Current Aspects in Total Knee Arthroplasty

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Total knee arthroplasty (TKA) is a proven and successful treatment option for advanced osteoarthritis of the knee. It is one of the most frequent surgical procedures, and a further increase is expected for many countries. Despite substantial developments in implant materials and design and standardization of surgical technique, the revision rates have not changed significantly over the last 2 decades, as demonstrated by the Swedish Knee Arthroplasty Register. Controversies remain about topics that have already been discussed since the introduction of modern condylar TKA: patella resurfacing, posterior cruciate ligament retention or substitution, how to achieve optimal alignment and ligament balance, and rotational orientation of the tibial tray. All of these topics remain under discussion because evidence is still lacking for the use of either option, at least on patient-reported outcome. Several papers in this supplement address these ongoing controversies.

An increasing number of reports discuss implant-associated metal hypersensitivities, and patients with these sensitivities usually need alternative implant materials or coated standard implants. These implants are costly and further increase the economic pressure on health care providers. On the other hand, the implants have additional invitro effects, such as reduced wear, which might have a positive effect on revision rates. Therefore, long-term results are needed to finally judge the cost-effectiveness with regard to all effects of these implants. A possible option to reduce the economic burden of TKA might be the proven technology of all-polyethylene tibial trays, which seem to have been experiencing a renaissance recently. The paper by Chambers et al summarizes the current evidence.

For patients with posttraumatic osteoarthritis or have undergone high tibial or distal femoral osteotomy, TKA is more challenging because of changed anatomy and previous surgeries. The papers by Dexel et al and Ochs et al address the challenges and the results of these patients.

A relevant number of patients who have undergone TKA are not satisfied with the result of this major surgery. Different reasons, including alignment, changes in the complex biomechanics of the knee, and patient-related factors and expectations, are thought to affect clinical outcome. Improvement of physical activity is a major expectation of most patients undergoing TKA, and reliable measurement is, therefore, necessary. In addition to frequently used scoring systems that include questions on physical activity, more complex measurements using activity monitors are available and provide detailed insight in physical activity changes after TKA. This knowledge might help surgeons counselling patients before TKA and avoid overextended expectations.

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