



Birmingham Centre for
Observational and
Prospective Studies

The PPF Study: A national retrospective review of femoral periprosthetic fracture management. Is there variation in practice?

Aim

To report the incidence and management strategies of periprosthetic fractures around the femur.

Format

A retrospective multicentre service evaluation.

Methods

Anonymised retrospective data collection period: 10 years (January 1, 2010 – December 31, 2020)

Inclusion: All adult patients (≥ 16 years) who sustained a femoral periprosthetic fracture including fractures to any orthopaedic device (including, but not limited to, plates, screws, nails and arthroplasty). This includes periprosthetic fractures to the knee and any conservatively or surgically managed cases.

Exclusion: patients < 16 years old, intraoperative periprosthetic fractures, isolated acetabular fractures, and cancer suspected cases.

Data Collection Tool: REDCap secure web application.

Approval: Local trust site approval is needed. This project is not considered Research by the NHS according to the HRA decision tool (<http://www.hra-decisiontools.org.uk/research/>). Please register this project as a service evaluation.

Study Management Group: Birmingham Orthopaedic Network (BON) and Birmingham Centre for Observational and Prospective Studies (BiCOPS)

Local Registration

Institutions providing data will be requested to register this project according to their local guidelines to adhere to clinical governance procedures. Identification of a lead clinician at each hospital is required.

Presentation

Following data collection, a formal report will be collated. We intend to distribute the results to all collaborating centres and aspire to publish our work, as a collaborative authorship group in a high impact orthopaedic journal, thus disseminating our findings to a wider audience. We also aim to present the results at a regional, national, or international meeting.



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Costs

No local costs should be incurred through the routine collection of data. This study has received funding from the Queen Elizabeth Hospital Birmingham (QEHB) Charity Trauma Research and Education Fund to help with set up costs.

CLINICAL SERVICE EVALUATION PROJECT PROPOSAL

Your Details:

Name	Division:	
Position / Job Title:	Specialty:	
Email:	Tel: Bleep:	

Title: The PPF study: A national retrospective review of femoral periprosthetic fracture (PPF) management. Is there variation in practice?

Project Team:

Name	Job Title	Specialty	Role within Project (data collection, Supervisor etc)
Mr/Dr. X	T&O Registrar	T&O	Project lead

Participation Details: see note 2

What areas will this audit impact on?	Who in this area have you discussed and agreed this audit with?		
	Name	Job Title	Date Agreed
Trauma and Orthopaedics	Named Consultant		

Background

As our population is growing older, more primary total arthroplasty procedures are being performed annually¹. Projection models estimate that periprosthetic fractures are expected to rise by 4.6% every decade over the next 30 years².

The rising incidence of femoral periprosthetic fractures presents a clinical burden requiring expert care and an economic impact³. The mean cost of treating a single patient with a periprosthetic fracture in a UK teaching hospital was estimated to be £23,469 (range of £615–£223,000)⁴.

The true incidence of femoral periprosthetic fractures across the United Kingdom is still vaguely known. The

NJR only records cases that underwent revision arthroplasty and does not include cases treated with open reduction internal fixation¹. In addition, although various studies describe management options for periprosthetic femoral fractures, there is uncertainty over the indications for fixation or revision⁵. Therefore, standardization of management of periprosthetic fractures should be implemented across the region, but the current evidence for a standardized approach is currently lacking.

References:

1. Home. (n.d.). Retrieved October 15, 2020, from <https://www.njrcentre.org.uk/njrcentre/default.aspx>
2. Pivec R, Issa K, Kapadia BH, Cherian JJ, Maheshwari AV, Bonutti PM, Mont MA. Incidence and Future Projections of Periprosthetic Femoral Fracture Following Primary Total Hip Arthroplasty: An Analysis of International Registry Data. *J Long Term Eff Med Implants*. 2015;25(4):269-75. doi: 10.1615/jlongtermeffmedimplants.2015012625. PMID: 26852635.
3. Ramavath, A., Lamb, J. N., Palan, J., Pandit, H. G., & Jain, S. (2020). Postoperative periprosthetic femoral fracture around total hip replacements: current concepts and clinical outcomes. *EFORT open reviews*, 5(9), 558–567. <https://doi.org/10.1302/2058-5241.5.200003>
4. Phillips JR, Boulton C, Morac CG, Manktelov AR. What is the financial cost of treating periprosthetic hip fractures? *Injury*. 2011 Feb;42(2):146-9. doi: 10.1016/j.injury.2010.06.003. PMID: 20673576.
5. Ricci WM. Periprosthetic femur fractures. *J Orthop Trauma*. 2015 Mar;29(3):130-7. doi: 10.1097/BOT.0000000000000282. PMID: 25699540.

Aims & Objectives

- To describe the incidence of periprosthetic fractures around the femur
- To highlight variation in the management of femoral periprosthetic fractures
- To identify influential patient and surgical variables on treatment outcomes
- To explore associations between prosthesis and fracture type.
- To provide proof of concept data for larger experimental studies.

You should ask an appropriate senior clinician or manager to sign overleaf in support of your project, however you are advised to wait until the design of your project has been finalised, following discussion with the appropriate member of the clinical audit team

Methodology

Data Collection Method:

Casenote
review

Prospective data
collection

Data from existing
database(s)

Patient/
staff questionnaire

Further details or other method:

Patient details shall be identified from a retrospectively maintained trauma database, or retrieved from the trust IT/coding department. Patients will then be reviewed:

1. To determine whether their diagnosis meets the inclusion criteria
2. To determine the time & date of the diagnosis (taken from time & date of their presentation)

Audit Sample:

Sample selection criteria: All adult patients (≥ 16 years old) whom sustained a femoral periprosthetic fracture.

Time period audited: January 1, 2010 – December 31, 2020

Number/estimated number of cases to be audited: 100

Deadlines:

Proposed start of data collection: 15/4/2021

Data collection duration: 4 months

Proposed date for presentation of results: 15/09/2021

Forum: Regional Meeting

Will you be leaving your current post in the near future? Yes/no

If Yes, please give leaving date:

If your project will not be finished by then, please identify and provide the name and job title of another member of staff who is willing to take over when you go: