

■ EDITORIAL

The Earth is no longer a square, the knee was never a hinge

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Until the Middle Ages it was thought that the Earth was flat and lay in the middle of a big ocean. With the development of better astronomy and long-distance travel, this myth was debunked.¹ Initially, total knee arthroplasty (TKA) involved a hinged joint linking the femur and tibia. Improved understanding of anatomy and biomechanics allowed the development of an unconstrained total condylar knee.

The surgical challenges were to get the basics of alignment, mobility and stability right, in order for the suboptimal materials available at the time to survive as long as possible.² The main indication for the operation was advanced degenerative disease and the main expectation was pain relief, in contrast to the lifestyle demands of the subsequent generation of patients.³

Many changes have occurred in arthroplasty surgery of the knee during the last ten years. With increasing demands from an ageing but active population, more competition among hospitals and a drive for innovation by orthopaedic suppliers, more TKAs are performed each year.⁴ This is fuelled by general expectations from the media of miracles. Within this trend, the focus became much more about patients' expectations and functional outcome, and less on the longevity of the components.⁵

The perception that up to 30% of the patients remained dissatisfied after TKA has re-awakened issues such as the ideal alignment of the components (anatomical *vs* mechanical) and the place of partial arthroplasties with preservation of the cruciate ligaments. With the drive towards an "anything is possible" approach, surgeons also started exploring the possibilities of the operation being undertaken as a day case. Although this would be extremely cost effective, our knowledge of the pathophysiology of the response to surgery is not advanced enough to allow this for every patient. It should also be borne in mind that many patients present with complex pathology including extra-articular deformities, and associated pathology in the spine and hip. Others

have chronic pain and significant comorbidities including ischaemic disease, diabetes and haemophilia. For all these patients, the debate about the design of the components may be of minor importance for their outcome.

Periprosthetic infection also remains an unsolved problem. In this issue, published as a supplement to *The Bone & Joint Journal*, to mark the International Knee Meeting in Gothenburg (Knee²), leading authors were asked to review their recent experiences and efforts to deal with the key challenges in TKA surgery.

Lavand'homme et al⁶ tried to identify the patient at risk for severe acute and chronic persistent pain and to propose a system of stratification in order to target the right patient in need for tailored treatment of pain. Multimodal and preventive pain management should reduce the proportion of patients suffering from chronic pain post-operatively.⁶ The same principle of stratification was applied by Thienpont et al⁷ to determine the possibilities of discharge on the day of surgery. Enhanced recovery programmes make a short hospital stay possible for many patients. However, the "fastest fast track" with patients leaving the hospital on the day of surgery remains a challenge. Some post-operative morbidity presents after > 24 hours, and the development of complications could lead to mortality in some patients when they have left the environment of the hospital.⁷

Reducing morbidity and mortality may partly rely on the increased use of partial arthroplasties as established by Liddle et al.⁸ Murray et al⁹ gave an overview on how the treatment of anteromedial degenerative arthritis of the knee remains controversial. Despite evidence of lower morbidity and mortality in favour of unicompartmental arthroplasty, the choice for TKA is still imposed by the pressure of lower revision rates. This is especially true in countries where surgeons are ranked in National Joint Registries only according to revision rates rather than by other aspects of surgery such as transfusion requirements,

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infection, function or rates of re-admission.⁹ Parratte et al¹⁰ extend the principle of partial arthroplasties to selective resurfacing, often combining modular implants in patients with bicompartamental disease.¹⁰ The advantage of these techniques includes the preservation of both cruciate ligaments. This is of particular interest to surgeons working on the principles of kinematic alignment as described by Oussedik et al.¹¹ These principles involve attempts to restore an oblique joint line on both the femoral and tibial sides, allowing for some persistent lateral joint laxity.¹¹

The concept of the “forgotten joint” as an outcome¹² is less applicable to indications that remain technically challenging for the surgeon, as well as for infections. Baldini et al¹³ describe different types of difficult primary TKA and the outcome that can be expected. New technologies have become available that can help surgeons reduce the complexity of these cases. Patient-specific instruments make detailed pre-operative planning possible and this extends to patients with an extra-articular deformity.¹³

Finally, Gherke et al¹⁴ discuss the complexity of making the diagnosis and the current ideal treatment for patients with periprosthetic infection. The recent evolution and availability of the alpha defensin test with a high accuracy rate probably allows surgeons to identify the infected patient better. The debate as to whether the infected revision should be performed in one or two stages has yet to be resolved.¹⁴

This supplement highlights how much more work is needed in order to fulfill the ultimate wish of each patient to find his knee joint returned to the state that it was in before the degenerative process started – there is much work to be done before we can deliver the miracles which are increasingly expected.

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