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# **BSOA ANNUAL SCIENTIFIC MEETING ABSTRACT BOOKLET**

**The Studio, Birmingham**

**Monday 11th & Tuesday 12th November 2024**

# ORAL PRESENTATIONS

Title	Presenter
Analysis of patient satisfaction with day-case hip and knee arthroplasty	Nina Handzewniak
Achieving lasting change in a Welsh orthopaedic surgical unit; halving length of stay for hip and knee arthroplasty in 6 months.	Rob Jesty
Preventing future deaths from local anaesthetic toxicity (LAST) - survey and education sessions for orthopaedic surgeons on local anaesthetic dosing	Serena Sodha
Value-driven arthroplasty at Chase Farm Hospital (CFH)	Snehal Kale



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Annual Scientific Meeting  
Abstract Booklet 2024  
Oral Presentation  
Nina Handzewniak

## **Analysis of patient satisfaction with day-case hip and knee arthroplasty**

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Day-case (outpatient) arthroplasty has been gaining interest in recent years as a possible solution for tackling the elective joint replacement waiting lists. With emerging evidence for their cost-efficiency [1], reduced incidence of complications [2] and lower readmission rates [3] it appears to be an attractive option for many clinicians. Unfortunately, data on patient satisfaction with daycase procedures is scarce, and mostly focused on unicompartmental knee arthroplasty [4]. This study aims to evaluate patient reported outcomes for total hip, total knee and unicompartmental knee day-case arthroplasty.

### Methods

This single centre study analysed a cohort of 39 patients who underwent an elective outpatient joint arthroplasty between August 2019 and August 2024. Eighteen patients underwent a unicompartmental knee replacement (UKR), eight underwent a total knee replacement (TKR), and thirteen underwent a total hip replacement (THR). Each patient got contacted over the phone to answer a nine-question interview, during which they were asked to rate how satisfied they were with various parts of their daycase procedure and the peri-operative care. Furthermore, the pre-surgery Oxford Hip and Knee scores were compared to the scores at the 6-week follow up appointment.



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## Results

Within the investigated cohort, 36 (92.3%) patients rated the decision of the same day discharge as 'Excellent' or 'Good'. 38 (97.4%) patients were satisfied with the quality of post-operative instructions they received, and 34 (87.2%) with the physiotherapy service. Furthermore 34 (87.2%) of the interviewed patients would be happy to undergo a day-case procedure on the contralateral joint. In the post January 2023 cohort, the average Oxford Hip Score for the THR patients pre-surgery was 21.9, as compared to 42.0 six-weeks post the arthroplasty (91.8% improvement). The average Oxford Knee Score was 22.2 increasing to 33.3 (50% improvement) in the TKR group, and 24.6 increasing to 32 (30% improvement) in the UKR group.

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1. Hlatshwako et al., Using orthopaedic health care resources efficiently: A cost analysis of day surgery for unicompartmental knee replacement
2. Bayaoumi et al., Successful same-day discharge in 88% of patients after unicompartmental knee arthroplasty: a systematic review and meta-analysis
3. Dey et al., The safety and efficacy of day-case total joint arthroplasty
4. Patel et al., The patient perspective, experience and satisfaction of day case unicompartmental knee arthroplasty: A short-term mixed-methods study





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## **Achieving lasting change in a Welsh orthopaedic surgical unit; halving length of stay for hip and knee arthroplasty in 6 months.**

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There is an enormous challenge ahead with NHS waiting lists at a record high. 3% of the population of Wales are on an orthopaedic waiting list [1]. 10% of all patients on a waiting list in Wales are waiting for hip or knee replacement, and they are waiting on average 452 days [1]. Making matters worse, National data shows a 10% increase in emergency trauma activity between 2014-15 and 2019-20 which has placed more pressure on capacity for planned care [1].

Orthopaedic services can operate models with fewer beds if the surgical element of the pathway is well planned, patients are prepared and educated, and processes enable effective and timely discharge. We planned to formulate a short stay arthroplasty protocol in line with GIRFT (getting it right first time) ambulatory hip and knee replacement guidance with the aim of reducing our mean length of stay and improve the patient pathway [2].

### Methods

With an average length of stay for primary hip and knee arthroplasty of 3.66 days we tried to drive change by creating a clear short stay arthroplasty policy aimed at reducing this figure and improving the patient experience. This involved engaging all relevant team members: surgical, anaesthetic, pre-assessment, recovery, nursing, radiology, pharmacy and therapies. The whole MDT was consulted and involved in the development of our protocol. Our prior anaesthetic practice was not standardised with most patients receiving long-acting intra-theal opiates. An audit of our patients found that those receiving intra-theal opiate had a longer length of stay, higher post-operative pain scores and higher rates of PONV, urinary retention and post-operative hypotension. This galvanised us to implement a standardised anaesthetic peri-operative care plan advocating plain spinals supplemented by regional nerve blockade (adductor canal and genicular nerve blocks for knees and PENG block and lateral femoral cutaneous nerve for hips).



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Empowering a change in anaesthetic practice by holding sessions to teach these US guided regional techniques to anaesthetists served to further increase the engagement with the new short stay protocol.

## Results

Prior to initiating the pathway the average length of stay for primary hip and knee arthroplasty was 3.66 days. After three months of the new short stay arthroplasty pathway the length of stay was reduced to 2.78 days. 38% patients were discharged on day 0 or 1 and 68% were discharged by day 2. The subsequent 3 months after that we achieved an average length of stay of 1.8 days (excluding 6 outlier cases) with 59% discharged on day 0 or 1 and 74% discharged by day 2. This equated to a 51% reduction of length of stay in 6 months. We also noticed fewer re-admissions in the 6 months following instigating the policy. Our reduced length of stay achieved in a short period of time offers valuable insights that may benefit other centres aiming for similar success in this area.

## References

1. Orthopaedic Services in Wales – Tackling the Waiting List Backlog (audit.wales) Report of the Auditor General for Wales. March 2023
2. Guide to delivering perioperative ambulatory care for patients with hip and knee pain requiring joint replacement surgery: GIRFT / SWAOC, March 2023



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## **Preventing future deaths from local anaesthetic toxicity (LAST) - survey and education sessions for orthopaedic surgeons on local anaesthetic dosing**

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The recent widely-publicised case of a death from LAST after hip replacement highlights the potential for tragic consequences when dosing errors with local anaesthetic (LA) occur [1]. While often considered the remit of anaesthetists, any doctor who administers a drug should also be confident to dose, prescribe and manage immediate complications of that drug.

### Methods

An anonymous survey was carried out of orthopaedic surgeons of varying seniority. This was followed by teaching sessions and recirculation of our comprehensive Trust guidance, with post-intervention surveys. A records audit of prescribing practice was also performed.

### Results

Just 42% of responders agreed or strongly agreed that they understood the maximum doses of LAs. A quarter knew the contents of an ampoule of 0.5% bupivacaine. 33% suggested a dose above the safe limit for a case study patient, and responders were not familiar with the management of LAST. Notes audit highlighted that LA is often not prescribed appropriately.

### Conclusion

Competence in LA dosing among orthopaedic surgeons is poor. Teaching sessions with case studies have been effective and well-received. A simplified prescribing pathway is in development, and ongoing education with the surgeons and scrub team are planned.

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Snehal Kale

## **Value-driven arthroplasty at Chase Farm Hospital (CFH)**

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The NHS is increasingly prioritizing "value" as demand on limited resources keeps increasing. While patient outcomes (clinical effectiveness, experience, and safety) are crucial[1,2], cost efficiency in day case arthroplasty is also of significant importance[1,3]. To understand cost behavior and optimize resource allocation, robust cost data and analysis is integral. The positive health effects of day case arthroplasty have been established and this abstract aims to highlight its massive potential to reduce healthcare costs for the NHS.

### **Methods**

In order to analyze the costs associated with day case arthroplasty procedures, a sample of 48 cases were identified from the admitted patient care data sets at CFH. To ensure a fair comparison, patients of similar age group, frailty score and medical comorbidities, belonging to the same patient cohort were selected. Anesthetic perioperative plan included shorter acting spinal anaesthetic, motor and opioid sparing nerve blocks making it patient and procedure specific with multimodal analgesia.





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## Results

Implementing this anesthetic technique in the sample set resulted in significant cost savings due to reduced length of stay (LoS) in the hospital. This reduced the physiotherapy and ward costs by 80%, imaging costs by 63% and surgical/medical teams cost by 41%. For joint replacements, the average national tariff is about £7,700, while our technique reduces costs to about £4,600 as a result of early hospital discharge, saving almost £3,000 per joint. These savings can be reallocated in a variety of ways, such as increasing surgical capacity to address backlogs, training and research, or even investing in innovative technologies like virtual reality for orthopedic surgeries.

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# POSTER PRESENTATIONS

Title	Presenter
Case report: Awake fiberoptic intubation in a patient with anterior cervical spine osteophytes (ACOs) causing compression of neck structures	Aamer J Mughal
Virtual reality in awake orthopaedic patients	Jake Warrington
Blood loss in periprosthetic femoral fracture surgery	James Gladwin
Human factors in multidisciplinary management of complex hip surgery in high-risk patient: a case-based learning and a call for subspecialty anaesthesia provision guidelines	Nadeeshya Welikala
Human factors, impact of cognitive overload and its consequences during an elective "Swiss Cheese" day in a tertiary orthopaedic stand-alone centre.	Rashmi Rebello
Revolutionizing patient care: Lessons from our ambulatory arthroplasty	Samiha Ismail
How to Use Brain Function Monitoring for Adequacy of Anaesthesia	Shahzeb Zafar



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## **Case report: Awake fiberoptic intubation in a patient with anterior cervical spine osteophytes (ACOs) causing compression of neck structures**

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### Introduction

Spinal osteophytosis is a common age-related finding, with anterior cervical osteophytes (ACOs) occurring in up to 30% of the population over 65 years of age [1]. The majority are asymptomatic [2], however they have been documented as a cause of dysphagia by compression of the posterior pharyngo-oesophageal segment, narrowing of the luminal diameter and interference with normal peristaltic action [3]. Retrospective cohort studies have suggested they are implicated in up to 10.6% of cases of dysphagia referred to ENT services [4], and in extreme cases can cause significant laryngeal compression and narrowing leading to dyspnoea and stridor [5]. The implications of such cases for the anaesthetist are broad, including management of multiple co-morbidities in the typical geriatric patient; potential for difficult airway management due to distortion of laryngopharyngeal anatomy and relative neck immobility; and peri-operative nutritional considerations.

### Case Report

A 79-year-old gentleman was scheduled for elective resection of C3-5 anterior osteophytes. His initial presentation in the months prior had noted progressive dysphagia to both solids and liquids, and resultant weight loss (approx. 38 kilograms). An MRI cervical spine demonstrated marked oesophageal stricturing focused at C3/4, with anterior displacement of the laryngeal inlet and a degree of supraglottic narrowing. He had therefore been initiated on RIG feeding for nutritional support (a PEG was attempted but abandoned due to inability to pass the scope beyond the stricture)



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Additional past medical history included ischaemic heart disease and previous transient cerebral ischaemic events, diabetes mellitus, and prostate cancer.

Intubation was planned via an awake fiberoptic (disposable Ambu® scope) in the sitting position. Routine monitoring was applied as per Association of Anaesthetists guidelines (ECG, non-invasive blood pressure, pulse oximetry) with the addition of processed EEG (SedLine®). Tracheostomy sets were available for either emergency front of neck access, or for planned insertion to improve the surgical field (neither of which were ultimately required). Topicalisation of the airway was conducted by a combination of oxygen driven nebulisation of 5ml 2% lidocaine, and direct atomisation of 2.5ml 5% lidocaine/0.5% phenylephrine solution to the posterior oropharynx and laryngopharynx. Glycopyrrolate premedication was omitted due to evidence of moderate aortic stenosis on a routine pre-operative echocardiogram. After 5 minutes, conscious sedation was administered as a 2mg midazolam intravenous bolus and TCI remifentanyl infusion (Minto Cet 1ng/ml) to significantly obtund airway reflexes whilst maintaining communication with the patient until induction of general anaesthesia. A guedel airway was inserted to gauge tolerance of awake airway instrumentation, and subsequent insertion of the fiberoptic scope was aided by gentle tongue traction and a jaw thrust. A further 2ml 2% lidocaine was administered to both the cords and carina via the scope during laryngoscopy. An anterior larynx was identified as anticipated, and the laryngopharynx demonstrated intact mucosa, minimal oedema and relatively maintained aperture, permitting an atraumatic first pass intubation with a 7.0mm reinforced endotracheal tube (Covidien Shiley™). Following induction of general anaesthesia, fiberoptic oesophagoscopy was performed to facilitate insertion of an orogastrically placed Ryles tube. This demonstrated compression of the posterior wall at the level of the cervical osteophyte and significant narrowing of the lumen, consistent with pre-existing imaging.



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The patient subsequently underwent a multi-level osteophyte resection via a Smith-Robinson anterior approach to the neck, and the operation was uneventful beyond a transient episode of bradycardia with surgical retraction on surrounding structures. He was extubated successfully at the end of the procedure and electively admitted to HDU for post-operative monitoring. After being assessed on day one post-operatively by the speech and language therapists, he demonstrated immediate improvement of dysphagia symptoms with no evidence of aspiration to oral intake of clear fluids and a soft diet. Given the prolonged period of dysphagia and lack of oral intake, he was however advised to continue with RIG feeding and small sips of fluid only, until a Barium swallow follow-up could be arranged (still pending at time of writing).

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Jake Warrington

## **Virtual reality in awake orthopaedic patients**

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Virtual Reality (VR) headsets have been used in place of pharmacological sedation [1]. Data was collected from patients undergoing eligible orthopaedic procedures at The Rotherham NHS Foundation Trust regarding willingness to adopt VR during surgery and its effect on their decision to choose regional anaesthesia (RA) over general anaesthesia (GA). VR was then trialled in Orthopaedic theatres.

### Methods

Patients eligible for surgery under RA were identified using orthopaedic theatre lists. Patient questionnaires were used to assess anxiety, anaesthetic preference, and whether the availability of VR changed this preference. Patients receiving VR completed questions on their experience. Clinical staff were asked to comment on the practicality of intraoperative VR. Questionnaires utilised Likert scales and free text comments.

### Results

Based on 47 questionnaires, 11 additional patients would consider opting for RA over GA if VR was available ( $Z=2.18$ ,  $P=0.03$ ). All patients that trialled VR ( $n=4$ ) would be very likely to choose it again. Free text answers demonstrated positive feedback in all patients receiving VR. Availability of VR caused one patient to alter their anaesthetic choice receiving local anaesthetic only over GA.

### References

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James Gladwin

## **Blood loss in periprosthetic femoral fracture surgery**

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Periprosthetic femoral fracture carries significant morbidity and mortality even when treated surgically [1]. Fixation of periprosthetic femoral fractures occurs not infrequently in our trust. It is major surgery which frequently requires intraoperative or postoperative blood transfusion. We sought to identify rates of transfusion and subclassify by fracture type to identify particularly high-risk groups.

Our aims were primarily to identify rates of transfusion in periprosthetic femoral fracture surgery within our trust and identify high risk groups for bleeding. We aimed to increase use of intraoperative cell salvage and in doing so aimed to reduce rates of allogenic blood transfusion and post operative anaemia.

### Methods

All cases of periprosthetic femoral fracture in our trust in last three years were reviewed, this totalled 60 cases. Twenty-four cases were excluded predominantly as they were transferred for surgery elsewhere or treated conservatively.

After exclusions this left 36 patients for analysis. The anaesthetic charts and post operative recovery unit (PACU) notes were reviewed, in addition to electronic notes. Preoperative haemoglobin level was noted and compared to result immediately post-op and in the following five days. Allogenic packed red cell transfused units were calculated both intraoperatively and postoperatively. Data was subcategorised and evaluated by fracture location, percutaneous vs open approach and unified classification system.



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## Results

Nineteen patients (53%) received a blood transfusion at any point, with nine patients (25%) receiving three or more units. Eleven patients (31%) received a transfusion intraoperatively and 13 patients (36%) patients received a transfusion postoperatively. There was a mean haemoglobin drop of 31.1g/L across all patients, from preoperative value to lowest value in five days post operatively. This figure was the same in groups receiving a transfusion and those not receiving a transfusion showing appropriate use of red cell transfusion. Transfusion rates were highest in distal fractures (71%) when assessed by location, type D fractures according to the unified classification system [2] (100%), and with a percutaneous approach (71%) compared to an open approach.

## Conclusions

Periprosthetic fracture surgery is associated with significant blood loss. Our data shows significant risk of requiring a blood transfusion in the perioperative period. All patients should be expected to have a haemoglobin drop and strategies should be used to mitigate against this.

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Nadeeshya Welikala

**Human factors in multidisciplinary management of complex hip surgery in high-risk patient: a case-based learning and a call for subspecialty anaesthesia provision guidelines.**

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Each year, approximately 250,000 high risk patients undergo surgery in the NHS, with increasing patient age, comorbidities and complexity of surgery including hip operations. This highlights the need for perioperative care led by a multidisciplinary team. [1] Implementation of human factor strategies - focusing on teamwork, communication and decision making - can enhance patient safety and improve workers well-being. [2, 3]

Clinical case

67-year-old female patient required urgent hip excision arthroplasty. Imaging revealed chronic septic arthritis of the right hip extending into sacroiliac joint, psoas muscle and a large complex pelvic lesion. Complex medical history included high BMI (42 kg/m<sup>2</sup>), deconditioning, anaemia, increased inflammation markers with the risk of intraoperative septic shock, hypertension and recent proximal lower limb deep vein thrombosis.

Despite the procedure's urgency, a multidisciplinary team (MDT) enabled a focused risk assessment, optimization, coordination of postoperative critical care and addressing need for additional workforce for safe surgical (two consultant surgeons and senior trainees/fellows) and anaesthesia management (two anaesthetists).



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However, on the morning of surgery, despite the best efforts, unexpected shortage of anaesthetists caused delays, increased team stress level, cancellation of elective cases and a subsequent clinical incident report highlighting the avoidable impact on the team. Due to exceptional efforts of the teams, the patient underwent a successful five-hour operation (GA, invasive monitoring, cell salvage). Post operatively, patient was managed on ICU and subsequently back in the orthopaedic ward, and discharged from the orthopaedic centre 23 days after surgery.

The case and surrounding clinical and non-clinical issues, including continuing unrealistic expectations from anaesthetists in the setting of limited anaesthetic resources, were urgently discussed at the local M&M meeting. This led to a call for departmental guidelines on the safe anaesthesia provision for complex hip surgery, in relation to clinical safety and protection of anaesthetic staff wellbeing. The latter is on the way and can benefit from the input of the national society of orthopaedic anaesthetists.

#### Learning points

MDT involvement is crucial in improving perioperative care in high-risk surgery. [1, 4] Human factors play a critical role in improving patient safety, optimizing team dynamic, workflow, and reducing the cognitive burden in high stress environment. [3] Recent recommendations highlighted the importance of theatre list planning, adequate time allocation, staffing and the use of cognitive aids to ease pressure on healthcare professionals [2,3]

Orthopaedic centres dealing with high-risk patients would benefit from having robust anaesthesia management guidelines for complex surgery, for the benefits of patient safety and wellbeing of workforce.





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Rashmi Rebello

## **Human factors, impact of cognitive overload and its consequences during an elective “Swiss Cheese” day in a tertiary orthopaedic stand-alone centre.**

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Complex orthopaedic surgeries, such as revision hip replacement or periprosthetic fracture, require good multidisciplinary teamwork. Human factors, such as cognitive overload, team dynamics, and individual behaviours, significantly influence surgical outcomes and staff wellbeing. Errors in the operating theatre can be caused by human factors or organisational factors [1], which can be visually described by the Swiss cheese model [2]. This model postulates that failures may be active because of human factors and latent as a result of inadequacies in the system or institution [2]. When the ‘holes’ in the ‘cheese’ align, an error can bypass the various layers of defence, resulting in an adverse event.

### Clinical cases report

We present a particularly challenging elective orthopaedic list with two complex cases. Case 1: 32 year old patient for first stage total hip replacement; background of sickle cell anaemia, chronic pain, poor venous access, septic arthritis, chronic pain issues, polypharmacy, history of intracerebral bleed, DVT, PE. Case 2: 82 year old patient for revision of total femoral replacement for periprosthetic infected fracture; comorbidities including high body mass index, hypertension, ischemic heart disease, aortic stenosis and chronic obstructive pulmonary disease. The order of this elective list was driven by the need to prevent cancellation of either of the two high-risk patients due to difficulty of rebooking. In response to expected complexity of the cases it had 2 consultant orthopaedic surgeons and trainees/fellows booked for simultaneous operating. The additional surgical workforce was attempted to be matched by an adequate number of senior anaesthetists while booking the list but this failed to materialise on the day.



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Unexpected pressures on the day were caused by the absence of a floating anaesthetic consultant during the day and twilight hours, due to a busy on-call. The consultant anaesthetist for this challenging list was then pressured to take over this extra role while in theatre with the complex first case as well as to deal with the post anaesthetic recovery staff who were refusing to accept the patients without a floating senior anaesthetist during twilight hours. As a result, the management of both cases were significantly impacted by a multitude of human factor issues, which eventually compromised human performance, lead to cognitive overload [3] and amalgamated into a perfect example of the Swiss cheese model. There was a delayed anaesthetic set up, under pressure of the second case, followed by a poorly prepared anaesthetic team for the management of deterioration of the patient intraoperatively. The latter required hours of postoperative stabilisation before an unplanned transfer to intensive care unit. Reassuringly, both patients made good recovery and were discharged home.

## Results

The shortcomings of that stressful “Swiss Cheese” day in theatres and clinical judgement errors caused by human and organisational factors were extensively discussed, with many opportunities for shared learning. Several learning points were attained after our experience and brought up at the departmental morbidity and mortality meeting in order to analyse how this list could have been managed better. There has been a significant improvement in staffing of post anaesthetic care unit with an onsite senior clinician, which was welcome by surgical, anaesthetic and post anaesthetic care unit teams. We have also developed “room tips”/guidelines for anaesthetic management of similar cases, with contributions from seven consultants and a senior trainee, to highlight important aspects of anaesthetic management for such cases, to not only improve patient theatre “journey” and outcomes but to also ensure safety and wellbeing of the workforce.



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**B.S.O.A**

*British Society of Orthopaedic Anaesthetists*

Annual Scientific Meeting  
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Poster Presentation  
Samiha Ismail

## **Revolutionizing patient care: Lessons from our ambulatory arthroplasty**

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COVID-19 has spurred a re-imagining of surgical pathways to address growing backlogs. This prompted the NHS' Getting It Right First Time Programme (GRIFT) to advocate for ambulatory arthroplasty [1]. It is cost-effective [2], reduces post-operative complications [3] and increases patient satisfaction [4]. In 2021, our Regional Elective Orthopaedic Centre implemented an Ambulatory Arthroplasty pathway. This was audited in 2022 with 89 cases included and achieved a 32.5% success rate; defined as patients not requiring inpatient stays. Following this the pathway went through significant changes. This abstract aims to evaluate the effectiveness of these changes and share the lessons learned.

### Methods

Our original pathway closely mirrored the standard pathway, with key changes such as multidisciplinary ambulation discussions on the day of surgery and an enhanced home follow-up process. Following a 2022 audit, the pathway was redesigned to enhance the patient experience and success rate. Pre-operatively, patients are booked as day-cases ensuring the entire team are aligned on the approach, and pre-surgery phone calls are done to help familiarise patients with the process and normalcy of home communication. Peri-operatively, anaesthetic plans focus on enabling rapid recovery and early mobilisation using fast-acting, short-duration spinal anaesthetics with motor sparing regional nerve blocks. This facilitates early post-operative physiotherapy, helping patients mobilise safely with less pain prior to discharge. Take-home medications packs are organised in advance to prevent drug sourcing delays. Post-operatively, patients receive high-energy drinks, transition to trolleys or recliner chairs and wear their own clothes, promoting mobility and early discharge



To ensure safety, patients receive follow-up calls for two consecutive days and are provided with emergency contacts numbers. Finally, a consistent multidisciplinary team implements the pathway to foster efficient teamworking and communication. The pathway was audited from January 2023 to August 2024, and included all booked day-case arthroplasty cases.

### Results

During the audit, 70 day-case arthroplasties were preformed, with a 50% success rate, up from the original 32.5% success rate. The median post-operative stay for successful cases was 7.1 hours (interquartile range [6.4-8.5]) compared to 30.0 hours (interquartile range [25.5-74.2]) for unsuccessful cases. The main cause of unsuccessful ambulation was physiotherapy delays, affecting 13 patients (19%). This shows that ambulatory arthroplasty is not only achievable, but its success relies on the reimagination of the holistic patient pathway. Our approach is highly relevant to other elective orthopaedic surgical centres. Moving forward, we will enhance physiotherapy services, and educate patients on the availability and safety of ambulatory arthroplasty to boost enrolment. Additionally, we now continuously audit this pathway in real time to accelerate improvements.

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# BSOA

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Shahzeb Zafar

## How to Use Brain Function Monitoring for Adequacy of Anaesthesia

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Brain function monitoring is widely used as a measure of adequacy of anaesthesia. Various different modalities are used that employ there own proprietary algorithms/formulas to process EEG waveforms to deliver a number corresponding to how asleep or awake the patient is. Many centres, including the Royal Orthopaedic Hospital Brimingham, use “Sedline” to measure adequacy of anaesthetic. The posters are aimed at being a quick guide to understanding and knowing what to aim for when using Sedline.

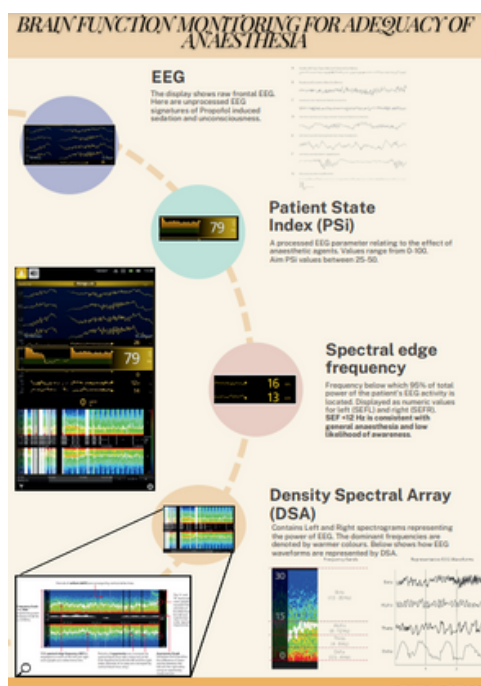
### Methods

No ethics approval was needed. This is supposed to be an educational poster aimed at providing a quick guide to using Sedline and knowing what parameters to aim for.

### Results

Information regarding Sedline has been summarised in the form of 2 posters.

#### Sedline 1:



#### Sedline 2:

