Section V: Knee Degeneration

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Osteoarthritis of the knee is one of the five leading causes of disability among elderly men and women. The papers in this section present the topic of degeneration of the knee from the perspective of both diagnosis and treatment (with a focus on knee arthroplasty). Radiographs are the current clinical tools used in diagnosing osteoarthritis. Radiographic joint-space narrowing is the only structural end point currently accepted by the U.S. Food and Drug Administration and European Medicines Agency (EMA) for phase-III clinical trials. However, radiography is limited because it can only provide information about osseous changes at very late stages of disease. Magnetic resonance imaging represents an advance in technology because it can provide information regarding cartilage morphology and matrix biochemistry as well as information about other features of osteoarthritis, including bone-marrow abnormalities, synovitis, and damage to menisci and ligaments. The first two papers in this section provide an overview on the diagnosis of osteoarthritis with use of radiography and magnetic resonance imaging and on the tracking of longitudinal degenerative changes in the knee with use of magnetic resonance imaging. Currently, no disease-modifying drugs are available to stop, slow down, or prevent cartilage degeneration during the course of osteoarthritis. When the disease becomes severe, joint re-

placement is the primary treatment option. In the second part of this section, advances in navigated total knee arthroplasty and unicompartmental knee arthroplasty are reviewed. With emerging techniques, navigated total knee arthroplasty has become not only an important surgical tool but also a measurement tool and teaching tool in operating rooms and laboratories. Technique advancement in unicompartmental arthroplasty of the knee includes robotic unicompartmental arthroplasty and unicompartmental arthroplasty with use of resurfacing implants and personalized jigs. With further development, these computer-assisted surgical techniques will greatly improve our ability to treat degeneration of the knees. ■

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