Patient reported importance of assistive devices in hip and knee replacement Enhanced Recovery after Surgery (ERAS) pathways

Abstract

Introduction

This study examines patients' perceptions of the usefulness of occupational therapy and assistive devices provided, in achieving discharge criteria and assisting with activities of daily living once home, following an Enhanced Recovery after Surgery protocol for total hip and total knee replacement patients.

Methods

Two weeks following discharge, 197 patients who had undergone total hip replacement or total knee replacement were telephoned to ask how useful they found occupational therapy education and advice, and the assistive devices provided.

Results

114 patients (58%) answered the call. Over 96% of patients found occupational therapy education and advice useful. 97% of posterior total hip replacement patients were still using the assistive devices two weeks following discharge, compared to 90% of anterior total hip replacement patients and 87% of total knee replacement patients. Over 95% of all patients found that assistive devices enhanced their ability to undertake activities of daily living, and were extremely or partly useful in achieving early discharge.

Conclusion

Over 85% of patients who responded perceived the occupational therapist's advice and education, and assistive devices provided, to be useful in achieving discharge criteria, and in enhancing their ability to undertake activities of daily living once back in a home environment.

Keywords

Occupational therapy, enhanced recovery after surgery, fast-track surgery, hip replacement, knee replacement

Key Messages

- Patients perceive assistive devices to be useful in achieving discharge criteria and helping with ADLs .
- Most patients still use assistive devices two weeks post-discharge offering scope to improve rehabilitation interventions.

What the study has added

This study highlights the need for further research on the occupational therapist's role in helping patients on ERAS hip and knee replacement pathways to return to ADLs more quickly.

Introduction

Enhanced Recovery after Surgery (ERAS), also known as fast-track, accelerated or rapid recovery, has been used successfully in total hip replacement (THR) and total knee replacement (TKR) surgery (Husted, 2012; Malviya et al, 2011) to reduce length of hospital stay, with no increase in post-operative complications such as dislocation (Husted et al, 2010), and has high patient satisfaction levels (Specht et al, 2015).

In the UK, Occupational Therapy is a routine part of hip and knee replacement pathways (Wainwright and Middleton, 2010; Dawson-Bowling et al, 2014), Occupational therapists assess the individual needs of the patients and provide assistive devices to facilitate discharge and aid return to function at home. Due to the multi-modal nature of ERAS it can be difficult to have an understanding of the effects of occupational therapy and the provision of assistive devices within the ERAS protocol.

Background

ERAS pathways are well established in total hip and knee replacement surgery (Husted, 2012), and as a result, evidence for traditional practices has been examined, leading to changes in practice such as the removal of the use of drains (Husted et al, 2014) and the development of new anaesthetic and pain regimes (Aasvang et al, 2016; Kehlet and Aasvang, 2015) which enable quicker mobilisation and a shorter hospital stay.

Occupational Therapy is a traditional part of the THR and TKR pathways (College of Occupational Therapists, 2012) in the UK, although this may not be so in other countries (Grotle et al, 2010). There is little literature in ERAS examining the extent to which occupational therapy and provision of equipment accelerates the achievement of discharge criteria, and/or reduces complications; although there is strong evidence supporting multi-disciplinary collaboration as an important element of the ERAS concept (Pape et al, 2013; Husted, 2012).

Studies in Denmark and UK have indicated that although patient satisfaction is high in ERAS (Specht et al, 2015; Jones et al, 2014), patients' perceptions of specific ERAS interventions and their relative importance to overall patient experience is poorly understood. There is also a paucity of literature on the effectiveness of occupational therapy interventions in orthopaedic settings (Drummond et al, 2012; Jepson et al, 2013). A study in the US (Seeger and Fisher, 1982) found that a majority of patients were independent at discharge through the use of either modified activities of daily living (ADL) techniques or the use of assistive devices; and that the largest percentage of patients were more likely to always use the equipment (rather than frequently, seldom or never), and used the equipment for 2 months or longer.

Within the evidence available, debate centres on what advice and assistive devices should be given by occupational therapists to prevent dislocation following THR. A survey by Drummond et al (2012) of 174 occupational therapists in the UK found that in general there was a consensus about which movements should be avoided post-surgery, and on the assistive devices which should be supplied. However there was a wide variation on the justification for use, how long they were needed for, and how much time was spent with patients. This variation in practice highlights the need for further research into the occupational therapy role for both hip and knee replacement, so that a solid bed of evidence is available to support occupational therapy elements of the ERAS pathway (Jepson et al, 2013).

This study examines patients' perceptions on the usefulness of assistive devices provided by the team at the hospital in achieving discharge criteria, and in making ADLs easier once patients are home. In this study assistive devices are defined as equipment used to increase, maintain or improve functional capabilities of individuals with disabilities (Cooke and Polgar, 2007).

Methods

This study is a service evaluation so ethical approval was not required as per the NHS Health Research Authority decision tool (NHS Health Research Authority, http://www.hra-decisiontools.org.uk/research/), and this was confirmed by the hospital's R & D Department. In keeping with good practice, the principles outlined in the Declaration of Helsinki (WMA, 2013) were followed.

The evaluation took place in a hospital in Wales which has a well-established ERAS protocol for its total hip and knee replacement patients (Enhanced Recovery Partnership Programme Case Studies, 2011). Occupational therapy input comprised of education and advice on the occupational therapy process as part of the joint school delivered by a multi-disciplinary team (MDT) prior to surgery, and guidance to patients in ADLs with the provision of assistive devices. The joint school was designed as a patient education forum, where the MDT were able to clarify their roles, and the ERAS pathway was explained to patients. If joint school was not attended, patients were given occupational therapy education and advice the day following surgery on the ward. It was also planned to visit posterior THR patients pre-operatively, and issue them details on hip precautions to be adhered to for 12 weeks following surgery, aimed at reducing positions which may make them more susceptible to dislocation. Post-operative protocols with regard to hip precautions were decided by the orthopaedic consultants, and included: not to bend more than 90 degrees; not to twist; not to cross legs for 3 months; patients to sleep on their back if possible for first 6 weeks; and not to return to driving until reviewed by consultant at 6 – 8 weeks.

In this study, assistive devices were provided to anterior THR and TKR patients to maximise comfort and facilitate discharge; whilst for posterior THR patients they were provided to reduce the risk of dislocation and assist in meaningful occupations. Equipment provision was assessed on an individual basis for anterior THR and TKR patients, and patients were advised to use them for as long as needed. Posterior THR patients were all provided with a long-handled shoe horn, helping hand, and sock aid, and had their furniture (such as bed,

chair and toilet) raised to their ideal height at home by working out their leg length and adding two inches. Post-operative management protocols on determining weight-bearing status, and the timing of post-operative clinic appointments, were also established by the orthopaedic consultants.

Prior to discharge, patients were assessed to ensure that they were medically and surgically fit. This included assessment of ADLs and transfers by occupational therapists, and assessment by physiotherapists to ensure that patients were independent with their walking aids, and were safe with stair negotiation and when completing their exercises.

Instructions for the use and the fitting of the equipment were given to all patients prior to discharge, and all patients or a relative/carer were shown how to fit the devices. A direct telephone number for the occupational therapists was given to all patients on discharge so that they could be contacted easily, and once patients had finished using their assistive devices they were requested to return them to the Occupational Therapy Department at the hospital, although in some areas the community equipment service could collect them from patients' homes.

Two weeks following discharge, 197 patients who had undergone THR (anterior or posterior) or TKR from January 2014 to June 2014, and been given assistive devices by the hospital, were called by telephone by one of the occupational therapy team. The two weeks post-discharge timing was chosen as the hospital has a local policy whereby the Occupational Therapy Department has a duty of care in this period of time to follow up patients if there are any concerns on discharge. The telephone was used as it was thought to be the most effective method given the very limited resources available. If patients answered the call, they were asked the following questions:

Q1. Was the education and advice given by occupational therapists useful?

Q2. Are you still using the equipment?

Q3. Has the equipment enhanced your ability to carry out activities of daily living?

Q4. How useful was the equipment in getting an early discharge?

These questions were developed by the occupational therapy team through discussion, as a way of gaining a well-rounded evaluation of the occupational therapy service; and the response options for the first three questions were “yes” or “no”, and “extremely”, “partly” and “not” for the final question. It was justified that no clarification of the questions was needed due to the occupational therapy process being explained at joint school and on the ward.

SPSS Predictive Analytics Software (IBM Corp, 2010) was used to analyse the data, using descriptive statistics.

Results

114 patients who had been provided with equipment (58% of all those provided with equipment and given a discharge telephone call, see Table 1) responded to a telephone call made two weeks after discharge, and gave feedback on the education and advice given by the occupational therapists and on the equipment they had been given.

INSERT Table 1: Frequency of patients who were given equipment and responded to discharge call

72% of posterior THR patients, 93% of anterior THR patients, and 82% of TKR patients attended joint school (see Table 2). Eleven (33%) of the posterior THR patients had pre-operative visits, and one (3%) anterior THR and one TKR (2%) patient had a pre-operative visit (see Table 2).

INSERT Table 2: Frequency (%) of patients attending joint school and having pre-operative visit.

Table 3 gives the percentage of patients who responded to Q1, Q2, Q3 and Q4, broken down by procedure. For Q1, 97% of posterior and anterior THR patients responded that the education and advice provided by the occupational therapy team was useful, 100% of TKR patients responded positively. For Q2, 97% of posterior THR patients responded that they were still using the equipment provided, compared to 90% of anterior THR patients and 87% of TKR patients. For Q3, 97% of posterior and anterior THR patient responded that the equipment had enhanced their ability to undertake ADLs, as did 96% of TKR patients. For Q4, 97% of posterior THR patients responded that the equipment was either extremely or partly useful in achieving early discharge, compared to 96% of anterior THR patients and TKR patients. Missing data were due to answers not being recorded.

INSERT Table 3: Percentage responses to questions Q1 – Q4

Discussion

The high percentage of positive responses to the questions asked suggests that the majority of patients perceive occupational therapists' advice and education, and the assistive devices provided by the hospital, to be very useful in achieving discharge criteria, and in enhancing patients' abilities to undertake ADLs once they are back in their home environment.

It is interesting to note that the majority of patients are still using the equipment provided two weeks following discharge. This is longer than the mean of 9 days it took minimally invasive THR patients to stop using their assistive devices as found by Berger et al (2004); however it

does support Van Egmond et al's (2015) study of fast-track TKR patients in which patients' functional Patient Reported Outcome Measures (PROMs) did not start to improve until two weeks following surgery, and historical studies (Seeger and Fisher, 1982) which found patients using devices for two months or longer. This suggests that there may be the opportunity to review rehabilitation and occupational therapy involvement in the two weeks following discharge to accelerate return to function.

It should be highlighted that with the exception of posterior THR patients, when assessing patients on the ward, occupational therapists aimed to reduce the need for assistive devices through advice regarding transfers and ADLs participation. If a device was provided it was explained that this was for the short term only, whilst recovering from surgery, and reliance on the device should be reduced once muscle strength returned following physiotherapy input. However some patients may have required the device longer-term due to other co-morbidities.

Of the 114 patients, only 13 had had pre-operative visits (11 posterior THR, 1 anterior THR, 1 TKR). The aim was to visit posterior THR patients pre-operatively, however only a third of these patients were visited. This may be because patients were either out of area, unable to be contacted, or were admitted before a visit could be organised; or due to staff shortages.

Most studies evaluating ERAS take length of stay (LOS) as the outcome of interest. In this study we are examined patients' perspectives on how input by occupational therapists and assistive devices affected LOS and recovery at home. A positive response from patients that they perceived that assistive technology played a role in getting them home earlier suggests that assistive technology may play a role in reducing LOS. Interestingly in Drummond et al's survey of occupational therapists (2012), responses on whether teaching

hip precautions affected length of stay were mixed. 62% of respondents felt they had no effect on length of stay; 27% that they shortened LOS, and 6% that they increased hospital stay.

This study is not conclusive, but it is the first study examine patients' perceptions of the usefulness of assistive devices, and adds to the currently limited evidence base on understanding the role of occupational therapy in hip and knee replacement pathways. The survey by Drummond et al (2012) and the proposed Cochrane systematic review protocol (Jepson et al, 2013) also highlight the need for further research in this area. It is pertinent to study patient perspective in assessing the relative importance of different ERAS components because of the very short LOS now being achieved (Husted et al, 2012; Winther et al, 2015), including the first reports of outpatient ERAS for selected patients (den Hartog, 2015).

The effect of occupational therapy and assistive devices on reducing complications such as dislocation is difficult to measure. There is a current move towards abandoning post-operative precautions and assistive devices, citing a lack of evidence for them. A recent systematic review (Barnesley et al, 2015) found that dislocation rates were not improved when hip precautions were used, however only two studies met their eligibility criteria, both adopting the anterior approach. In this study fewer anterior than posterior approach patients were using their assistive devices two weeks following discharge, although rates were high for both approaches (90% anterior vs 97% posterior).

In large ERAS cohorts (Jorgensen et al, 2014) dislocation was found to be higher in centres without precautions compared to those with precautions (Mikkelsen et al, 2014). A study by Schmidt-Braekling et al (2015) found no increase in the risk of post-operative dislocation in the year following surgery when comparing a modified 4-week precaution protocol with a 6-

week precaution protocol for patients who had had a minimal invasive posterior approach THR. It may be that more guidance is required post discharge with instructions from occupational therapists to reduce the use of assistive devices depending on how the patient progresses with functional rehabilitation.

If a randomised controlled trial were to be designed to investigate the value of using dislocation precautions, it would need to control for all other confounders for dislocation such as surgical technique, prosthesis (and its femoral implant head size), and patient related factors. Barnesley et al (2015) estimate that in order to find a 50% reduction in the rate of dislocation, a study would need to have over 5000 patients in each arm, which is unlikely to be feasible. Before any such trial, patient and public involvement would also need to be undertaken in order to get funding (Involve, 2012). Our study highlights patients' perceptions that they may be unwilling to forego the use of assistive devices.

This study examines patients' perceptions of a specific ERAS component in facilitating early discharge. Such methods of evaluation may become more frequent as LOS and complications reduce, and we look to more improvements in patient experience. This study is the first step towards understanding what is important to patients, and gives a clear indication from patients of the value of assistive devices. Therefore removing the assistive devices (if associated with precautions) would seem premature until such evidence is available.

Limitations

The methodology used in this study does have its limitations. There is evidence that patients are more likely to be positive in their evaluation when asked about their treatment by phone (Elliott et al, 2009), rather than by mail, particularly as the person asking the questions was from the occupational therapy team and so was likely to be known to the

respondent. In addition, as no response was gained form 42% of patients who were given a discharge telephone call, the sample is biased towards those patients who were able to answer the call (Bowling, 2005).

A further limitation is that posterior THR patients were advised to use their devices for 12 weeks following surgery, and so this is likely to have affected their response to question 2 “Are you still using the equipment provided?”. They may have felt obliged to respond that they were still using the devices, even if they had not found them useful, in order to be seen to be following correct procedures and thus reducing the risk of dislocation.

Conclusion

Our study suggests that patients perceive that advice from occupational therapists, and the assistive devices provided by hospitals, are very useful in achieving discharge criteria and, once home, enhance the patient’s ability to carry out ADLs. For THR patients there is debate in the limited literature on the role of hip precautions in preventing dislocation. This study cautions against removing precautions (such as relevant assistive devices) until further evidence is available.

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