

To operate or not to operate, that is the question

THE PROXIMAL HUMERUS FRACTURE



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To operate or not to operate, that is the question. In the case of a displaced diaphyseal fracture of the femur, this question is not a challenge. We do not need a randomised controlled trial to determine if intramedullary nailing of a fracture of the femur is more effective, for any outcome, than months in traction. However, some fractures do not offer such a clear clinical decision-making opportunity. One such fracture that vexes the orthopaedic community is the proximal humerus fracture, especially in the elderly. As the human population continues to age, and life expectancy continues to extend towards the tenth decade, the fracture of the osteoporotic proximal humerus has become the focus of fierce debate.

A recent Cochrane Review¹ and a subsequently published large multi-centre trial from the United Kingdom (PROximal Fracture of the Humerus: Evaluation by Randomisation (PROFHER) trial)² have both concluded that in terms of shoulder function and quality of life, operative management does not appear to be more effective than non-operative treatment for fractures of the proximal humerus, particularly in the elderly. The Cochrane review assessed the evidence of included trials as ‘moderate or high’ and the PROFHER trial was published in one of the highest impact journals in the world. The evidence continues to mount, with further meta-analyses confirming these conclusions.³⁻⁵ With clinical adoption of this evidence, will surgical management of fractures of the proximal humerus become an historical entity?

In the May edition of *Bone & Joint Research*, Dean et al⁶ sampled a population of 110 patients treated surgically for a fracture of the proximal humerus over a defined period. Ten consecutive patients were included from each of 11 centres and reviewed retrospectively. The authors found that the majority of the patients met the inclusion criteria for the

PROFHER trial and therefore perhaps could have been managed non-operatively with significant cost savings and no detriment to function or quality of life. Given the costs of surgical management,^{7,8} this conclusion has widespread pragmatic implications.

However, in reality the solution may not be that simple. The number of Neer four-part fractures in the PROFHER trial (11/250, 4.4%) was much lower than the 25% in the surgical population sample study by Dean et al, suggesting that generalisation of the results of the PROFHER trial may not be appropriate. Also, in the PROFHER study 66 surgeons operated on 125 patients over a two and a half year period, i.e., less than one patient per surgeon per year. It is hard to imagine this small proportion of patients being representative of all fractures of the proximal humeral at participating centres over this time frame. And, of greatest concern, there were a number of patients eligible for the PROFHER study that were excluded in the fine print because of an “associated dislocation” (100 patients), or because they had “clear indications for surgery” (87 patients). Thus, there were surgeons participating in this study who felt uneasy randomising certain patients to the potential for non-operative care. Intrinsically, we know that a healthy 50-year-old patient with an anterior fracture dislocation of the shoulder will do better with surgical intervention.

Lastly, there is significant residual disability and risk for complications in both operative and non-operative groups in these studies.¹⁻⁵ There is clearly room for improvement. It may well be that improved implant designs and/or surgical techniques can enhance outcomes and justify surgical intervention for a greater proportion of patients. In addition, the standardisation of fracture pattern classification will help clarify an evidence-based approach to these patients.⁹

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Thus, despite the fact that the evidence is suggesting that fractures of the proximal humerus may be treated effectively with conservative management, it is more likely that there are specific groups of patients that may indeed benefit from surgery. In fact, Sabharwal et al¹⁰ recently concluded in their study in *Bone & Joint Research* that the focus on specific fracture configurations and surgical techniques may need to be at the centre of future high-quality randomised trials, which will help determine ‘on whom to operate’, and not simply ‘to operate or not to operate’.

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