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Day-case total hip arthroplasty: a literature review and development of a hospital pathway

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Aims

We present the development of a day-case total hip arthroplasty (THA) pathway in a UK National Health Service institution in conjunction with an extensive evidence-based summary of the interventions used to achieve successful day-case THA to which the protocol is founded upon.

Methods

We performed a prospective audit of day-case THA in our institution as we reinitiate our full capacity elective services. In parallel, we performed a review of the literature reporting complication or readmission rates at ≥ 30 -day postoperative following day-case THA. Electronic searches were performed using four databases from the date of inception to November 2020. Relevant studies were identified, data extracted, and qualitative synthesis performed.

Results

Our evaluation and critique of the evidence-based literature identifies day-case THA to be safe, effective, and economical, benefiting both patients and healthcare systems alike. We further validate this with our institutional elective day surgery arthroplasty pathway (EDSAP) and report a small cohort of successful day-case THA cases as an example in the early stages of this practice in our unit.

Conclusion

Careful patient selection and education, adequate perioperative considerations, including multimodal analgesia, surgical technique and blood loss management protocols and appropriate postoperative pathways comprising reliable discharge criteria are essential for successful day-case THA.

Cite this article: *Bone Jt Open* 2021;2-2:93–102.

Keywords: total hip arthroplasty, day-case surgery, safe discharge, patient selection, outcomes, complications

Introduction

There is a strong consensus that total hip arthroplasty (THA) is one of the most successful elective operations, combining exceptional functional outcomes with low complication rates.¹ With an ageing, more active population, the demand for THA is expected to rise globally, with a projected 400% increase from the early 2000s to 2030.² This increasing demand for arthroplasty in the coming years can burden healthcare systems universally, particularly from a financial perspective.³ Additionally, a longer length of stay (LOS) in hospital post-THA has been associated with greater morbidity and mortality.⁴

‘Enhanced recovery’ protocols have been adopted to reduced LOS and have proven successful when compared to the more conformist recovery pathways.⁵ Although these pathways have led to a reduction in LOS to a few days, day-case or outpatient THA, whereby patients are discharged from hospital on the same day post-surgery, is comparatively less common internationally.

We have seen unprecedented demands and changes within our healthcare systems during the COVID-19 pandemic.⁶ As we now drive to reinitiate our full capacity elective services in an attempt to tackle an ever growing demand for lower limb arthroplasty,⁷ this pandemic has presented rare

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doi: 10.1302/2633-1462.22.BJO-2020-0170.R1

Bone Jt Open 2021;2-2:93–102.

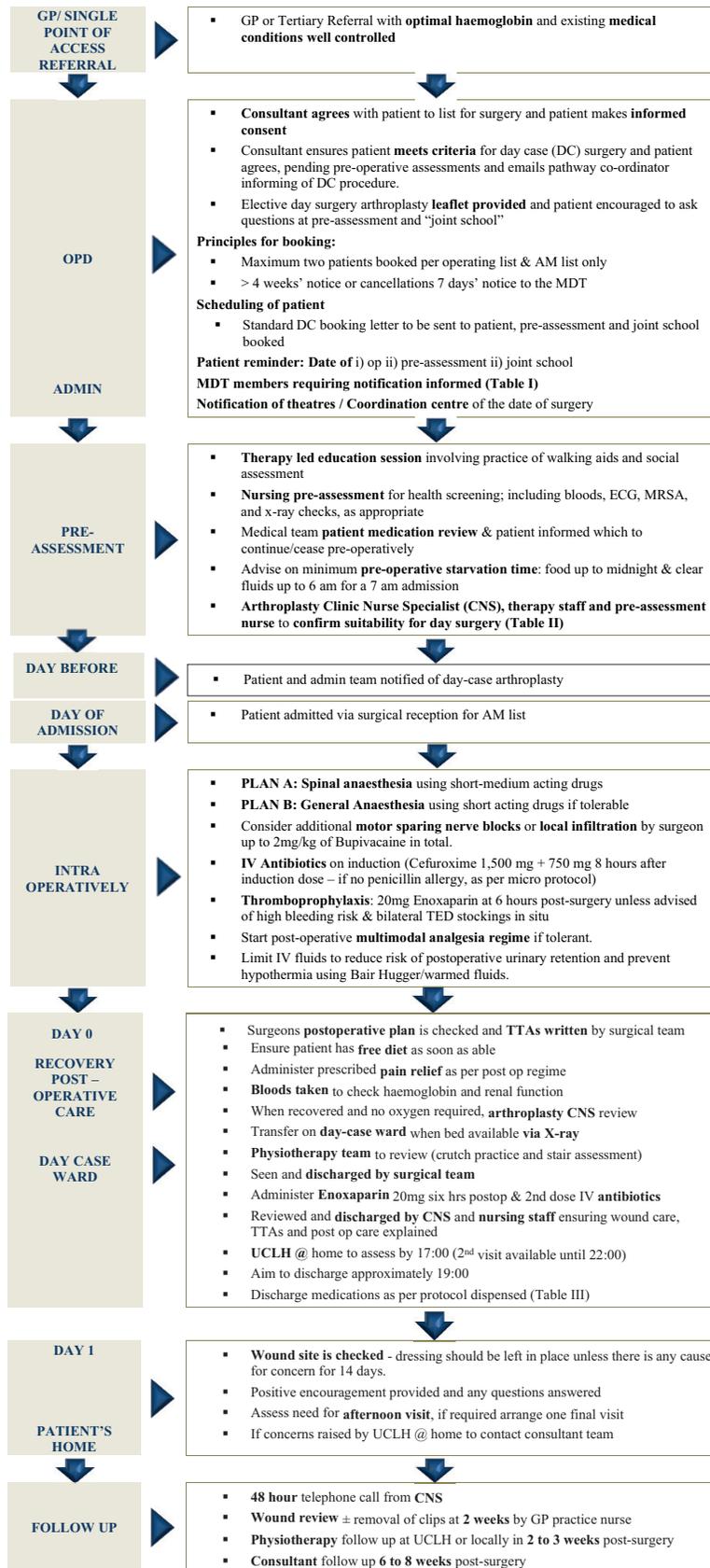


Fig. 1

UCLH Standard operating procedure of elective day surgery arthroplasty and UCLH@home patient pathway.

Table I. Multi disciplinary team members.

Arthroplasty clinical nurse specialist
Matron for trauma and orthopaedics
Day surgery ward manager
Assistant general manager
General manager
Lead physiotherapist
Lead occupational therapist
Therapy assistant
Sister, pre-assessment clinic
Matron, theatres and anaesthetics division
Trauma clinical nurse specialist
UCLH@home matron

Table II. Inclusion and exclusion criteria for elective day surgery arthroplasty.

Inclusion criteria	Exclusion criteria
Willing to participate	ASA \geq 3
Clinically safe to be treated at home	Any cardiac history
Proficient with walking aids	Significant prostate history
Living within the local borough	Haemoglobin < 120 g/l
Supported at home by relatives	Insulin dependent diabetes
	Requires continuous positive airway pressure (CPAP)
	History of chronic pain
	Cognitive issues that preclude the ability to understand instructions
	Significant psycho/social issues that would prevent the patient from managing at home safely

ASA, American Society of Anesthesiologists.

opportunities to revise and re-engage elective arthroplasty pathways aimed at improving patient care and healthcare efficiency. As we are now living in the era of integrated care systems, this will set a great example in transferring our care back to the community and reducing the burden on the secondary care services in the UK through a collaborative work involving all the stakeholders responsible in providing integrated care to our population.⁸

Early literature demonstrates day-case THA should be considered as a safe, efficient, and cost-effective practice, as it has been shown to be advantageous to both patients and healthcare systems alike. In this review, we present our institutional elective day surgery arthroplasty Pathway (EDSAP) and early results, coupled with an evidence-based summary of the most common interventions used to achieve successful day-case THA based on the evidence presented in the literature.

University College London Hospitals (UCLH) day-case arthroplasty pathway. In order to achieve successful day-case THA, a number of strict protocols need to be in place that reduces the risk of an increased LOS. Pre-, peri-, and postoperative measures should be in place in order to facilitate day-case THA, as illustrated in our unit's EDSAP standard operating procedure (Figure 1 and Tables I–IV).

The COVID-19 pandemic has provided our institution with the opportunity to revise and re-engage our elective day-case arthroplasty pathway (Table V). As we close in on the winter months with undoubtedly increased pressures on our NHS system, we have already seen the benefits of day-case arthroplasty in our institution, as simultaneous elective operating lists have been cancelled due to bed shortages. Over the last few months in our early stages, we demonstrate varying success with day-case THA. Multiple patients successfully proceeded with day-case THA with high patient satisfaction, combined with few cases of failed day-case discharge. As with any novel service there is a learning curve, we would like

to share these unsuccessful discharges as they are as important as the successful cases to learn how to avoid this in the future. Institutional approval was granted for auditing our pathway.

The process has compounded the necessity for stringent patient selection. Four out of 14 patients who were recruited failed day-case THA discharge due to inappropriate preparation (lack of UCLH@home team capacity) or patient selection (Table V).

Conversely, with appropriately selected patients this pathway provides an effective, efficient and economical service. We report a small cohort of successful day-case THA as an example in the early stages of day-case arthroplasty in our unit (Table V). Patient mean age was 61.3 years (SD 9.6), body mass index (BMI) 26.1 kg/m² (SD 4.5), and ASA grade 1.6 (SD 0.5). Mean operative time was 85 minutes (SD 28), and haemoglobin (Hb) drop of 17.8 g/l (SD 5.8). Mean time from skin closure to post-operative radiograph was 2.5 hours (SD 0.9), and to discharge was 7.1 hours (SD 1.1). There were two cases of robotic assisted THA with successful day-case discharge. Following day-case discharge there were no readmissions or postoperative complications including re-operations, inadequate analgesia, infection, or venous thromboembolism reported in our cohort at 30- to 90-day follow-up.

While the initial results for this small cohort of day-case THA are promising, we examined the literature to extrapolate the evidence-based reports from which this pathway was designed and also identify elements to further improve this service in this review.

Search strategy. Our search strategy using NICE healthcare databases (title and abstract) was "hip arthroplasty" OR "hip replacement" OR "THA" OR "THR" AND "out-patient" OR "day case" OR "daycase" OR "same-day" OR "same day". Inclusion and exclusion criteria were used as defined in Table VI. Two authors (JT, WW) independently screened all search studies, any inconsistencies or disagreements were resolved by discussion and consensus.

Table III. Elective day surgery arthroplasty anaesthetic and prescription protocol.

Anaesthetic protocol	Postoperative inpatient medications	Discharge medications
<p>PLAN A: Spinal anaesthesia</p> <ul style="list-style-type: none"> ■ Heavy bupivacaine or prilocaine. ■ Sedation using propofol and add fentanyl only as additional opioid (10 mcg to 30 mcg). <p>PLAN B: General anaesthesia using short acting drugs where possible.</p> <p>PLAN A & B:</p> <ul style="list-style-type: none"> ■ Consider additional motor sparing nerve blocks (fascia iliaca or adductor canal block). ■ Additional local infiltration by surgeon up to 2 mg/kg of bupivacaine in total. ■ Start multimodal analgesia including NSAIDs in recovery. 	<ul style="list-style-type: none"> ■ Paracetamol 1 g QDS ■ Ibuprofen 400 mg TDS ■ Dihydrocodeine 30 to 60 mg QDS ■ PRN Oramorph 10 mg to 20 mg three hourly ■ Cyclizine 50 mg TDS ■ Cefuroxime* 750 mg eight hours post-induction ■ Enoxaparin 20 mg six hours postoperative <p>Do not prescribe modified release oral opioids</p>	<ul style="list-style-type: none"> ■ Paracetamol 1 g QDS ■ Dihydrocodeine 30 to 60 mg QDS ■ PRN Oramorph 10 mg to 20 mg three hourly (dispense one 100 ml bottle) ■ Cyclizine 50 mg TDS ■ Senna 2 tablets nocte ■ Rivaroxaban 10 mg OD for 35 days.

*If no penicillin allergy, otherwise consult microbiology guidelines. NSAIDs, non-steroidal anti-inflammatory drugs

Table IV. Elective day surgery arthroplasty discharge criteria.

- **Physiotherapy team** reviewed and discharged the patient once crutch and stair assessment completed successfully.
 - **Thromboprophylaxis** and **antibiotics** administered as per prescription prior to discharge.
 - **Radiograph** performed and reviewed by the surgical team as satisfactory.
 - Postoperative **haemoglobin** stable (< 30 g/l drop) and **renal function** satisfactory.
 - **Pain well controlled** and patient appropriately **educated** on the use of regular and breakthrough analgesia.
 - Patient is reviewed by **surgical team** and confirmed fit for discharge.
- Reviewed by **CNS (clinical nurse practitioner)** and **ward nursing team**:
- Advice provided regarding wound care, TTAs, and postoperative care. The patient reviewed by **UCLH@home** by 17:00:
 - Patient **discharged by 20:00** under the care of hospital at home.

After completion of this process, 19 articles were selected (Figure 2).

Evidence in support of day-case THA. Day-case THA has been shown to benefit patients and healthcare systems as it is considerably less expensive,^{3,9} with similar or improved complications rates and functional outcomes in comparison to inpatient THA pathways.^{3,10-27} A study comparing the complication rates and patient-reported outcome measures (PROMs) between inpatient and day-case THA showed that at 90 days postoperatively there were no significant differences in complication rates between the two groups, and the latter group experienced better PROMs at two years.¹³ Similarly, Coenders et al²⁶ demonstrated significant improvement in all PROMs at one year following day-case THA, but also significantly lower 90-day complication and readmission rates in day-case THA compared with inpatient THA (4.61% vs 11.54% and 1.38% vs 4.46%, respectively). Moreover, Richards et al¹⁵ conducted a matched cohort analysis that showed lower 90-day complication rates in patients who underwent day-case THA compared to those that were treated as an inpatient post-operatively (8.82% vs 10.29%, respectively). In the largest study to date, although a non-comparative retrospective study, Berend et al²⁷

reported on 1,472 day-case THAs at a single centre with low complication and readmission rate at 90 days (4.82% and 2.17%, respectively). Additionally, a meta-analysis of day-case THA (1,428 day-case vs 65,543 inpatient THAs) concluded lower complication and readmission rates in patients who had day-case THA compared to inpatient counterpart (3.0% vs 4.7% and 1.4% vs 3.0%, respectively).²⁸ The complication and readmission rates associated with day-case THA published in the literature are summarized in Table VII.

Day-case THA has been shown to be significantly cheaper than inpatient THA in USA-based systems, although this has yet to be demonstrated in the UK NHS. Aynardi et al³ reported the overall cost in the day-case setting was significantly lower at \$24,529 (SD 1,759) compared to \$31,327 (SD 9,013) for the inpatient group. This cost-effectiveness was also shown in a further computer-based cost utility study comparing the costs of day-case and inpatient THA (\$43,288 (SD 1,606) vs \$48,155 (SD 1,673), respectively).⁹

Preoperative measures

Patient education. Adequate preoperative patient education is a fundamental component of the THA clinical pathway and has been shown to reduce LOS.²⁹ Focused discussion sessions involve procedural benefits and risks, the model of day-case THA, analgesia, and postoperative physiotherapy. In our institution (UCLH), we start educating this cohort of patient from the time we list them for the procedure up until the day of the operation. Day-case THA education leaflets and joint schools are paramount for the service, and we have adapted these classes virtually for the COVID-19 pandemic.

Patient selection. In our protocol, we specified our inclusion and exclusion criteria for patients eligibility for day-case THA (Table II) to facilitate a fast-track service which allows for a predictable perioperative environment, good analgesic control, and rapid physiotherapy assessment before successful hospital discharge can be achieved. Major comorbidities have been highlighted in the

Table V: Institutional elective day surgery total hip arthroplasty patient demographic, intraoperative, and perioperative data.

Sex	Age, yrs	BMI (kg/m ²)	ASA grade	Preop diagnosis	Comorbidities	Procedure	Approach	Anaesthetic	Operative Time (hrs: mins)	Blood loss (Hb drop, g/dl)	Time to XR (hrs: mins)	Time to Discharge (hrs: mins)	Unsuccessful day-case discharge reason
M	55	28.6	2	OA	Mild COPD, hypertension, GORD	Right THA	Posterior	GA plus block	01:10	-7.0	01:52	08:50	
M	63	29.7	2	OA	Hypertension, GORD	Right THA	Posterior	Spinal	00:52	-26.0	01:15	06:50	
F	54	24.5	2	OA	Right THA 2017, asthma, migraines	Left THA	Posterior	GA plus block	01:20	-19.0	01:05	07:11	
F	53	31.2	2	Hip dysplasia plus OA	Vertigo, haemorrhoids	Left THA	Posterior	Spinal	01:47	-09.0	23:35	123:47	*Non-English speaker, complex operation: dysplastic hip, short, high BMI
F	71	21.4	1	OA	Left THA 2016, benign tinnitus	Right THA	Posterior	Spinal	01:22	-22.0	02:55	06:27	
M	78	23.7	2	OA	Hypertension, Mild sleep apnoea, Hernia repairs	Left THA	Posterior	Spinal	01:24	-20.0	03:07	07:00	
M	63	36.5	2	OA	Mild COPD, kidney stones	Left THA	Posterior	Spinal	01:22	-23.0	03:53	05:41	
F	39	39.3	2	Hip dysplasia plus OA	GORD, anxiety, panic attacks	Left THA	Posterior	Spinal	01:53	+ 3.0	22:22	31:51	*Pain +++, anxiety, complex case; long operation time, high BMI
F	58	29.8	1	OA	GORD, current smoker, glaucoma	Left THA	Posterior	GA	01:06	-13.0	21:41	51:28	*Recruited on the day of surgery, no available capacity for UCLH@home
M	66	35.5	2	OA	Hypertension, tinnitus	Right THA	Posterior	Spinal	01:11	-14.0	23:19	30:49	*Recruited on the day of surgery, no available capacity for UCLH@home and no relative for supervision
F	72	24.8	2	OA	Corneal operations, postoperative DVT	Right THA	Posterior	GA plus block	01:11	-13.0	02:09	08:13	
F	55	22.6	1	Hip dysplasia plus OA	Nil	Robotic-assisted right THA	Posterior	Spinal	02:12	-21.0	02:45	06:04	
F	54	22.5	1	OA	Nil	Right THA	Posterior	GA	01:05	-13.0	03:26	08:52	
M	69	27.1	2	OA	Bilateral TKA, TURBT	Robotic-assisted left THA	Posterior	GA	02:19	-14.0	02:50	05:41	

*Failed discharge on the day of surgery.
 ASA, American Society of Anesthesiologists; BMI, body mass index; COPD, chronic obstructive pulmonary disease; DVT, deep vein thrombosis; GA, general anaesthesia; GORD, gastro-oesophageal reflux disease; OA, osteoarthritis; THA, total hip arthroplasty; TURBT, trans urethral resection of bladder tumour.

Table VI. Search strategy inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
Day-case arthroplasty being defined as discharge on the same day as surgery.	Non-English language article.
Reporting on outcomes of day-case THA.	Case reports.
Level I to IV evidence.	Follow-up less than 30 days.
	Discharge on following calendar day to day of surgery.
	Studies reporting outcomes of hip and knee arthroplasty that did not clearly define THA outcomes and complications separately.

THA, total hip arthroplasty.

literature such as cardiovascular disease, pulmonary disease, uncontrolled diabetes, coagulopathy, obesity, and corticosteroid use which may cause patients to be ineligible, as these conditions increase the risk of postoperative complications, which in turn increases LOS in hospital.³⁰ Studies measuring the outcomes of day-case THA have largely been conducted in selected patients without any major comorbidities.^{3,10-14,19,20,22,31,32} The American Society of Anaesthesiologists (ASA) scoring system has also been

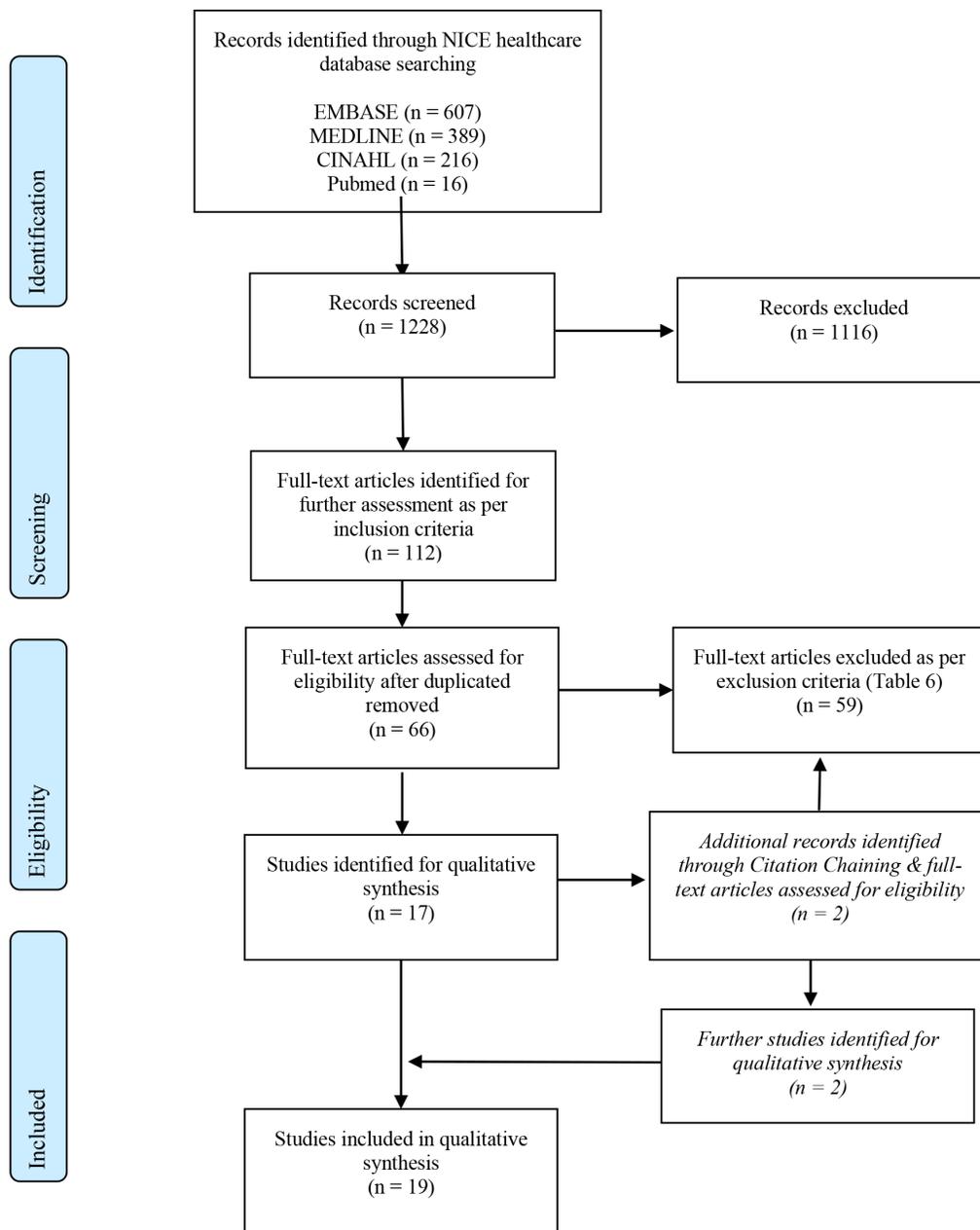
**Fig. 2**
Flowchart of search strategy.

Table VII. Summary of day-case total hip arthroplasty studies in the literature.

Author	Study design	No. of day-case THA patients	Follow-up (days)	Approach	Anaesthetic	Day-case complications (%)	Inpatient complications (%)	Day-case readmissions (%)	Inpatient readmissions (%)
Rosinsky et al ¹³	Prospective comparison	91	90	DAA	GA	11.00	11.00	0	1.10
Springer et al ²¹	Retrospective comparison	45	30	Posterior	GA/RA	2.22	0	0	0
Goyal et al ¹⁴	Prospective comparison	112	30	DAA	RA	0.89	3.70	0.89	0.93
Madsen et al ²²	Retrospective comparison	116	90	Posterior	RA	6.03	N/A	2.59	N/A
Fraser et al ²³	Prospective observation	106	365	DAA	RA	0.94	N/A	0.94	N/A
Sershon et al ²⁴	Retrospective comparison	965	90	DAA	RA	3.80	N/A	1.14	N/A
Klein et al ²⁰	Prospective observation	549	90	Mini-posterior	RA	4.92	N/A	0.55	N/A
Larsen et al ¹⁹	Prospective observation	29	42	Posterior	RA	0	N/A	0	N/A
Hartog et al ¹¹	Prospective observation	27	42	DAA	RA	4.17	N/A	4.17	N/A
Dorr et al ¹⁸	Prospective observation	50	180	Mini-posterior	RA	1.88	N/A	1.88	N/A
Toy et al ²⁵	Retrospective observation	145	90	DAA	GA/RA	3.44	N/A	0.69	N/A
Berger et al ¹²	Prospective observation	150	90	Mini-posterior	RA	2.00	N/A	0.67	N/A
Otero et al ¹⁶	Retrospective comparison	249	30	Not stated	GA/RA	5.62	4.96	2.02	3.55
Nelson et al ¹⁷	Retrospective comparison	420	30	Not stated	Not stated	7.86	13.43	1.43	2.97
Aynardi et al ³	Retrospective comparison	119	90	DAA	RA	1.68	0	0	0
Paredes et al ¹⁰	Prospective observation	72	90	DL/AL	RA	4.17	N/A	4.17	N/A
Richards et al ¹⁵	Retrospective comparison	136	90	DAA	GA/RA	8.82	10.29	1.47	1.47
Coenders et al ²⁶	Retrospective comparison	217	365	DAA	RA	4.61	11.54	1.38	4.46
Berend et al ²⁷	Retrospective observation	1,472	90	DAA/DL	GA and RA	4.82	N/A	2.17	N/A

DAA, direct anterior approach; DL, direct lateral; GA, general anaesthetic; N/A, not applicable; RA, regional anaesthetic.

used as an eligibility tool for day-case THA in a number of studies.^{11,19,22,32}

Perioperative measures

Analgesia. In order to achieve day-case discharge, post-THA pain must be effectively managed so that patients can successfully mobilize. A multimodal pain-controlling approach combines various groups of analgesics and aims to minimize opioid use in order to reduce opioid-induced adverse reactions. Multimodal analgesia has been shown to successfully deliver more rapid functional recovery, reduced adverse drug reactions and reduced LOS in hospital post-arthroplasty.³³ We prescribe pain relief medications as outlined in our institutional protocol (Table III). Also, educating patients about the importance of anticipatory analgesia, starting regular pain relief early and immediately after discharge must be the standard practice. Furthermore, we reinforce this during our routine UCLH@home day-one postoperative review at the patient's residence/home.

Anaesthetic. The decision to use a general anaesthetic (GA)^{13,15,16,21,25,27} or a regional anaesthetic (RA) (spinal or epidural)^{3,10-12,14-16,18-27} for day-case THA is debateable. Rosinsky et al¹³ is the only study using exclusively a GA as the form of anaesthetic. Berger et al¹² showed in their study involving 150 consecutive day-case THAs successfully discharged home on the same day, that a regional anaesthetic combined with adequate pre-emptive oral analgesia and anti-emetic therapy is an effective method of maximizing day-case discharge.

Surgical technique. While most day-case THA studies used muscle-sparing approaches,^{3,11-14,20,23} conventional approaches have also been shown to attain successful day-case THA.^{19,22} Furthermore, minimally-invasive approaches have been linked to more rapid recovery time, which is a factor that aids in successful day-case discharge post-THA.^{3,12,18} The reduced soft tissue trauma is the principal benefit of this approach and results in a reduced level of postoperative pain, greater mobility, smaller scar, and a reduced LOS.³⁴ The most popular approach among the yielded studies within the literature search is the direct anterior approach (DAA). There is increasing interest in the DAA more recently as it reduces soft tissue trauma, which is thought to allow for a more rapid rehabilitation.³⁴ In our institution, we predominantly use the posterior approach without any modifications as we believe that this service is about collaborative work and its success is multifactorial. Wound closure is as important as the surgical approach and surgical technique and meticulous closure is essential to reduce postoperative complications. We close the skin with 3-0 Monocryl to avoid having the need for the later removal of stiches or staples at the two-week postoperative review.

Management of intraoperative blood loss. Blood loss is common post-THA. Unlike inpatient arthroplasty, where

the maximum drop in Hb has been shown to be seen after four days,³⁵ there is no evidence in the literature to advocate the optimal timing for a Hb check following day-case THA.³⁶ Preoperatively, selecting patients with an adequate Hb can curtail the need for a blood transfusion, which in turn can increase LOS. Moreover, the use of tranexamic acid has proven to be an effective method of achieving haemostasis intra-operatively.³⁷ We routinely use tranexamic acid intravenously at induction (1 gram) followed by tranexamic acid wash prior to closure as a method of minimizing blood loss supported by the literature.^{10,13,15,20}

Postoperative measures

Early rehabilitation. Early postoperative rehabilitation once the patient is alert and clinically stable is pivotal in order to attain successful day-case discharge post-THA. As mentioned previously, adequate pain control is vital to allow for patients to mobilize with physiotherapists postoperatively and a multimodal analgesic approach has been shown to aid with early mobility.³³ Accordingly, general and spinal anaesthesia using short-acting drugs where tolerable, motor-sparing nerve blocks, or infiltration of local anaesthetic collectively facilitate early mobilization. Our unit predominately uses the posterior approach for THA and despite this, and in accordance with recent literature, we do not educate our patient's on hip precautions.³⁸ Multiple studies have demonstrated relaxed hip precautions do not increase the early dislocation rate following THA and potentially hinder both postoperative rehabilitation and patient satisfaction.³⁸

Discharge protocol. There is no clear consensus established in the literature regarding specific criteria that has to be satisfied prior to day-case discharge following THA. In our protocol, we follow strict discharge criteria in order to maintain safety and run an efficient service (Table IV). Furthermore, to ensure safety, our protocol includes a mandatory postoperative day-one review by UCLH@home. Pain control is pivotal for discharging patients on the same day. The presence of an escort and the presence of family or friends to support at home is an essential criterion. Goyal et al¹⁴ describes a clear discharge criteria that included completing certain physical activities with the physiotherapists, being declared clinically stable enough to leave the hospital and also feeling subjectively comfortable with sufficient assistance at home. Fraser et al²³ also adopted the same discharge criteria. However, like our protocol, other studies also took into account postoperative Hb levels as part of the discharge criteria.^{10,11}

Limitations to the evidence of day-case THA. The introduction of any novel protocol is always paralleled with areas for improvement. In Goyal et al's¹⁴ randomized controlled trial (RCT), they reported a high rate of patients (24%) recruited for day-case THA who were not discharged on the day of surgery due to common adverse events.

Conversely, in the opposing arm of the same RCT, they reported 17% of patients who were scheduled to receive inpatient arthroplasty met inclusion criteria for day-case surgery and were discharged on the same day. This further emphasizes the meticulous selection criteria required for effective day-case arthroplasty pathways.

Additionally, when analyzing the literature, one must take into account potential selection bias when comparing day-case to inpatient THA. Due to the selection criteria for day-case THA, the majority of patients are highly motivated, have lower ASA grades, fewer comorbidities, lower BMI, younger age, and have good social support networks.^{31,39} Jaibaji et al,³⁹ in their systematic review of day-case arthroplasty including 3,955 day-case THAs, had a mean patient age of 58.3 years compared to the UK national joint registry mean age of 70 years for THA.³⁹ The asymmetry of baseline characteristics is associated with lower surgical risk favouring patients selected for day-case arthroplasty.²⁸ Thus, it could be extrapolated that studies demonstrating superior or equivocal complication and readmission rates between day-case and inpatient THA could be secondary to selection bias,^{3,22,24,26} however, RCTs¹⁴ and propensity matched studies^{13,15,17,26} eliminating this bias have shown superior results favouring day-case pathways.

When evaluating financial benefits of day-case THA, previous studies have criticized reports lacking inclusion of outpatient visitations, complications or readmissions, support networks, and initial set-up expenses. Both studies included in our report included these,^{3,9} although, neither of the studies in their economic evaluation accounted for selection bias as described above associated with day-case THA vs inpatient THA. Working back from an NHS tariff-based system, increased financial remuneration is provided for managing patients with increased comorbidities following THA for hip fracture due to increased cost of care. Accordingly, this may negate the size of financial benefits reported in the above studies.⁴⁰ Additionally, incorrect coding of day-case total knee arthroplasty in an institution demonstrated financial losses following its introduction, highlighting the constraints of the initial implementation of novel pathways.⁴¹

Due to the heterogenous nature of reporting studies, differences in surgical approach, anaesthetic technique, patient demographics, control groups, preoperative, perioperative, and postoperative protocols, and the limited number of studies (single RCT), the evaluation of the benefits of day-case THA compared with inpatient THA remains novel. Further prospective RCTs are required to truly define efficacy and morbidity of day-case arthroplasty pathways.⁴² Nonetheless, the evidence presented demonstrates a safe and effective pathway for appropriately selected patients with consistently low complication and readmission rates. In our institution,

we benefited from this service by reducing costs and freeing up beds for the next surgical list, especially considering our limited green pathway beds due to the effect of COVID-19.

Day-case THA proves to be as safe, effective, and more cost-effective than inpatient THA, benefiting both patients and healthcare systems alike. In our UK NHS-based system, unsuccessful same-calendar-day discharge was seen in patients with complex surgical cases, language barriers or late recruitment with insufficient capacity of our day-case supporting systems (UCLH@home team). Careful patient selection and education, adequate perioperative considerations, including multimodal analgesia, surgical technique, and blood loss management protocols and appropriate postoperative pathways, are essential for successful day-case THA.



Take home message

- Early literature demonstrates day-case total hip arthroplasty (THA) proves to be as safe, effective, and more cost-effective than inpatient THA, benefitting both patients and healthcare systems alike.
- In a UK NHS-based system, initial results for day-case THA are promising, with low 30-day and 90-day readmission and complication rates.
- Careful patient selection and education, adequate perioperative considerations, and appropriate postoperative pathways are essential for successful day-case THA.

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Funding statement:

- No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

ICMJE COI statement:

- S. Konan reports consultancy, payment for lectures including service on speakers' bureaus, payment for development of education presentations and travel/accommodations/meeting expenses for Smith and Nephew and AO, all of which are unrelated to this article. F. S. Haddad reports editorial board membership by The Bone & Joint Journal and the Annals of the Royal College Of Surgeons, consultancy and royalties from Smith & Nephew, Corin, MatOrtho, and Stryker, and payment for lectures (including service on speakers' bureaus) from Smith & Nephew and Stryker, all of which are unrelated to this article.

Acknowledgements:

- This study was part of a quality improvement project conducted at University College London Hospitals NHS Foundation Trust. The authorship would like to thank the entirety of the Trauma & Orthopaedics Department and Anaesthetic Department for their support in the pathway and study. Specifically, we would like to further thank Ms A Brooke, Dr C Goldsack, Dr S West, Mr S Oussedik, Mr J Witt, Mr R Patel, and Mr G Grammatopoulos for their contribution in creation of the Elective Day Surgery Arthroplasty Pathway Standard Operating Procedure.

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