

SECTION I SYMPOSIUM

Articular Fractures

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Guest Editors

Editorial Comment

Posttraumatic osteoarthritis (OA) may occur after various joint injuries but it most commonly and predictably develops after injuries that disrupt the articular surface.

Because articular fractures are common, posttraumatic OA and associated pain and loss of function probably are more common than generally has been recognized. Osteochondral defects and bone contusions seen on MRI scans are thought to contribute to the development of OA with time. However, a displaced articular fracture left untreated or that has a complication from treatment can lead to rapidly progressive OA within months. In addition, unlike most other forms of OA, posttraumatic OA often affects young adults for whom there are seldom good treatment options and for whom lifelong impairment is likely.

To prevent these adverse sequelae, the importance of restoring the anatomy after an articular fracture has for decades been recognized as a guiding principle of the treatment of articular fractures. Clinicians have assumed that accuracy of articular reduction is a, if not the, dominant factor in outcome of an articular fracture. More recent clinical research has suggested that factors other than articular reduction play an important role in eventual outcome of an injured joint. In certain cases, these other factors may have a dominant influence on eventual clinical outcome.

Perhaps one of the most perplexing aspects of investigating articular fractures is the complex nature of the injury and the treatments designed to restore the displaced articular surface. Clinical research has inadequate tools to accurately and reliably assess the adequacy of reduction.

Blunt impaction of the articular surface can lead to chondrocyte apoptosis, presumably leading to lack of cartilage repair, and subsequent arthritis. The fracture, physical disruption of the joint, is inseparably related to impaction of the articular surface. Therefore, if a comminuted fracture develops posttraumatic arthritis, was it the inadequacy of articular reduction, or overwhelming impaction injury to the cartilage, or some other factor in combination with these that determined the outcome? If we are to improve our ability to restore the displaced articular surface and develop new therapies to limit or prevent the development of posttraumatic OA, it will be critical to develop research strategies to answer this question.

This symposium is a compilation of papers that represent the spectrum of work investigating articular fractures. They cover a wide range of science including bench top research, in vivo animal models, and clinical assessment of injury severity and adequacy of articular reduction. These papers investigate important areas of current interest, and show the relative paucity of scientific understanding about the basic and clinical science of articular fractures. Because of the magnitude of the clinical problem and our current inadequate understanding of basic mechanisms and the interplay of factors important for clinical outcome, this is a critically important area for future research. We hope that the readers will find this symposium stimulating and that it will encourage young researchers to take an interest in this fascinating aspect of traumatic injury.

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DOI: 10.1097/01.blo.0000132630.92596.37