

Swimming Breaststroke after Total Hip Replacement; Are we Sending the Correct Message

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Abstract

There are approximately 80,000 total hip replacements (THR) carried out annually in the UK. Patients are encouraged to carry out low-impact activities to strengthen muscles and improve bone quality. Swimming is a low impact activity and is frequently encouraged as part of a post-operative regime. However, swimming breaststroke is generally not encouraged.

The aim of this study is to explore the information given to patients regarding swimming (especially breaststroke) following THR. Additionally to review the literature/surgeon experience on dislocation rates following swimming breaststroke.

We conducted a survey of 640 health care professionals and 215 THR patients to see the desires, capabilities and advice given regarding swimming following THR. We also reviewed the literature on dislocated THR following swimming breaststroke.

100% of hip arthroplasty consultants would advise patients to swim breaststroke, compared to 18% of other health care professionals. No healthcare professionals have seen a case of dislocated THR following swimming breaststroke, and there are no reported cases in the literature.

Conflicting information is given to patients on swimming following THR. With no reported cases in the literature, we recommend patients to swim breaststroke following THR, in order to help rehabilitate soft tissue tension and function, therefore improving hip stability.

Keywords: Arthritis; Hip; Rehabilitation; Swimming; Qualitative; Analyses

Introduction

Since its introduction in the 1950's, total hip replacement (THR) has become the standard treatment for patients with end stage osteoarthritis. Multiple studies have documented significant quantitative and qualitative improvement in physical function and health related quality of life after THR [1]. 80,000 hip and knee replacements are carried out in around 400 hospitals in England and Wales each year. At present, the success rates of total hip arthroplasty at 10 years or longer exceeds 95% survivorship in patients older than 75 years [2-4]. Increasingly more patients are undergoing total hip arthroplasty, and they are generally expected to maintain a higher level of activity. In addition, life expectancy has increased, which has placed an increasing demand on these arthroplasties [5-7].

The length of hospital stay following a primary THR is on average between 3-5 days [7]. Therefore the majority of the rehabilitation occurs in the community or on an outpatient basis. The protocol for outpatient follow up is reducing, with routine appointments commonly arranged for six weeks and one year. The rest of the interaction between patients occurs with physiotherapists, GP's, and practice nurses as opposed to the primary operating consultant.

Dislocation following THR is a significant and unfortunately common complication. The risk of dislocation is influenced by patient factors such as age, sex, previous surgery, and cognitive or neurologic disorders as well as patient compliance with a rehabilitation regime [8,9].

The aims of this study were to explore the information given to patients regarding swimming (especially breaststroke) following THR by different health care professionals that are involved in the

rehabilitation period. Secondly, we evaluated the swimming capabilities and desires of these patients. We also explored the literature/surgeon experience on dislocation rates of THR following swimming breaststroke, and examined the different techniques of breaststroke swimming and the muscle groups being used. The hypothesis to this study is that conflicting information is given to patients regarding swimming breaststroke which can impact patient satisfaction and outcome.

Methods

Healthcare professional survey

We conducted a survey of 640 health care professionals (HCP's) across England and Wales who will be in contact with patients following to THR.

Our survey consisted of the following questions;

1. How long after surgery do you advise before they can go swimming any stroke (front crawl, backstroke, dog paddle, breast stroke)? (Please circle)

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2. Are they allowed to swim breaststroke?
3. Would their ability to swim breaststroke be age related?
4. Would their ability to swim breaststroke be affected by head-size or the replacement? And which would be the optimum head-size?
5. Are there any other health problems which would affect your decision in allowing them to swim breaststroke?
6. Please state your medical surgical grade
7. Have you ever seen a case of THR dislocation whilst swimming breaststroke

The survey was distributed to General practitioners, Orthopaedic core trainees, Orthopaedic specialist registrars, Orthopaedic consultants, Orthopaedic consultants in hip arthroplasty, and physiotherapists across the West midlands, North east, North West, London, North and South Wales.

The number of completed questionnaires from the different health care professionals (HCP's) were as follows (78% response rate);

- 110 General practitioners (64% return)
- 115 Physiotherapists (85% return)
- 212 Orthopaedic specialist registrars (89% return)
- 115 Orthopaedic Consultants in Hip arthroplasty (92% return)
- 88 Orthopaedic consultants not in hip arthroplasty (60% return).

Patient survey

We also conducted a survey of 215 patients following THR across England and Wales.

Our survey consisted of the following questions;

- Do you want to swim once recovered from your hip replacement
- What swimming strokes could you swim before surgery
- Who have you been seeking advice from regarding swimming breaststroke.

Literature review

The PubMed database [10-12] was used on the 14th October 2013 to identify relevant literature by searching the following terms in the title, abstract, or keyword fields: 'dislocated THR', 'dislocated THR' AND 'swimming' AND 'swimming breaststroke'.

A subsequent search was performed using several scientific databases: EMBASE, Cinahl, Cochrane and Pedro google scholar, journal of surgical case reports, BMJ case reports, journal of orthopaedic case reports relating to dislocated total hip replacements and swimming by searching for the following terms in the title, abstract, or key word fields; 'dislocated THR' AND 'swimming'.

Results

The results were analysed for each question and also comparing opinions by hip arthroplasty consultants to other HCP's.

Regarding swimming post THR, the majority of health care professionals (GP's, Orthopaedic registrars, Orthopaedic consultants not in hip arthroplasty, and physiotherapists) advocated swimming between 6 weeks and 6 months after surgery, with 44.71% and 42.35% favouring 6-12 weeks and 3-6 months respectively (Figure 1).

When comparing advice given from hip arthroplasty consultants, 90% would advocate swimming from between 6-12 weeks (Figure 2).

Regarding swimming breaststroke, only 18% of HCP's would advocate swimming breaststroke following THR at any time post-operative. Compared to consultants in hip arthroplasty, where there was 100% approval of swimming breaststroke following THR.

The number of hip arthroplasty consultants that responded was 88, of which 65 perform the operation via a posterior approach and 23 perform it via an antero-lateral approach. The choice of approach did not seem to affect the decision of whether swimming breaststroke would be advocated.

No one felt that age played a part in the decision making on swimming breaststroke. However, 15% of hip arthroplasty consultants felt that a 36 mm head would be the optimum size, where as 10% preferred a 28 mm head.

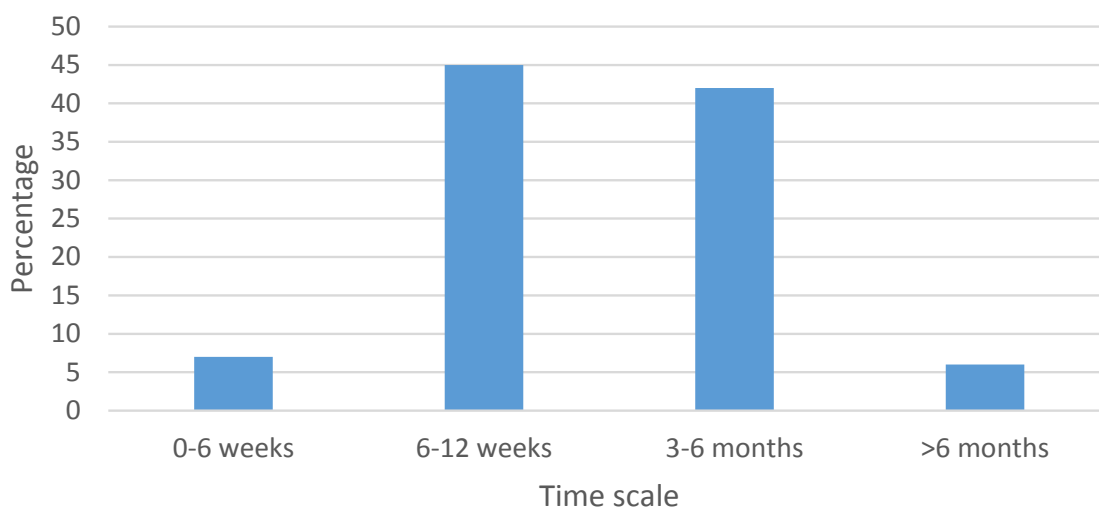


Figure 1: Bar chart showing Advice given by HCP's on when to swim following THR.

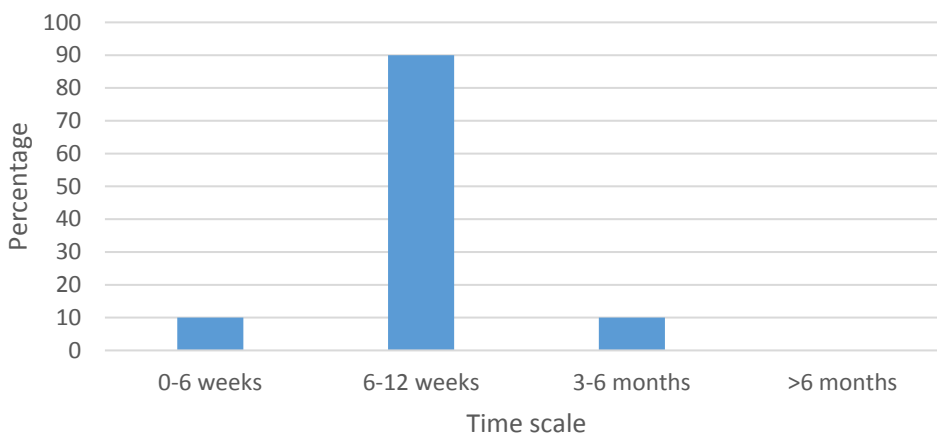


Figure 2: Bar chart showing advice given by Consultants in Hip arthroplasty on when to swim following THR.

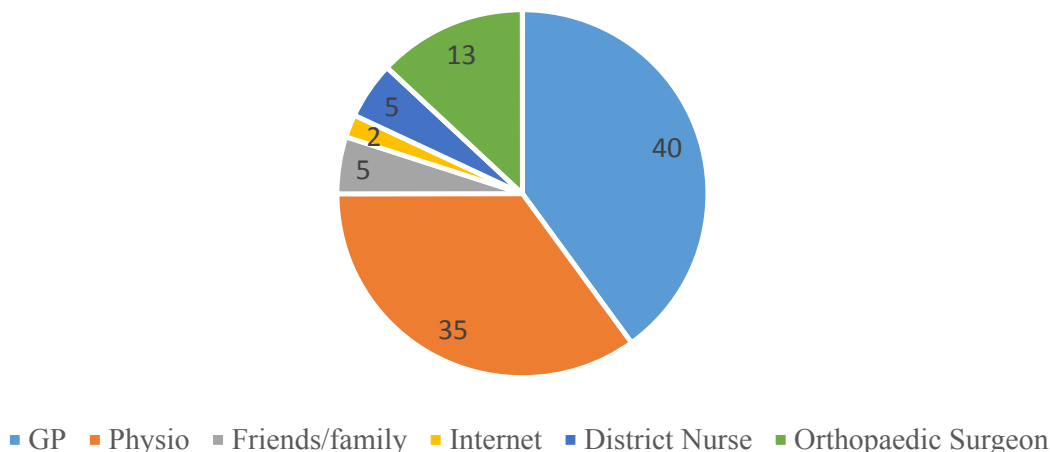


Figure 3: Pie chart showing percentage of distribution of information received by patients from different HCP's.

Regarding medical conditions precluding swimming breaststroke following THR, 18% of the responses from all the HCP's including hip arthroplasty consultants felt that conditions such as poorly controlled epilepsy, Parkinson's, dementia, and hydrophobia would affect the decision, but ultimately the decision would be made on a patient by patient basis.

When asked about experience in cases of THR dislocations, 0% of HCP's have seen a dislocated THR from swimming breaststroke.

Patient survey

When asked if patients would like to swim following THR, 90% responded saying yes, and 68% of patients stated that they are capable of swimming breaststroke prior to having their hip replacement.

The majority of patients received advice on swimming breaststroke following THR from their GP's (40%) and physiotherapists (35%) (Figure 3).

Results of literature review

No cases of dislocated THR secondary to swimming breaststroke were found in our literature search.

Discussion

This study confirms that inconsistent information is given to patients regarding swimming breast stroke following THR. Consultants in hip arthroplasty unanimously advocate patients to swim breast stroke 6 weeks following their THR, which is not the message given to patients in the community.

Rehabilitation is paramount following THR, especially for soft tissue recovery and function. Standard rehabilitation protocols after total hip replacement focuses on the most important muscles to target in all phases of recovery were the hip abductors (62.2%), followed by the quadriceps (16.9%), and other muscles (21%) [13,14]. It has been shown that muscle size, functional ability, balance, can improve quality of life and time post surgery in patients following THR [15].

To recommend a certain activity after hip replacement, factors such as wear, joint load, intensity and the type of prosthesis must be taken into account for each patient [16]. The reduction of wear is one of the main factors in improving long-term results after total joint replacement [17]. Wear is dependent on the load, the number of steps and the material properties. Since load will influence the amount of wear exponentially, only activities with low joint loads such as swimming,

cycling or possibly power walking should be recommended [16]. It is unwise to start technically demanding activities after total joint replacement, as the joint loads and the risk for injuries are generally higher for these activities in unskilled individuals [15]. Therefore it is highly recommended for patients to swim following hip replacement. However, swimming breaststroke is generally not encouraged.

There are two techniques for swimming breaststroke, a whip kick and a frog kick. The frog kick technique is generally recommended for rehabilitation which employs the movements of hip and knee flexion, with hip external rotation and abduction followed by knee extension and hip adduction. Therefore working and strengthening the gluteus maximus, abductors, adductors, quadriceps, and hamstrings, which are all considered important and targeted muscles in rehabilitation following THR [15,17].

The choice of approach may theoretically affect the surgeon's opinion on swimming breaststroke and the time post operatively, and when such activity can start. Using the lateral approach may require more time for abductors to heal before performing the frog kick action when swimming breaststroke. However, our study did not show any difference in opinion regarding the advice on swimming breast stroke based on the surgical approach.

It is clear from our study that conflicting information is being given to patients from different HCP's as 100% of hip arthroplasty consultants would advocate swimming breaststroke compare to 18% of other HCP's. This can not only reflect poorly on the health service by causing confusion amongst patients, but more importantly affect rehabilitation which can ultimately lead to a less favourable outcome [17].

All of the HCP's involved in our study (640) have never seen a case of dislocated THR whilst swimming breaststroke. A thorough literature search did not reveal any cases of dislocated THR secondary to swimming breaststroke.

The findings from our study support and advocate for patients to swim breaststroke following THR. This is reinforced by the evidence of no reported cases of dislocation in the literature and from our HCP survey. Contrary to conventional advice received by patients, swimming breaststroke should form part of the rehabilitation regimen as this low impact sport targets the key muscles used in soft tissue tension and function around the hip which are key components to hip stability. The results from our study support that the hip arthroplasty surgeons believe the optimum time to start swimming would be around the 6 week post-operative stage to allow for tissue healing.

Conclusion

This study highlights the desire and capabilities of patients to swim breaststroke following THR. We have also shown that there is capricious information delivered to patients on this subject from different HCP's. The target driven NHS means earlier discharges from hospital, less frequent surgeon follow up, and more emphasis on follow up in the community. The results from this study demonstrate that the wishes of consultant orthopaedic surgeons on rehabilitation of their

patients are not being implemented. The authors of this study would support delivery of a clear message that swimming breaststroke should be encouraged as part of a rehabilitation regimen following THR as per the desire of the patients and the hip arthroplasty surgeons. The review of the literature and results from our study demonstrate no risk of dislocation, and on the contrary, it would help soft tissue tension and function, therefore increasing hip stability.

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