Best Practice for Hip Arthroplasty Surgery Documentation

GIRFT
GETTING IT RIGHT FIRST TIME

BRITISH HIP SOCIETY

British Orthopaedic Association

Working in partnership with NHS Resolution

Introduction

As part of ongoing work both to improve patient outcomes and to reduce litigation costs within the NHS, a large series of hip arthroplasty cases in which complaints were made have been reviewed. A number of common denominators and concerns, both in technique and documentation, have been identified. The Getting It Right First Time (GIRFT) programme, in association with the British Hip Society, British Orthopaedic Association and NHS Resolution, aims to reduce the frequency of such occurrences by bringing these common denominators to the attention of surgeons who perform hip surgery. Throughout this guidance, real cases are used as a tool to stress the importance of adequate documentation of hip surgery.

To ensure patients can have confidence in their surgery, they should be reassured by a series of professional standards to ensure that hip replacements are planned, performed and supervised in a safe and thorough way, with attention to detail in all these areas. Additionally, it is important for patients to know that the prostheses used have either a proven track record (via an ODEP rating), or are undergoing a rigorous prospective evaluation through clinical trials or via processes such as Beyond Compliance[1].

The various components of the joint arthroplasty should be clearly documented providing evidence of safe clinical practice, in addition to providing important information should a review or revision of the replacement ever be required.

This guidance illustrates the standard of practice that should be followed in modern hip surgery in the UK. The document is not a comprehensive guide to hip surgery, nor is it expected that surgeons will follow all the advice it covers. Ultimately the responsibility for patient care is with the treating surgeon, but the British Hip Society and British Orthopaedic Association endorse the content of this guidance.

Theatre briefing

A brief gathering at the start of any surgical list has become standard within all sectors of healthcare. It is essential that this takes place. It is the surgeon's responsibility to ensure that all the required instrumentation and prostheses are available and that the requirement for any additional equipment, is communicated by the surgical team prior to any surgery taking place.[2] Evidence that the WHO surgical safety checklist including sign-in, time-out and sign-out has been performed should be clear and available in the record.[3] As part of that, the administration of pre-operative prophylactic antibiotics and other peri operative medication, (e.g. tranexamic acid) should be detailed as well as evidence of patient warming, plans for VTE prophylaxis during the procedure and post-operatively should be recorded. It is important that any unusual or additional steps in the procedure are identified.

Pre-operative planning

A record detailing the conclusions of any pre-operative multi-disciplinary team (MDT) meetings should be documented and thereafter made available to justify the indications for surgery and the procedure planned. In addition, the results of preoperative templating, if used, should be noted. A record of implant selection and rationale for that implant choice should be documented at the time of consent. Any potential bone grafting, whether autologous or non-autologous, should be discussed in the consent process and specifically referenced in the record of consent.

The procedure

The names and grades of the lead surgeon and any assistants present during the operation should be documented. Similarly, the details of the anaesthetist(s) should be noted along with the type(s) of anaesthetic used.

With regard to the operative detail, the following should be recorded: patient position, skin preparation, and surgical approach utilised.

When using a posterior approach, it should be detailed whether or not the sciatic nerve was visualised, and how the nerve was protected. The approach itself should be described in addition to steps taken to protect the adjacent neurovascular structures. A diagram could be used, if required, and any unusual anatomy should be recorded, both in the narrative and diagrammatically.

Case Vignette

THR - Failure to identify/protect the sciatic nerve

A patient underwent a right total hip replacement. Postoperatively, she developed a right foot drop and, following nerve conduction studies, was diagnosed with severe proximal sciatic nerve lesion.

The patient alleged damage to the sciatic nerve was as a result of substandard surgery.

An independent expert, instructed to guide the court and the trust, was critical of the operating surgeon's failure to apply British Orthopaedic Association Blue Book Guidance by failing to identify and protect the sciatic nerve.

Subsequent settlement resulted in a payment (with legal costs) of £150,000.

Judgment was critical of a failure to identify the sciatic nerve and to record that in the operation note.

Messages:

Documentation of the identification and any steps taken to protect critical structures, such as the sciatic nerve in the posterior approach, is essential.

It is also important to note and to record the neuro-vascular status at end of any procedure, with neurologic status reviewed and recorded once regional anaesthesia has worn off.·

Acetabular preparation

With regard to the acetabulum, the quality of the bone stock, unusual anatomical variants and abnormal orientation should be recorded. A record should be made of the maximal size of the reamer used and any concerns with the integrity of the acetabular walls post preparation. The inner and outer diameter of any implant should be recorded clearly. When using an uncemented socket, a comment should be made regarding implant stability and whether adjunctive screw fixation was required.

The surgeon's assessment of final acetabular component orientation should be detailed alongside a comment regarding how that position was planned and achieved.

With uncemented fixation, the liner type and size should be detailed with confirmation that it was checked to be seated correctly within the acetabular shell.

Femoral preparation

On the femoral side, the size of the final broach/reamer should be identified. Subsequently the surgeon should record whether a trial reduction was performed, the components used in that trial, and an assessment of the resulting range of motion and intraoperative stability. Again, any anatomical variations encountered, and steps taken to accommodate these should be noted.

Case Vignette

THR - Failure to document anatomical variations

Having had a right uncemented total hip replacement using a 8mm femoral stem, a man in his sixties required and underwent revision surgery 2 years later, having been experiencing persistent pain due to the femoral stem having become loose and fractured.

The Claimant alleged that the entry point for introduction of both the rasps and prosthesis had been excessively medial, resulting in an inappropriately small prosthesis being used and implanted in varus.

There was subsequent migration and aseptic loosening of the component and failure of the prosthesis.

The allegation was not accepted by the operating surgeon, who claimed that he had to use the small prosthesis because of the abnormally excessive curvature of the Claimant's femur.

The case could not be defended at trial, however, as there was found to be insufficient evidence in the operation note to support the surgeon's account. Specifically, there was a lack of detail as to the surgical approach and a lack of explanation in the operative record regarding the rationale for the unusually small prosthesis.

Damages of £15,000 plus costs were paid to settle the claim.

Message:

Any unusual anatomy and the steps taken to adapt to those anatomical variations should be documented.

When using an uncemented implant, the size of the component, the level to which it was seated, and security of fixation should be detailed. Any intra-operative concern with calcar, or more distal femoral fracture, should be identified alongside how such an injury was assessed and treated.

When using cemented fixation, the preparation of the canal, the presence and size of the cement restrictor and centraliser should be noted.

The use of trial components is recommended and should be recorded alongside any reason why the definitive components implanted are a different size to the trials.

Case Vignette

THR - Uncemented stem sizes

A patient underwent a right uncemented total hip replacement. Post-operatively the patient had a clinically significant leg length discrepancy and experienced ongoing pain.

The patient alleged that the NHS trust had used an incorrect prosthesis and failed to correct that error intraoperatively when it was apparent that a smaller prosthesis should have been used. It was argued that, had an appropriately sized prosthesis been used, a good result would have been achieved without the identified 2cm leg length discrepancy.

The claimant was awarded £60,000 with additional costs in the region of £25,000.

Message:

Ensure that there is adequate planning prior to surgery.

Assess leg lengths preoperatively and record any pre-operative difference or concern. This is particularly important where there has been previous surgery or in cases with abnormal anatomy. Intraoperative steps to assess leg lengths and hip biomechanics should be recorded.

At the end of the operation any obvious leg length discrepancy should be identified, recorded, explained to the patient and/or investigated.

Cementation

The quantity and brand of cement should be recorded. Similarly, additions such as antibiotics should be identified. Methods to optimise cementation both in the acetabulum and femur must be noted. The manufacturer's label for the cement detailing the batch number should also be attached.

Implants

The choice of implant used should be based upon the best available evidence from sources such as the National Joint Registry, the Scandinavian and Australian registries, ODEP ratings, and other high-quality published literature[4]. In all circumstances, the surgeon should be aware of the manufacturer's information for use and the operative technique manual. It is the surgeon's personal responsibility to ensure that any components that are implanted are compatible and used according to the manufacturer's recommendation. Although there is no evidence that using acetabular and femoral components from different manufacturers is harmful, any justification for ignoring the manufacturer's guidance must be very clearly recorded.

It is appreciated that there are potential justifications for using non-compatible implants. Most frequently in revision surgery, when the benefit of using such implant configurations may outweigh the risk of inducing increased morbidity by removing well fixed implants. This situation should be identified and recorded in the operative record.

It is mandatory that any and all implants that are opened are checked by the surgeon and scrub team prior to implantation. Any and all components opened, checked and implanted should be recorded on a board in theatre. The component identification labels should be secured within the patient record, in an appropriate location. Appropriate information required for National Joint Registry submission should be secured within a purpose-specific document or electronically linked to the National Joint Registry.

'Stop' moment

It should be considered standard practice for there to be a 'stop moment', prior to the wound being closed, to ensure that the components that have been implanted are checked against the theatre board, that they are compatible in size, material, and manufacturer prior to the end of the operation.

Case Vignette

THR - Use of non-compatible implants

A man in his fifties underwent a left hip resurfacing using a system which requires a specific match between the head and cup components. To ensure this, the components are packaged with colour coding. During the procedure a 50mm 'GREY' head was implanted with a 52mm 'RED' cup. This component size mismatch and the associated component 'colour' discrepancy was not noted at the time of the surgery.

The mis-matched components led to early failure of the prosthesis. The resurfacing was revised 2 years later.

To compound this error, the additional failure to register the implant with the NJR meant that this additional check was not introduced.

Damages of £15,000, plus costs, were awarded.

Messages:

Components should be checked by the surgeon and scrub team at the time they are opened and implanted and a final review and check for compatibility should be made prior to closure.

Implant identification data must be submitted to the National Joint Registry. While helpful, the use of colour coding is not fail safe particularly when members of the surgical team might be colour blind.

Final assessment prior to closure

It should be considered standard practice to record a final assessment of leg length and joint stability via a trial range of movement, detailing the range prior to dislocation occurring in extension with external rotation and in flexion, adduction and with internal rotation.

Closure

Details of the closure should be recorded, including reference to the closure of the capsule and repair, or otherwise, of musculotendinous attachments. The position of drains should be noted.

Post operative instructions

Any drugs given to the patient peri-operatively should be recorded clearly.

At the end of the operation any obvious leg length discrepancy should be identified, measured, recorded, explained and/or investigated. In addition, the vascular status of the limb should be checked and recorded.

Clear and readily accessible post-operative instructions should detail the antibiotic prophylaxis regime, plans for VTE prophylaxis (commonly via a separate VTE risk assessment), timing of haemoglobin check and X-rays, instructions for the timing of removal of any drains, alongside the appropriate timing for removal of sutures or clips. It is important to detail the planned weight-bearing status and any specific instructions or limitations to be observed in rehabilitation.

Case Vignette

Failure to investigate leg length discrepancy

A patient underwent a left sided hip replacement, which proceeded uneventfully. Post-operatively and at the time of 'follow up', a clinically significant leg length discrepancy was identified and documented on four separate occasions, however, no investigation of the extent and/or underlying cause of the leg length discrepancy was undertaken. The patient developed pain and reduced mobility but was simply referred for physiotherapy.

Three months post-operatively it was discovered that the patient's hip replacement had dislocated.

The patient required further open surgery to relocate the hip.

It was agreed that if the leg length discrepancy had been properly investigated in the immediate post-operative period, or indeed at any time thereafter, and the dislocation identified, a closed rather than open reduction could have been performed to relocate the hip.

As a result of the failure to investigate the patient's leg length discrepancy, which was identified and documented, the NHS paid £50,000 in damages and costs.

Messages:

Leg lengths should be checked post operatively.

Any discrepancy should be explained and/or investigated, and from there acted upon as necessary.

Post operative care

Within the initial course of post-operative care, it should be considered standard practice for an anterior/posterior and lateral x-ray to be performed. This is to ensure that the hip is in joint, the position of the components is satisfactory, that there is no evidence of bony injury or any unexpected concern with regard to component orientation or fixation, specifically to exclude dislocation, component mal-position, and an unexpected fracture.

It is important that a neurological assessment of sciatic and femoral nerve function is performed and recorded once any regional spinal or local anaesthetic has worn off.

It is sensible that a post-operative haemoglobin check should be performed, specifically if there has been more blood loss than expected, or in circumstances where the patient had a low starting haemoglobin level. This can be repeated as clinically indicated.

A daily record of progress with mobilisation should be made detailing any wound concerns. Similarly, any deviation or concern with routine post-operative VTE prophylaxis should be identified.

Duty of candour

It is important that appropriate duty of candour be exercised informing the patient of any events or perioperative complications which could cause harm or compromise their outcome, at the earliest opportunity following detection and as deemed appropriate by the treating team. This should be carried out in accordance with local policy and should include a clear apology, an offer of an appropriate remedy (if possible) and/or support. The communication should detail the short and long-term effects of what has happened, to the patient.[5]

Bilateral surgery

When a surgeon is to carry out the second of staged bilateral hip replacements, either in a staged or simultaneous procedure, it should be considered standard practice for the surgeon to be aware of the components used on the first side. The surgeon should record any reason for the use of significantly different sized components. Where evidence of the size of the index side components is unavailable, this should be documented.

Other common issues in Hip Surgery that have been identified within the case review:

Hip revision surgery

In addition to the principles described for primary surgery above, if a revision surgery is to be considered, the indications for revision, together with an explanation as to why it is felt that the index procedure has failed and an explanation of how this is to be corrected, should be undertaken and recorded in the notes. Careful attention to detail regarding the procedure planned and the techniques involved, should be described to the patient and steps taken to ensure the patient understands the situation and that their expectations are consistent with the relative complexity of the procedure required.

Possible infection after hip surgery

It is important that appropriate prophylactic antibiotics are given pre-operatively and, according to a pre-determined protocol, post-operatively. This should be discussed with the patient pre-operatively and should be clear from the patient's record.

An appropriate clinical response should be made to any early signs of concern, such as wound ooze, erythema or swelling. If there is any uncertainty as to whether there may be infection, an early second opinion from a consultant colleague should be obtained. Appropriate haematological investigations such as FBC and Differential, CRP, ESR should be performed. When there is concern, a high index of suspicion consideration should be given to returning the patient to theatre for aspiration to allow additional information to be gathered from culture and other synovial analyses such as alpha-defensin, synovial white cell count, leukocyte esterase, synovial CRP, and polymorphonuclear percentage. From that series of tests, a clear diagnosis should be made with a detailed treatment pathway determined and recorded in the records. This should be communicated with the patient and their family clearly.

At the time of any further open surgery for infection, it is considered best practice that at least five tissue samples should be taken, using a specific sample tray with a number of sets of forceps. Further recommendations can be found in the International Consensus of Musculoskeletal Infection, 2018.[6, 7] The samples should be put into separate containers to prevent cross-contamination. Antibiotics given prior to this should be discussed with the microbiologists and the rationale discussed with the patient. It is considered good practice for the microbiology team to be aware that samples are to be sent, particularly 'after hours', so that they can be processed early.

In the presence of an early infection, any such surgery should be performed by a suitably-qualified surgeon with the ability to exchange all modular components of the recently-implanted hip replacement as well as to perform extensive debridement, back to healthy tissue, with additional and thorough lavage and wound closure as part of a DAIR (Debridement Antibiotics and Implant Retention) procedure. Arthroscopic surgery has no role in the treatment of acute or chronic prosthetic joint infection of the hip.

The procedure and the rationale behind any decisions taken alongside the formal microbiological advice given should be recorded clearly in the records. In essence, where there is a positive diagnosis of infection, a clear description of the management planned, including the microbiological diagnosis and antibiotic regime determined appropriate, should be recorded. It should be stressed that the investigation and successful treatment of Prosthetic Joint Infection relies significantly upon a multi-disciplinary approach.

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References

[1] The Beyond Compliance Advisory Group is an independent panel of experts who assist implant manufacturers with the assessment of risk of new products.

[2] National safety standards for invasive procedures, https://improvement.nhs.uk/resources/national-safety-standards-invasive-procedures/

[3] WHO Surgical safety checklist, http://www.who.int/patientsafety/safesurgery/ss_checklist/en/

[4] Primary Hip Replacement: A guide to good practice. BOA, 2012

[5] https://www.gmc-uk.org/-/media/documents/DoC_guidance_englsih.pdf_61618688.pdf

[6] Parvizi J, Tan, TL, Goswami K, Higuera C, Della Valle C, Chen A, Shohat N. The 2018 Definition of periprosthetic hip and knee infection: an evidence-based and validated criteria. J of Arthroplasty. 2018. May:33(5). 1309-1314

[7] Parvizi J, Gehrke T. Second international consensus meeting on musculoskeletal infection. 2018: July. Philadelphia.

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