Many patients requiring total knee arthroplasty will have a moderate flexion contracture that is fully corrected at surgery. However, when preoperative contractures are greater than 20 degrees, the deformity may become fixed and require special surgical consideration. This chapter will discuss these patients.

The deformity is a result of either a bone block and/or soft tissue contractures (Fig. 5.1). The proliferation of osteophytes in degenerative joint disease or prior trauma creates bone blocks that can occur in the anterotibial or posterofermal condyles. They mechanically abut the intercondylar notch, or tether the posterior capsule, thus preventing full extension. The bone deformity may be slowly progressive and subsequently cause secondary soft tissue contracture of the posterior capsule and collateral ligaments.

Soft tissue contracture occurs in patients with long-standing deformities from a variety of disease states such as inflammatory arthritis, immobility, hemophilia, and neuromuscular disorders. These contractures can be static or progressive and can lead to increasing tightness in the posterior capsule, collateral ligaments, and hamstring muscles. Once the deformity exceeds 50 degrees, the collateral ligaments are inevitably involved.

Flexion of the knee is a response to inflammation, infection, or any condition that leads to joint swelling and increased intra-articular pressures. It has been demonstrated that increasing intra-articular pressure results in the knee assuming a 30- to 45-degree flexion position.1

Fixed flexion contractures decrease the patient’s ability to walk. Velocity is slowed and energy costs are increased. Perry and associates2 measured a 50% increase in work by the quadriceps at a given rate of ambulation in the presence of bilateral contractures of 30 degrees. The adjacent joints also assume abnormal posturing and increase the energy requirements with a corresponding reduction in endurance. Persons who have added disability of muscle
FIGURE 5.1. (A) Patient with rheumatoid arthritis and fixed flexion from soft tissue contracture. (B) X ray of patient with osteoarthritis and severe flexion contracture secondary to bone impingement preventing full extension.