
Preface

This text is an outgrowth of the career-long interests of the editors. Over 12 years ago we had the good fortune to begin a collaboration that continues today. While we each had interests in the impact of arthritis on joint function, we approached this area in different ways earlier in our careers.

As a clinician (SAO) I recognized early in my career the adverse impact of post-traumatic arthritis (PTA) on my patients' lives. Understanding the role of articular fracture care in the development of PTA became a research interest of mine. As a basic investigator my early research focused on biomechanical assessment of the effects of articular fractures in the hip joint. We worked to develop a large animal model of an acetabular fracture. As a trauma surgeon my intent was to better understand the effects of varying accuracy of articular reduction.

As a bioengineer (FG) my early work focused on the role of biomechanical factors in joint health and disease. At the time, our studies of PTA were centered on soft tissue injury models of the knee, such as transection of the anterior cruciate ligament or meniscectomy models, which were generally regarded as models of "instability." As I began this collaboration with a trauma surgeon, I became fascinated by the complex and rapid PTA that he regularly observed clinically following articular fracture—this was a common, extremely debilitating condition, but we knew so little about the mechanisms that led to PTA following joint injury.

As our collaboration began we chose not to focus on reduction, but rather to observe the natural history of PTA development after an articular fracture. We decided to develop a new murine model in this regard so that we could then take advantage of the wide array of genetic models that could be used to study the disease process. More than any other, this one decision has set the stage for everything that followed in our collaboration. The work product of this collaboration from experimental model development to recent work is presented in Chap. 8.

When we began to collaborate, we recognized that very little work was published or funded on arthritis that develops after injury. This meant that the field of PTA was wide open; however it also meant that the impact of joint injury on PTA development was unappreciated. Over the past decade or more many investigators have contributed to our knowledge of joint injury and PTA development. Many of them have authored chapters for this text. A traditional approach of good scientific investigation is to study a complex

system such as an intra-articular fracture by focusing on an individual component of the injury while controlling for other factors. Yet clinically the multiple components of a joint injury that occur in the clinical setting do not happen in isolation. Another approach to studying such a complex system is to observe the mechanisms involved in the natural history of PTA development in a model of an articular fracture. In inviting authors to participate in this text we have tried to be as inclusive as possible regarding the approach to the problem of PTA development. We believe that all of these approaches are valuable. This text is an attempt to bring the current thinking on PTA into one document. It is intended to be a resource for those clinicians and investigators who are interested in working in the field of PTA. We hope that you find it valuable.

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