Case Study:

Use of Technology for Total Knee Arthroplasty with Retained Femoral Nail

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Case Introduction

The patient is a pleasant 72-year-old woman who was involved in a motorcycle accident 40 years ago. She underwent open reduction and internal fixation of her right femur fracture at that time. The fracture healed, but she was left with a 1.5 inch leg length discrepancy and gradually progressive pain and stiffness in her right knee. She went on to develop severe osteoarthritis of the knee.

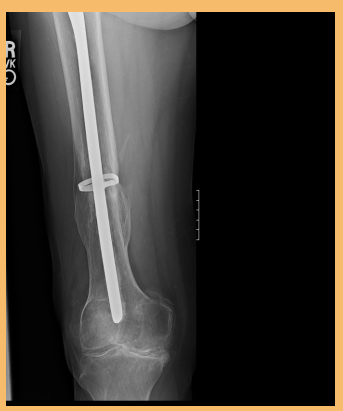

Fig. 1 Pre-op AP

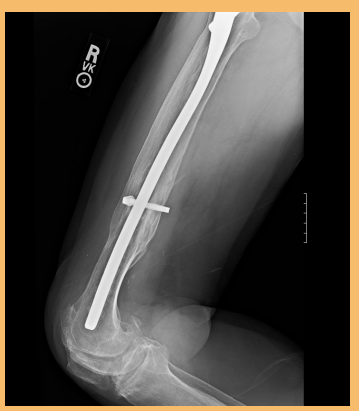

Fig. 2 Preop Lateral

Case Presentation

She presented with a longstanding history of pain in the knee. She had previously treated the symptoms with over the counter anti-inflammatory medications, a shoe lift, bracing, and activity modification. Despite this, she now had daily pain that limited her walking tolerance and activities of daily living. She felt that she was becoming more stiff and had a range of motion limited to 0-90 degrees.

Pre-operative Plan

Given the presence of the intramedullary rod in her femur, the use of an intramedullary femoral jig would have required its removal at the time of surgery. This would have added substantial time, blood loss, and morbidity to her knee replacement surgery. In an effort to provide her with anatomic alignment and to minimize her surgical risks, the KneeAlign® system was utilized. This allowed for proper component positioning through a standard knee arthroplasty incision and did not require exposure of the femoral canal.

Operative Findings and Approach

Postoperative xrays demonstrated appropriate implant position that matched her preoperative templating. By her 6-week visit she had exceeded her preoperative range of motion and was not taking any pain medication. She noted that her level of activity was markedly improved when compared to prior to surgery. She was not using any assistive devices and reported that she was routinely walking farther than before her knee replacement.
At her one year follow up visit, she was still not taking any pain medication and ROM improved to 0-110 . She was not using any assistive devices and could walk an unlimited distance.

Clinical Benefits

The KneeAlign® system allows for precise, real-time measurements to be made in the operating room. It does not require any additional pin placement outside of my standard skin incision. It is self-contained and does not require any additional towers, computers, or other equipment outside of the sterile field. I am able to use it with any total knee system. The system is easy to learn with a very short learning curve. It adds almost no time to my cases. It does not expose the patient to any additional radiation, such as obtaining a preoperative CT scan for the fabrication of patient specific cutting jigs.

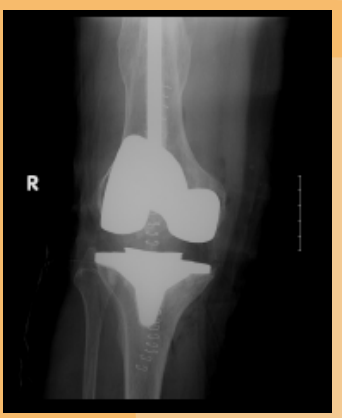

Fig. 3 Post-op AP

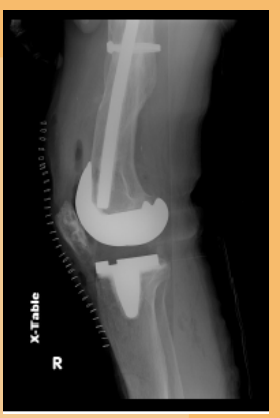

Fig. 4 Post-op Lateral

OrthAlign

Discussion

I initially started using the KneeAlign® system on patients with retained femoral or tibial implants that resulted in extra-articular deformities or blocked the placement of a femoral alignment rod. I then broadened my use of the system to include morbidly obese patients, where the soft tissues can obscure some landmarks. I was consistently pleased with my postoperartive x-rays and I have integrated its use into my surgical workflow. I now use it in every case.