



Patient restrictions following total hip arthroplasty: A national survey

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In this prospective nation-wide web based survey we describe the current practice regarding patient restrictions following total hip arthroplasty.

A web-based survey involving 20 items was developed and tested prior to administration. The questionnaire included general information, type of restrictions, specification and duration of restrictions. The target population consisted of all orthopaedic surgeons registered with the Dutch Orthopaedic Association working at one of the 94 orthopaedic departments in the Netherlands.

The response rate of the orthopaedic departments was 78% (n=74). The majority of orthopaedic departments use patient restrictions following THA. Restrictions were used with different rates per type of surgical approach: anterior (69%), anterolateral (100%), straight lateral (94%) and posterolateral (93%). The duration of these restrictions is generally six weeks.

Patient restrictions following THA are current practice, regardless of the surgical approach.

Keywords : Orthopaedic surgery ; total hip arthroplasty ; patient restrictions ; survey.

INTRODUCTION

Patient restrictions following total hip arthroplasty (THA) are traditionally advised to prevent early hip dislocation (1). More recently, the need of these historically based restrictions has become the subject of debate (14).

Several observational studies show that so called “non-restriction” or “reduced restriction” protocols do not increase the dislocation rate (2,4,7,11). Two randomized trials have shown no increase in early dislocation rate with a reduced restriction protocol for the anterolateral approach (5,12). Furthermore, liberal restriction protocols tend to lead to earlier and better resumption of activities, higher patient satisfaction and earlier return to work without higher dislocation rates (4,5,14).

Guidelines of national orthopaedic associations do not give any advice on the type or duration of patient restrictions following THA (10). Therefore it is not known which restrictions are used and for how long in clinical practice today. Without knowledge on restrictions commonly applied in routine care it is difficult to determine the clinical relevance of studies comparing groups of non-restriction or reduced restriction protocols.

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The aim of this prospective nation-wide survey study in the Netherlands was to describe the current practice regarding patient restrictions following THA. We hypothesized that restrictions are commonly used and that the type of surgical approach has an influence on the restrictions applied.

METHODS

We designed a web-based survey (www.Surveymonkey.com) specifically for the purpose of this study that consisted of three parts (general information, type of restrictions, and the specification and duration of restrictions), with 20 questions in total (Appendix 1). During the process of designing the survey we applied the 12 principles for conducting an orthopaedic survey as stated by Sprague et al. 2009 (9). We pretested the survey, in a large non-academic orthopaedic centre with 14 orthopaedic surgeons in the eastern part of the Netherlands, in order to ensure that the participants understood it. Following the results of the pretest, we revised the survey, reorganized and rephrased some of the questions and shortened the length of the survey (Figure 1). We administered a cross-sectional national survey study to a sample 692 orthopaedic surgeons from 94 orthopaedic surgical departments who were officially registered as members of the Dutch Orthopaedic Association.

The first part of the survey assessed the surgical experience of the orthopaedic surgeon as well as his/her orthopaedic department with THA (volume and type of surgical approach). The type of surgical approach was divided into anterior, anterolateral, straight lateral and posterolateral. We excluded the orthopaedic surgeons who did not perform any THA from any further analysis.

The second part of the questionnaire assessed the type of restrictions that are applied. We divided the type of restrictions applied on patients into three categories:

1) The use of *movement* restrictions (no flexion over 90 degrees, no adduction, no rotation more than 45 degrees or no combined flexion, adduction and rotation)

2) The use of *assistive devices* such as mobilization aids (i.e. crutches), sleeping aids (i.e. abduction pillow) and ADL aids (i.e. toilet seat)

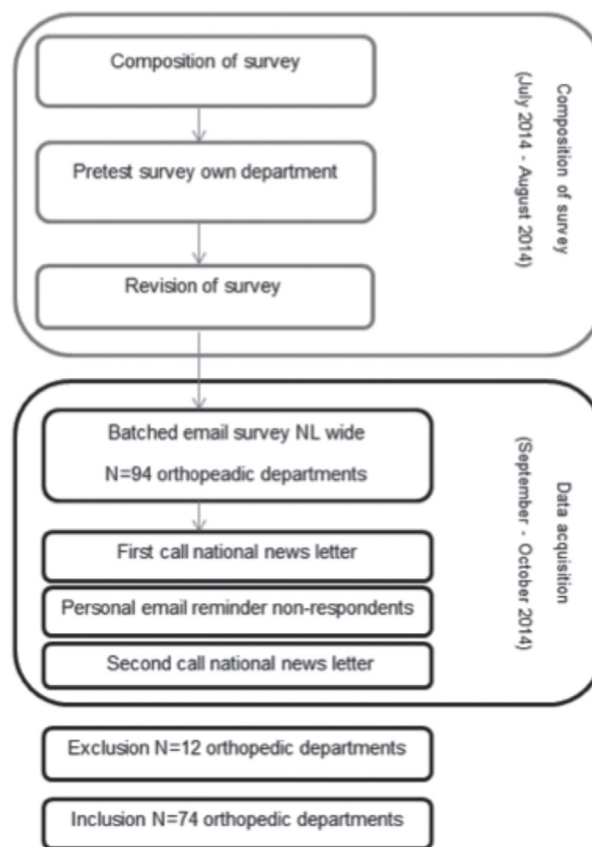


Fig. 1. — Flowchart describing method

3) The use of *daily life functional restrictions* including sleeping position, driving a car and sexual activities.

The third part of the questionnaire elaborated on the specifications of the three types of restrictions and their duration. Furthermore, we asked if there were special circumstances such as ASA classification, age, reason for THA (neck of femur fracture, developmental dysplasia of the hip, rheumatic disorders) or intra-operative findings (greater trochanter fracture or rupture of the gluteus medius tendon) that could influence the restriction protocol routinely used.

We approached the respondents by personal email requesting them to fill out the survey questionnaire as well as by non-personal invitation via a call in the newsletter of the Dutch Orthopaedic Association. A second call in the newsletter of the Dutch Orthopaedic Association served as a reminder to

all responders. Finally, we sent personal email reminders to the non-responders. We informed the respondents about the scientific relevance of the study and assured that the data used would be coded and anonymous. In return we received a total of 178 surveys. Of these, we excluded 11 surveys filled out by orthopaedic surgeons who no longer perform any THAs and 31 incomplete surveys with a large number of missing answers, which made them unsuitable for further analysis.

Statistical analysis

We applied descriptive statistics regarding the amount of THA’s performed on a yearly basis. In order to assure a representative view of the use of restrictions after THA in clinical practice, data of individual respondents was regrouped into response per orthopaedic department for each of the surgical approaches enlisted above. By doing so, we were able to correct for the dominance of large group of respondents belonging the same orthopaedic department (c.q. the size of the different orthopaedic departments) thereby reducing the risk of distorting the widespread national use of THA restrictions in the Netherlands. In case of inconsistency in answers of respondents within the same orthopaedic department (only applicable for the orthopaedic departments containing two or more respondents for the same surgical approach), this department was included in the analysis when at least one of the respondents answered the question positively.

We analyzed for each of the surgical approaches the use of the three types of restrictions (movement, assistive devices, functional). The duration of

restrictions was analyzed on respondent level. We allowed no missing data in the questionnaire so only complete data sets were analyzed. All analyses were conducted in Excel.

RESULTS

We received a response from 74 out of the 94 (78%) orthopaedic departments. The response rate per clinic varied between one and six.

The majority of departments use some sort of restriction after THA (Table I). For the anterior approach the use of restrictions is the lowest (69%).

Movement restrictions

Movement restrictions are less often used (62%) for the anterior approach compared to the other surgical approaches. In contrast, movement restrictions are commonly applied for the anterolateral (100%) and the posterolateral approach (93%). In general, the majority of the respondents (80%) prescribed movement restrictions for a period of 6 weeks (Figure 2).

Assistive devices

The use of assistive devices, in particular walking aids and abduction pillow, is lower for the anterior approach (54%) (Table 1) compared to the other surgical approaches. The use of an abduction pillow is highest for the posterolateral approach. Most of the respondents (75%) prescribe the use of mobilization aids (i.e. crutches, walker, tripod) for a period of 6 weeks postoperatively (Figure 3). The

Table I. — Percentage of orthopaedic departments using restrictions for the various surgical approaches.

		Postero-lateral (N=45)	Straight-lateral (N=25)	Antero-lateral (N=9)	Anterior (N=13)
Restrictions		93	94	100	69
Movement restrictions		98	76	100	62
Assistive Devices	<i>Walking devices</i>	93	93	100	54
	<i>Abduction pillow</i>	51	22	33	15
	<i>ADL devices</i>	95	61	78	38
Functional restrictions	Sleeping position	82	94	100	38
	Car driving	98	94	100	67
	Sexual activity	36	50	22	31

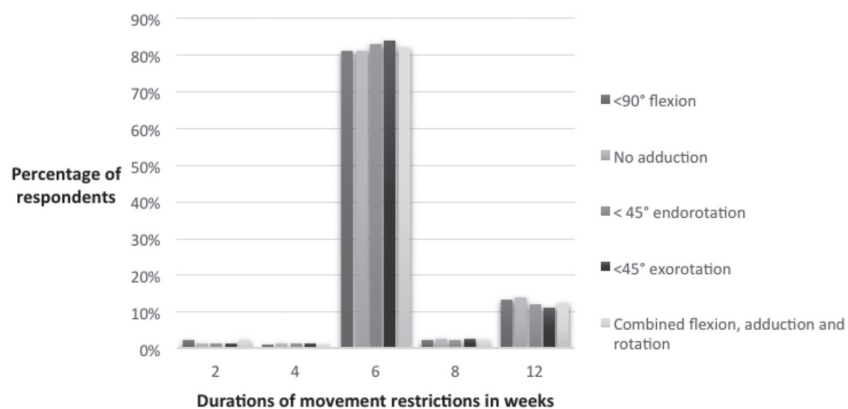


Fig. 2. — Duration (weeks) of prescribed movement restrictions among the respondents

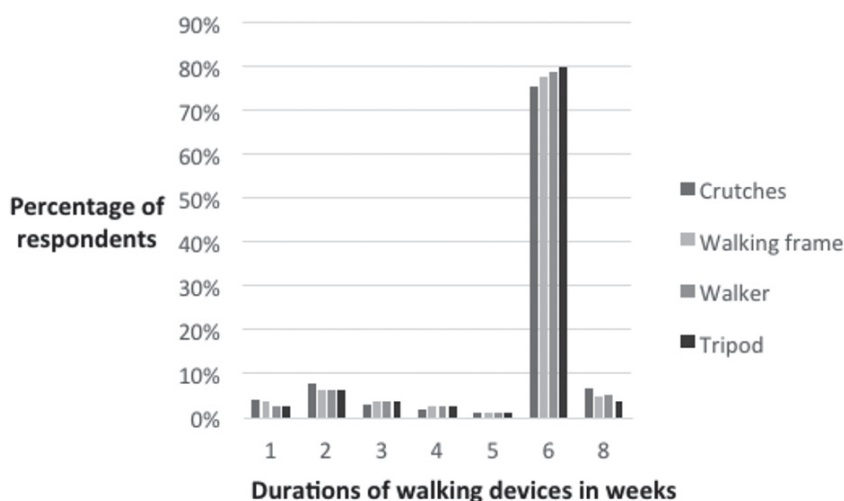


Fig. 3. — Duration (weeks) of prescribed walking devices among the respondents

vast majority of respondents advise ADL devices after THA, not only during their hospital stay, but also at home (Figure 4).

Functional restrictions

Table I shows that the orthopaedic departments using the anterior approach prescribe sleeping restrictions the least (38%). In addition, the percentage of clinics prescribing sleeping restrictions is highest for the anterolateral and straight lateral approach (100% and 94% respectively), followed by the posterolateral approach (82%). A similar pattern of results emerged for car driving restrictions,

being most frequently prescribed by clinics using the anterolateral, posterolateral and straight lateral approach. Restrictions concerning sexual activities are less common (<50%). The majority of respondents reports not to provide any restrictions on sexual activities after THA. In general functional restrictions are prescribed for six weeks.

Circumstantial patient restrictions

A vast minority of the respondents changes the postoperative restrictions in patients with higher ASA-classification (4%), high age (9%), with cognitive disorders (25%), with the diagnosis neck

of fracture (13%) or with the diagnosis rheumatoid arthritis (3%). The majority of respondents (78%) change the postoperative restrictions when there is a fracture of the greater trochanter or a rupture of the gluteus medius tendon

DISCUSSION

The results of this survey demonstrate that the majority of orthopaedic departments use patient restrictions following THA (69-100%). The use of restrictions is lowest for the anterior approach. Generally, the duration of prescribing these restrictions is six weeks.

Despite results of previously published studies, which have shown no increase in dislocation rate when using a so called “non-restriction” or “reduced restriction” protocol, the majority of clinics use postoperative restrictions (2,4,5,7,11,12). Likewise most respondents in our survey prescribe restrictions for six weeks while there are indications that the duration of restrictions can safely be shortened from six to four weeks (8). An explanation could be that that restrictions tend to be based on tradition rather than evidence (3). This is supported by the finding that the use of restrictions is higher in the more conventional surgical approaches (e.g. anterolateral, straight lateral and posterior approach) compared to the anterior approach which has gained popularity recently. Another explanation could be that studies investigating non-restriction or reduced restriction protocols eliminate different concrete restrictions

(4,5,7,12) and thereby making it difficult to compare them and implement new protocols into daily care.

In our survey we discerned three types of restrictions namely 1) movement restrictions 2) the use of assistive devices and 3) functional restrictions such as sleeping position, how long to refrain from driving and restrictions regarding sexual activity. Generally, the so-called ‘non-restriction protocols’ tend to be related to the use of movement restrictions and assistive devices (4). Only few studies mention whether functional restrictions are abandoned, while these probably have the highest impact on patients’ daily life. For example, Peak et al. showed that nearly 70% of the THA patients who were restricted to sleep in a supine position reported it to be highly uncomfortable and that this restriction can safely be abandoned for the anterolateral approach (5). All our respondents using the anterolateral approach prescribed sleeping position restrictions. Wall et al. pointed out that patients find it beneficial to be provided with information regarding sexual activity following THA (13). Less than 50 % of our respondents provided their patients with information regarding sexual activity. In previous studies the main outcome was dislocation rate. We believe patient reported outcome, perceived burden in terms of psychological distress (anxiety, mental preoccupation) and functional limitations of postoperative restrictions during their rehabilitation are at least equally important outcome measures (6).

A limitation of this study is that the outcome of this survey might only be applicable for the

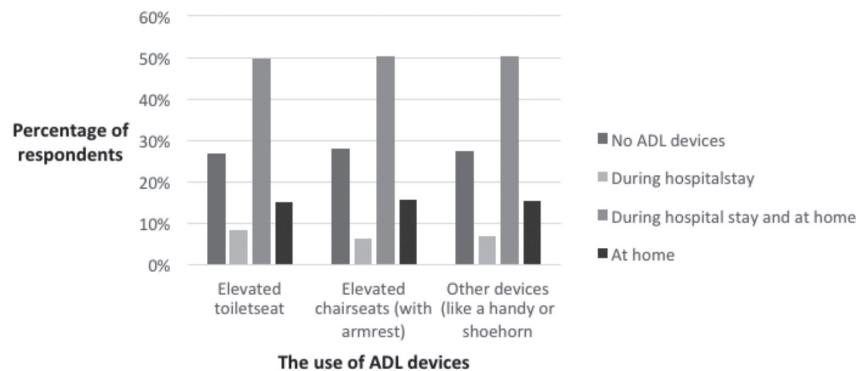


Fig. 4. — Location and prescribed use per type of ADL devices (elevated toiletseat, chairseat and other devices) among the respondents

Dutch situation. However, it is reasonable to assume that these results correspond with the rest of Western Europe since the Dutch guideline THA is internationally accepted and peer reviewed (10). Other limitations are related to the study design such as non-responder bias and responder fatigue. The strengths of our study are that it is unique and has a high response rate of 78%.

Liberal restriction protocols tend to lead to earlier and better resumption of activities, higher patient satisfaction and earlier return to work without higher dislocation rates (4,5,14). However, we believe future research directed towards this topic will benefit from a more systematically and detailed description of the type and duration of the restrictions that are eliminated. This will facilitate comparison between studies and hopefully lead to more evidence-based rather than tradition based daily practice.

In conclusion, patient restrictions following THA are current practice, regardless of the surgical approach.

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APPENDIX

Appendix 1. — Survey outline

Part I: General information

- Q1. What is the name of the orthopaedic department you are currently working?
- Q2. As a orthopaedic surgeon, do you perform primary total hip arthroplasty?
- Yes, please proceed to Q3
 - No, end of questionnaire
- Q3. On a yearly basis, how often do you perform a primary total hip arthroplasty?

Q4. On a yearly basis, what is the total number of primary total hip arthroplasties performed at your orthopaedic department?

Q5. Which surgical approach(es) for primary total hip arthroplasty do you apply? (more answers possible)

- Anterolateral approach
- Posterolateral approach (with and/or without capsular repair)
- Straight lateral approach
- Anterior approach
- Other approach, namely

Q6. At your orthopaedic department do you prescribe postoperative restrictions for patients following total hip arthroplasty?

- Yes
- No

Q7. What is the luxation percentage for primary total hip arthroplasty at your orthopaedic department? (these data will be handled strictly confidential and anonymous)

Part 2: Type of restrictions applied

Q8. Are postoperative movement restrictions applied for your patients following total hip arthroplasty in order to avoid an early dislocation?

- Yes
- No

Q9. Is an abduction pillow applied for patients following total hip arthroplasty?

- Yes
- No

Q10. Are walking devices applied (e.g. crutches, canes) for patients following total hip arthroplasty?

- Yes
- No

Q11. Are ADL devices applied (e.g. wheelchair, rollator) for patients following total hip arthroplasty?

- Yes
- No

Q12. Are postoperative restrictions applied with respect to sleeping position of your patients following total hip arthroplasty in order to avoid an early dislocation?

- Yes
- No

Q13. Are postoperative restrictions applied with respect to car driving following total hip arthroplasty?

- Yes
- No

Q14. Do patients receive information regarding sexual activities following total hip arthroplasty?

- Yes
- No
- Unknown

Q15, Q16, Q17, Q18 see next page

Q19. Car driving restrictions for how long following total hip arthroplasty?

- 2 weeks
- 4 weeks
- 6 weeks
- 8 weeks
- 10 weeks
- 12 weeks
- Unknown

Q20. For which patient-related (co-)morbidity do you selectively indicate restrictions? (multiple answers allowed)

- High ASA classification
- High age
- Collom fracture
- Development dysplasia
- Rheumatic disorders

Part 3: Specification and duration of restrictions

Q15. Which of the following movement restrictions are prescribed to patients following total hip arthroplasty and if so, for how long?

	Not applicable	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	Unknown
< 90 degrees of hip flexion								
No adduction								
< 45 degrees endorotation								
< 45 degrees of exorotation								
Combined deep flexion, adduction and rotation								

Q16. Which of the following mobilization aids are prescribed to patients following total hip arthroplasty and please indicate the duration of use?

	Not applicable	1 week	2 weeks	3 weeks	4 weeks	5 weeks	6 weeks	7 weeks	8 weeks	Unknown
Crutches										
Walking frame										
Walker / rollator										
Tripod										

Q17. Which of the following ADL aids are prescribed to patients following total hip arthroplasty and please indicate the location of use?

	No ADL aids prescribed	During hospital stay only	At home	During hospital stay and at home
Elevated toilet seats				
Elevated chair seats (with armrest)				
Other devices like a Handy of shoehorn)				

Q18. Which of the following restrictions with respect to sleeping position of your patients following total hip arthroplasty are applicable and for how long?

	Not applicable	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	Unknown
supine position								
supine position or unoperated side								
supine position patient while using abduction pillow								
Supine or nonoperated side with abduction pillow								