                                                                                  | Position yourself and you can feel the front of the chair behind your knees             |                    |
|                                 |                                                                                                  | Reach back for the armrest of the chair and as lowering down, slide your operated leg out in front, keeping the knee as straight as possible |                    |
| Getting on & off bathtub         | Fall risks & toes bend inward                                                                   | Aids: Bathboard if height & width of bathtub is suitable                                 | Follow until able to get in and out safely |
|                                 |                                                                                                  | Shower chair for walk-in shower cubicle                                                 |                    |
|                                 |                                                                                                  | Skills: Position yourself and you can feel the edge of the bathboard behind your knees. |                    |
|                                 |                                                                                                  | Lower yourself onto the bath board, slide to the middle of the board. Suggested good leg places into the bathub first. Then swing or lift the operated leg into the bathtub. |                    |
| Dressing trousers               | Bend forward or bring knee toward chest                                                          | Aids: Dressing stick/long handle reacher                                                | No restriction     |
|                                 |                                                                                                  | Skills: Dress operated leg first and undress it last                                    |                    |
|                                 |                                                                                                  | Use dressing aids on the outside of operated leg to avoid twisting the hip always      |                    |
|                                 |                                                                                                  | Gather the leg hole of trousers and grip it by the long handle reacher                  |                    |
|                                 |                                                                                                  | Lower the trousers to the floor and hook them over the foot of operated leg            |                    |
|                                 |                                                                                                  | Keep hold the trousers by aids & pull them up to knee then put on the good leg         |                    |
| Put on socks & shoes            | Cross leg & bend over                                                                            | Aids: Stocking aid                                                                      | No restriction     |
|                                 |                                                                                                  | Long shoe horn                                                                         |                    |
|                                 |                                                                                                  | Skills: Follow the instructions of occupational therapist on using of stocking aids as varies across brands |                    |

(continued)
exchange for wear, one femoral and one cup revision for loosening. In the CP group, the preoperative EQ5D-5L Index score, EQ5D-5L health perception score, and HHS were 0.68 (SD 0.27), 68 (SD 17) and 50 (SD 24) respectively; while the above scores were 0.67 (SD 0.28), 67 (SD 23) in the MP group respectively. 36 mm was the most common femoral head diameter in the CP and MP and comprised 72% and 62% of THAs respectively. There were no statistically significant differences in the above baseline demographics, functional scores, and

| ADL                                  | At-risk position for dislocation                                      | Conventional precaution                                                                 | Minimal precaution                                                                 |
|---------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Getting into & out the private car or taxi | Bend over chest and low seat causes rocking body forward in stand up and sit down | Aids: Cushion & put plastic bag on seat to ease sliding Skills: Position the car away from the kerb with less of a drop to negotiate when sitting down. Getting into the rear seat of car. Keep walking back & position yourself with your walking aid so you can feel the seat behind your knees. One hand hold the door window fully wound down and the other hand press on the seat Duck neck the head & gently lower yourself down. Keep operated leg extended. When buttock sits on the side of seat then slide the whole body into the middle of seat. Finally, put the operated leg into the car. Getting off in reverse and ensure operated leg is out before standing | Follow until you can get in & out by usual pattern |
| Lying posture                        | Cross leg with toes turn inward or bend toward chest                 | Skills: Getting into the bed Position yourself with your walking aid so you can feel the bed behind your knees. Sit back far enough to give full support to the operated leg and then either swing your legs onto the bed, keeping them together and avoiding any twisting motion. Use your arms to lift yourself back onto the bed. Keeping legs together and use the good leg to help to lift operated leg onto the bed. Getting out the bed in reverse | No restriction |
| Bed transfer                          | Cross leg & toes point inward when lying on back                    | Lying on back with pillow between legs                                                   | No restriction |
| Sleep                                 | Cross leg & toes dangle & toes turn inward                          | Lying on non-operated side with operated leg on top with pillow below                     | No restriction |
| Standing posture                     | Bend down                                                           | Aids: Long handle reacher                                                               | No restriction |
| Pick up things on floor & bend to low cupboards/fridge/washing machine | Twist shoulders or turn at the waist toward operated leg while keeping that foot still or toes turn inward | Skills: Lift leg of operated side and weight bearing on good leg & turn whole body in direction of operated side Take small steps in the direction would like to turn mainly using good leg | Follow same precautions on first 6 weeks |
| Turning                               | Fall risk                                                           | Aids: suitable outdoor mobility aids                                                    | Follow same precautions on first 6 weeks |
| Going up & down the big step of mini-bus & bus | Fall risk                                                          | Skills: Going up the step. Hold the grab rail. Good leg step first and bring the operated leg up to the same step then bring up the mobility aids. Going down the step. Put the mobility aids on the lower step. Hold the grab rail. Put the operated leg on the lower step, then step down to the same step with your good leg. | Follow same precautions on first 6 weeks |

Table 1. (continued)
various risk factors for hip dislocation (p-value > 0.05) between both groups as shown in Table 2.

Concerning hip dislocations, there were two hip dislocations in this cohort and both were in the CP group and revision THA (Table 2). The overall incidence of hip dislocation was 6.9% in the CP group. There were no dislocations in the MP group. The differences between the CP and MP group dislocation rates were not statistically significant (p-value > 0.05), as shown in Table 3.

Concerning postoperative rehabilitation progress, the MP group had a significantly shorter LOS than the CP group (12 days vs 19 days, p-value 0.04) (Table 3). Moreover, the MP group was able to achieve independent toileting earlier, however, this was not statistically significant (5.7 days vs 9.4 days, p-value 0.13) (Table 3). Regarding QOL scores, the MP group had significantly higher EQ5D-5L health perception scores than the CP group at 1-year post-operation (81.7 vs 70.9, p-value 0.01) (Table 3). The EQ5D-5L index score (0.81 vs 0.91) and HHS at 1 year (82.3 vs 80.7) were not statistically different between the CP and MP groups (p-value > 0.05), as shown in Table 4.

**Discussion**

The main finding of this study is that patients with minimal hip precaution after THA have a significantly shorter length of stay and better health perception 1 year after surgery, while no differences in the rate of hip dislocation. This has important clinical implications, as conventional hip precautions restrict patient’s movement in daily life, such as sleeping supine, and use of elevated toilet seats and chairs, which causes inconvenience and induces extra-cost in purchasing additional equipment. Moreover, restrictive hip precautions also go against the principle of fast-track arthroplasty, which focuses on enhancing the patient’s recovery, reducing the length of stay, and returning the patient to the function of ADL. Hip precautions advise the

---

**Table 2.** Baseline demographics, pre-operative hip function and various risk factors for hip dislocation in the Convention Precaution and Minimal Precaution group.

| Demographics          | Convention precaution (n = 29) | Minimal precaution (n = 26) | P-value |
|-----------------------|-------------------------------|----------------------------|---------|
| Age                   | 67 (SD 10.1, 48–92)           | 65 (SD 14.9, 36–83)        | 0.28    |
| Sex (Female:Male)     | 16:13                         | 18:8                       | 0.41    |
| **Pre-operative QOL and function** |                              |                            |         |
| EQSD-5L Index score (−0.281 − I) | 0.68 (SD 0.27)     | 0.67 (SD 0.28)         | 0.92    |
| EQSD-5L Health perception (0–100) | 68 (SD 17)              | 67 (SD 16)               | 0.83    |
| Harris Hip Score (0–100) | 50 (SD 24)                    | 50 (SD 23)                | 0.88    |
| **Risk factors for hip dislocation** |                              |                            |         |
| Primary: Revision THA | 17:12                         | 21:5                      | 0.09    |
| Diagnosis for primary THA |                                |                            | 0.52    |
| − AVN                 | 11/17 (65%)                   | 10/21 (48%)               |         |
| − OA                  | 4/17 (24%)                    | 6/21 (28%)                |         |
| − Others              | 2/17 (11%)                    | 5/21 (24%)                |         |
| Cause for revision THA|                                |                            | 0.79    |
| − Insert exchange for wear | 8/12 (67%)              | 3/5 (60%)                 |         |
| − Femoral revision for loosening | 1/12 (8%)                  | 1/5 (20%)                 |         |
| − Cup revision for loosening | 3/12 (25%)              | 1/5 (20%)                 |         |
| 36 mm femoral head diameter | 21/29 (72%)            | 16/26 (62%)               | 0.57    |
| Indislocatable at 90° flexion and 30° adduction, 30° internal rotation | 24/29 (83%)               | 22/26 (85%)               | 1.0     |

SD denotes standard deviation.

**Table 3.** Incidence of hip dislocation in convention precaution and minimal precaution group.

|                      | Convention precaution (n = 29) | Minimal precaution (n = 26) | P-value |
|----------------------|-------------------------------|----------------------------|---------|
| Primary THA          | 0% (0/17)                     | 0% (0/21)                  | 1.0     |
| Revision THA         | 16.7% (2/12)                  | 0% (0/5)                   | 1.0     |
| Total dislocations   | 6.9% (2/29)                   | 0% (0/26)                  | 0.5     |

**Table 4.** Post-operative hip function and quality of life scores in the conventional precaution and minimal precaution group.

|                      | Convention precaution (n = 29) | Minimal precaution (n = 26) | P-value |
|----------------------|-------------------------------|----------------------------|---------|
| Length of stay       | 19 days (SD 15.5)             | 12 days (SD 8.7)           | 0.04    |
| Independent toileting| 9.4 days (SD 11.1)            | 5.7 days (SD 5.7)          | 0.13    |
| EQSD-5L Index score at 1 year | 0.81 (SD 0.22)   | 0.91 (SD 0.12)            | 0.06    |
| EQSD-5L Health perception at 1 year | 70.9 (SD 17.1) | 81.7 (SD 13.0)           | 0.01    |
| HHS at 1 year        | 82.3 (SD 10.5)                | 80.7 (SD 15.4)            | 0.77    |

HSS denotes Harris Hip Score; SD denotes standard deviation.
patient to limit certain hip motions and perform daily activities with specific skills, which constantly reminds the patient of their post hip arthroplasty status, which might perpetuate their sick role and affect the progress of recovery.

THA is a successful treatment in end-stage osteoarthritis of the hip and shown to significantly reduce pain, restore function, and improved patient-reported quality of life. However, few studies have examined the effect of convention hip precautions on a patient’s quality of life and health perceptions. Mikkelsen et al. compared 365 posterolateral THAs with restricted and unrestricted rehabilitation protocol in terms of hip function in ADL, QOL, and ability to return to work. There were no differences in QOL scores, but significantly more patients in the unrestricted group were able to perform ADL independently and returned to work at 6 weeks postoperatively. Ververeli et al. reported a randomized prospective study involving 81 anterolateral THAs and found that reduced hip precaution increases the pace of recovery compared with conventional hip precaution rehabilitation. In this study, we used the EQ5D-5L, which is a valid and sensitive questionnaire to describe and value health in multiple dimensions. We found that the minimal hip precaution group had better health perception at 1 year postoperatively (81.7 vs 70.9, p-value 0.01). Although the compliance to hip precaution varies, most patients do remember the limitation prescribed, this constant mental reminder may contribute to the lower health perception in convention hip precaution patients even at 1 year.

A systematic review and meta-analysis in 2016 included six studies with a mix of anterolateral and posterolateral approaches, which reported the dislocation rate of the unrestricted and restricted group to be 1% and 1.5%, respectively. Fewer studies examine the role of minimal hip precaution in the posterolateral approach. Traditionally, THA using a posterolateral approach has a higher dislocation rate. However, the advancement in surgical technique and increasing attention in soft-tissue repair reduces the dislocation rate in the posterior approach. Recent meta-analysis showed no differences in the risk of dislocations between posterior and anterior approaches. A study by Brown and Ezzet reported no differences in early dislocations between standard and relaxed hip precautions with posterolateral approaches. A large cohort study by Van der Weegen et al., included more than 2000 primary THAs performed with a posterolateral approach, found minimal restrictions was not inferior to usual restrictions in dislocation rates, however, more hips had a femoral head larger than 32 mm in minimal restrictions group. In this study, there was no dislocation in all primary THA, while two (16.7%) dislocations in revision THA with conventional hip precautions. One of the reasons for a low dislocation rate is because of the use of a large femoral head, 62% and 72% of THA have 36 mm femoral head in the MP and CP group respectively. Revision surgery is a well-established risk factor for dislocation after THA with reported dislocation rates ranges from 6.6% to 21.2%. Although there were five revision THAs in the MP group, none of dislocated. However, the numbers are too few to draw any conclusions.

This study has several strengths. The same surgical team with four chief surgeons and comparable surgical techniques performed all the primary and revision THAs. The perioperative care and rehabilitation protocols are standardized and carried out by the same team of therapists to minimize confounding factors that affect hip dislocation rates. Most of the previous literature examining hip precautions after THR focused on its effect on dislocation, few look into the patient’s QOL and health perception. In this study, we assess the patient using the EQ5D-5L questionnaire and report on the effect on QOL and health perception with or without hip precautions. Moreover, all patients have at least 1-year follow-up, which is longer than most other studies examining this matter, allowing us to identify any hip dislocation beyond the early postoperative phase.

Our study had limitations. One major limitation is selection bias. As the assignment to CP or MP group is determined by the chief surgeon after considering multiple factors, such as intra-operative assessment of hip stability, and patient compliance to rehabilitation regimen etc. Although the difference in revision arthroplasty did not reach statistical significance, there are more revision surgeries in the CP group, which increases the overall dislocation risk. Furthermore, various factors are affecting the risk of THA dislocation that was not controlled in this study, such as implant position, co-existing spinal pathologies, soft-tissue repair, and soft-tissue tension etc. Whilst there are only fifty-five patients in this study, our results are encouraging and act as a pilot for larger scale study to explore minimal hip precautions on a patient’s functional recovery, QOL, and health perceptions. Despite insert exchange being the most common cause for revision in both groups, we understand that revision hip surgeries are heterogeneous, with various factors affecting hip stability. Nevertheless, we reported our experience with minimal hip precaution in revision THAs to motivate future studies to examine the role of hip precaution and enhanced recovery in the setting of revision hip arthroplasties.

Even though more and more evidence supporting the use of relaxed hip precaution does not increase hip dislocation rates, the idea of activity restriction after THA is deeply rooted in many surgeons, therapists, and patients. A survey in 2018 from the American Association of Hip and Knee Surgeons and the Canadian Arthroplasty Society reported 44% of respondents universally prescribed hip precautions after THA. Another survey in 2016 to physiotherapist and occupational therapist in the United Kingdom reported 97% of respondents routinely advise hip precautions with the duration ranges from 6 weeks to lifetime restrictions.
Despite recent advocates of relaxing life-style restrictions after THA, it is still a matter of debate whether such practice can improve patient’s recovery and clinical outcomes. A multicenter randomized controlled study by Dietz et al. found that no hip precaution group had lower Hip Injury and Osteoarthritis Outcome Jr scores than standard precaution group at 2 weeks. The author suggested that self-limiting behaviors of the patients with no hip precaution prescribed contributed to their results. Hence, more studies are required to investigate the effect of relaxing traditional hip precaution after THA on the pace of recovery, QOL, health perceptions, and risk of dislocations.

Conclusion

Patients with minimal hip precaution had a shorter length of stay and better health perception scores 1-year after THA, while no increase in THA dislocation rates.

Acknowledgements

We would like to acknowledge the occupational therapists June Chao, Viola Wong, Milly Lee and personal care assistants for providing occupational therapy and longitudinal data collection for this study.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Vincent WK Chan https://orcid.org/0000-0003-3223-0604

References

1. WHO. Chronic diseases and health promotion. 2020. https://www.who.int/chp/topics/rheumatic/en/.
2. Fransen M, Bridgett L, March L, et al. The epidemiology of osteoarthritis in Asia. Int J Rheum Dis 2011; 14(2): 113–121.
3. Learmonth ID, Young C and Rorabeck C. The operation of the century: total hip replacement. Lancet 2007; 370(9597): 1508–1519.
4. Ferguson RJ, Palmer AJ, Taylor A, et al. Hip replacement. Lancet 2018; 392(10158): 1662–1671.
5. Gwam CU, Mistry JB, Mohamed NS, et al. Current epidemiology of revision total hip arthroplasty in the United States: national inpatient sample 2009 to 2013. J Arthroplasty 2017; 32(7): 2088–2092.
6. Kornuijt A, Das D, Sijbesma T, et al. The rate of dislocation is not increased when minimal precautions are used after total hip arthroplasty using the posterolateral approach: a prospective, comparative safety study. Bone Joint J 2016; 98-b(5): 589–594.
7. van der Weegen W, Kornuijt A, Das D, et al. It is safe to use minimal restrictions following posterior approach total hip arthroplasty: results from a large cohort study. Hip Int 2019; 29(6): 572–577.
8. Gromov K, Troelsen A, Otte KS, et al. Removal of restrictions following primary THA with posterolateral approach does not increase the risk of early dislocation. Acta Orthop 2015; 86(4): 463–468.
9. Brown ML and Ezzet KA. Relaxed hip precautions do not increase early dislocation rate following total hip arthroplasty. J Am Acad Orthop Surg 2020; 28(10): e440–e447.
10. Mikkelsen LR, Petersen MK, Soballe K, et al. Does reduced movement restrictions and use of assistive devices affect rehabilitation outcome after total hip replacement? A non-randomized, controlled study. Eur J Phys Rehabil Med 2014; 50(4): 383–393.
11. van der Weegen W, Kornuijt A and Das D. Do lifestyle restrictions and precautions prevent dislocation after total hip arthroplasty? A systematic review and meta-analysis of the literature. Clin Rehabil 2016; 30(4): 329–339.
12. Peak EL, Parvizi J, Ciminiello M, et al. The role of patient restrictions in reducing the prevalence of early dislocation following total hip arthroplasty: a randomized, prospective study. J Bone Joint Surg Am 2005; 87(2): 247–253.
13. Bagaric I, Sarac H, Borovac JA, et al. Primary total hip arthroplasty: health related quality of life outcomes. Int Orthop 2014; 38(3): 495–501.
14. Dimitriou D, Antoniades A, Flury A, et al. Total Hip Arthroplasty improves the quality-adjusted life years in patients who exceeded the estimated life expectancy. J Arthroplasty 2018; 33(11): 3484–3489.
15. Rosenlund S, Broeng L, Holsgaard-Larsen A, et al. Patient-reported outcome after total hip arthroplasty: comparison between lateral and posterior approach. Acta Orthop 2017; 88(3): 234–247.
16. Ververeli PA, Lebby EB, Tyler C, et al. Evaluation of reducing postoperative hip precautions in total hip replacement: a randomized prospective study. Orthopedics 2009; 32(12): 889.
17. Herdman M, Gudex C, Lloyd A, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). Qual Life Res 2011; 20(10): 1727–1736.
18. Janssen MF, Pickard AS, Golicki D, et al. Measurement properties of the EQ-5D-5L compared to the EQ-5D-3L across eight patient groups: a multi-country study. Qual Life Res 2013; 22(7): 1717–1727.
19. Lee GRH, Berstock JR, Whitehouse MR, et al. Recall and patient perceptions of hip precautions 6 weeks after total hip arthroplasty. Acta Orthop 2017; 88(5): 496–499.
20. Pellicci PM, Bostrom M and Poss R. Posterior approach to total hip replacement using enhanced posterior soft tissue repair. Clin Orthop Relat Res 1998; (355):224–228.
90 days of follow-up? A systematic review with meta-analysis. *J Arthroplasty* 2018; 33(4): 1296–1302.

22. Wetters NG, Murray TG, Moric M, et al. Risk factors for dislocation after revision total hip arthroplasty. *Clin Orthop Relat Res* 2013; 471(2): 410–416.

23. Cogan A, Klouche S, Mamoudy P, et al. Total hip arthroplasty dislocation rate following isolated cup revision using Hueter’s direct anterior approach on a fracture table. *Orthop Traumatol Surg Res* 2011; 97(5): 501–505.

24. Mahomed NN, Barrett JA, Katz JN, et al. Rates and outcomes of primary and revision total hip replacement in the United States medicare population. *J Bone Joint Surg Am* 2003; 85(1): 27–32.

25. Lewinnek GE, Lewis JL, Tarr R, et al. Dislocations after total hip-replacement arthroplasties. *J Bone Joint Surg Am* 1978; 60(2): 217–220.

26. Tezuka T, Heckmann ND, Bodner RJ, et al. Functional safe zone is superior to the Lewinnek safe zone for total hip arthroplasty: why the Lewinnek safe zone is not always predictive of stability. *J Arthroplasty* 2019; 34(1): 3–8.

27. Fessy MH, Putman S, Viste A, et al. What are the risk factors for dislocation in primary total hip arthroplasty? A multicenter case-control study of 128 unstable and 438 stable hips. *Orthop Traumatol Surg Res* 2017; 103(5): 663–668.

28. Carli AV, Poitras S, Clohisy JC, et al. Variation in use of postoperative precautions and equipment following total hip arthroplasty: a survey of the AAHKS and CAS membership. *J Arthroplasty* 2018; 33(10): 3201–3205.

29. Smith TO and Sackley CM. UK survey of occupational therapist’s and physiotherapist’s experiences and attitudes towards hip replacement precautions and equipment. *BMC Musculoskelet Disord* 2016; 17:228.

30. Dietz MJ, Klein AE, Lindsey BA, et al. Posterior hip precautions do not impact early recovery in total hip arthroplasty: a multicenter, randomized, controlled study. *J Arthroplasty* 2019; 34(7 s): S221–S227.e1.