
**Tibial Insert Exchange Done Appropriately Can Lead to Excellent Results**

The modularity of total knee arthroplasty prostheses allows for a polyethylene insert exchange in selected knees that have isolated polyethylene wear but well-fixed and well-aligned components. When this procedure is performed, it is typically straightforward and leads to low patient morbidity. However, there are conflicting reports concerning the efficacy of an insert exchange (Acta Orthop. 2006 Dec;77[6]:917-20, Clin Orthop Relat Res. 2007 Nov;464:132-7, J Bone Joint Surg Am. 2002 Jan;84[1]:64-8, and J Bone Joint Surg Am. 2000 Apr;82[4]:516-23). Therefore, Baker and coauthors assessed patients who had had an isolated tibial insert exchange but otherwise had well-fixed components.

Forty-five isolated tibial insert exchanges (forty-two patients) were identified from an institutional database. Patients were included only if they had had follow-up of two years or more, no history of infection, and implants determined to be well aligned and well fixed on the basis of preoperative radiographic evaluation and intraoperative examination. Of the total cohort, four patients (10%) subsequently had a revision and were excluded from a later questionnaire analysis. The primary clinical indication for an insert exchange was polyethylene wear in thirty-four knees (76%), stiffness in five knees (11%), instability in three knees (7%), and pain in another three knees (7%). For the thirty patients who completed the follow-up questionnaires (Oxford knee score, UCLA activity score, Western Ontario and McMaster Universities Osteoarthritis Index, and Short Form-12) at a mean follow-up of fifty-eight months, significant improvements were seen in most of the scores, with a mean satisfaction score of 79.5 points (on a scale of 0 to 100 points), indicating that the majority of the patients were highly satisfied with the procedure.

**DISCUSSION**

The present study showed an important patient-related benefit for an isolated revision using a tibial insert exchange. It is not the first one to describe good results, as similar findings were observed by Jensen et al. in a study of twenty-seven patients (Acta Orthop. 2006 Dec;77[6]:917-20). It should be noted that in the investigation by Jensen et al., twenty-two of the patients also received a patellar resurfacing, so it is hard to compare these two studies. The present study is...
Component Alignment Does Not Affect Manipulation Rates After Total Knee Arthroplasty

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SUMMARY

Stiffness continues to be a major problem after total knee arthroplasty (TKA), with many patients requiring a manipulation under anesthesia (MUA). Although some studies have shown quite low rates of postoperative stiffness, there are reports of rates ranging from 6% to 12% (J Bone Joint Surg Am. 2007 Feb;89[2]:282-6, J Arthroplasty. 1991 Jun;6[2]:119-28, and HSS J. 2007 Sep;3[2]:182-9). Some authors have cited component malalignment as a causative factor (HSS J. 2007 Sep;3[2]:182-9, Knee. 2006 Mar;13[2]:111-7, and J Arthroplasty. 2006 Jan;21[1]:46-52). Therefore, Harvie and coauthors evaluated component alignment in a cohort of TKAs to see whether patients who required an MUA were different from a cohort without stiffness.

The authors reviewed the cases of 281 consecutive TKAs performed at a single institution. This included twenty-one knees (7.5%) that had undergone an MUA after TKA. At six months postoperatively, a computed tomographic (CT) scan of each knee was performed according to a specific Perth CT knee protocol (J Bone Joint Surg Br. 2004 Aug;86[6]:818-23). This allowed the authors to determine component alignment in three dimensions. The authors did not find any significant differences between the group that had an MUA and the group that did not have an MUA for any of the twelve parameters assessed for component alignment. Unfortunately, at twelve months postoperatively, the mean range of motion was 78° for knees requiring an MUA compared with 102° in the cohort that did not have an MUA (p < 0.0001). In addition, the Knee Society scores of the group that had an MUA were significantly lower (p = 0.002).

DISCUSSION

I think this was an interesting study to perform, and one can conclude that the reasons
for stiffness after a TKA are multifactorial; however, I agree that component alignment cannot be considered the most important determinant. Other factors, including diabetes, heterotopic ossification, inadequate pain management, and poor compliance with physical therapy, have been implicated in the past (HSS J. 2007 Sep;3[2]:182-9, Knee. 2006 Mar;13[2]:111-7, and J Arthroplasty. 2006 Jan;21[1]:46-52). I think that the study was performed well, and it is certainly difficult to obtain a large group of patients who have had such an extensive CT evaluation. Therefore, even with negative results, this study is quite valuable. I am concerned that the mean range of motion at the time of the final follow-up was only 102° in the cohort that did not have an MUA. Stiffness after a TKA remains a large problem, and a study like this one should impel future investigators to try to evaluate other reasons why patients experience stiffness and whether there are any other prognostic factors as well as treatment techniques that can lower the incidence of this problem or make it more tenable for the appropriate treatment.

Cementless Total Knee Arthroplasties Are Performing Well

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SUMMARY

In contrast to total hip arthroplasty, in which almost all U.S. surgeons use cementless femoral and cementless acetabular components in at least 75% of the procedures, a recent American Association of Hip and Knee Surgeons survey showed that <10% of surgeons use cementless fixation for all components in total knee arthroplasty (TKA) (J Arthroplasty. 2010 Sep;25[6 Suppl]:2-4). Early cementless knee components performed poorly, presumably because of suboptimal implant design (J Bone Joint Surg Am. 1993 Jan;75[1]:19-26, Knee. 2000 Dec 1;7[4]:233-238, and Clin Orthop Relat Res. 1991 Feb;263:288-302). Later reports have shown excellent fixation and successful outcomes at intermediate time periods (J Bone Joint Surg Br. 2007 Jan;89[1]:34-8, Knee. 2008 Jun;15[3]:211-6, and J Arthroplasty. 2008 Aug;23[5]:677-82). Nevertheless, there are few clinical reports concerning cementless knee arthroplasties, especially with posteriorly stabilized implants. Therefore, the purpose of this prospective study by Harwin and coauthors was to report the early clinical and radiographic results of a series of porous-coated hydroxyapatite-enhanced cementless TKAs.

The authors studied 114 consecutive cementless posteriorly stabilized TKAs performed in 110 patients between March 2008 and February 2010. The authors did not exclude any patients with osteopenia, inflammatory disease, large angular deformities, limited range of motion, or greater than normal body mass index. The patient cohort consisted of sixty-five men and forty-five women who had a mean age of sixty-two years (range, thirty-eight to eighty-five years). Patient follow-up ranged from twenty-four to fifty months, with a mean of thirty-six months. At the time of the final follow-up, all implants demonstrated radiographic evidence of stable biologic fixation, with no evidence of loosening or progressive radiolucent lines. The mean postoperative Knee Society pain score was 94 points (range, 82 to 100 points), with a postoperative Knee Society function score of 84 points (range, 72 to 100 points). Only one patient developed a deep infection, but excluding this patient, survivorship was 100%.

DISCUSSION

Certainly, the poor historical results of cementless TKAs have led to the low volume of these prostheses being used presently. However, there have been multiple potential design improvements, including stronger implants, the use of tibial keels and screws, improved articular geometry and kinematics, and the use of adjunctive surface coating. These improvements have led to multiple recent reports of successful cementless designs (J Bone Joint Surg Br. 2007 Jan;89[1]:34-8, Clin Orthop Relat Res. 2001 Jul;388:85-94, Clin Orthop Relat Res. 2001 Jul;388:41-50, J Arthroplasty. 2010 Jun;25[4]:507-13, and Acta Orthop Belg. 2009 Apr;75[2]:225-33). It bodes well that, at the time of the four-year follow-up in the present study, there was no aseptic component loosening and all of the components appeared radiographically to be biologically fixed and stable. It certainly behooves these authors to continue to follow these patients, which I believe they will do. I look forward to longer-term follow-up. Studies such as this one, which defines another potential fixation option for TKA, may swing the pendulum in a direction other than the use of all-cemented components.
Medicaid Patients Have Difficult Access to Arthroplasty Surgeons in South Florida

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SUMMARY

Approximately fifty-eight million low-income individuals receive Medicaid as their low-cost health coverage in the United States. As of 2005, Medicaid expenditures were $315.2 billion, making it the nation’s largest public health insurance program (N Engl J Med. 2007 Feb 15;356[7]:734-40). It is believed that Medicaid patients have difficulty locating doctors who will accept their insurance coverage. This may be because of financial issues; in 2008, Medicaid reimbursements averaged only 72% of the rates paid by Medicare, which are typically much lower than those of commercial insurance (N Engl J Med. 2011 June 16;364[24]:2324-33). Therefore, the purpose of this study by Lavernia and coauthors was to see whether insurance status affected access to lower-extremity arthroplasty procedures for patients with end-stage arthritis.

The authors studied 117 offices that were identified from a membership list of the American Academy of Orthopaedic Surgeons within a specific county in southern Florida. Each office was called on four separate occasions to make a hypothetical appointment for a fifty-five-year-old female patient (two calls for knee replacement and two calls for hip replacement). The call content encompassed asking whether the surgeons would see patients if they had only Medicaid or, on alternate attempts, if they had private insurance. If the office would not see patients with Medicaid, they were asked whether they could refer the patients to someone else who would see them.

All patients who had private insurance and called about the possibility of a total hip arthroplasty (THA) or a total knee arthroplasty (TKA) were given an appointment. However, when patients reported that their insurance was Medicaid, they were offered an appointment only 14.3% of the time for both THA and TKA. The mean time to obtain a THA appointment for a privately insured patient was 11.2 days, which was much less than the 24.0 days for a Medicaid patient. Similarly, the mean time for a TKA appointment was 8.0 days if the patient had private insurance versus 26.7 days for a patient with Medicaid. Another interesting finding was that 83% of the offices that would not see a Medicaid patient were unable to recommend an orthopaedic office that accepted Medicaid. None of the offices that offered privately insured patients an appointment recommended another orthopaedic office that accepted Medicaid.

DISCUSSION

Although some of the results of this study would be expected, it is hard for me to imagine that <15% of offices would accept Medicaid insurance. In addition, for those offices not accepting the insurance, 83% of those responding to calls from TKA patients and 100% of those responding to calls from THA patients could not even refer the patient for care. This is certainly surprising considering that <20% of the United States population has Medicaid insurance.

The results of this study are similar to various other orthopaedic studies with regard to children (N Engl J Med. 2011 Jun 16;364[24]:2324-33, Pediatrics. 2001 Jun;107[6]:1405-8, and J Pediatr Orthop. 2006 May-Jun;26[3]:400-4). The authors also rightly point out that there may be other reasons besides financial ones that prompt orthopaedic surgeons not to accept Medicaid patients. These patients typically have a higher prevalence of substance abuse problems, worse general health, and worse outcomes after surgical procedures, including arthroplasties (Psychiatr Serv. 2009 Jan;60[1]:35-42, J Health Care Poor Underserved. 1995;6[1]:41-59, and Arch Intern Med. 2000 Mar 27;160[6]:817-23). An interesting finding of the study was that <40% of the orthopaedic surgeons in this particular community performed THAs and TKAs regardless of insurance. This situation may forebode a problem in the field with regard to patient access to these interventions in general. The authors acknowledged the potential limitations of the study in that it was compiled from an urban area and was a small sample, which may not be generalizable to the rest of the country. Nevertheless, I think that it is noteworthy to point out the potential shortcomings of our health system for treating a large group of prospective arthroplasty patients. This is especially important in light of the fact that this population of patients will most likely increase over the coming years.
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**Safety and Efficacy**

In the *Gel-One* Hyaluronate clinical study, pain relief was measured at 1, 3, 6, 9, and 13 weeks demonstrating statistically significant improvement over the Phosphate Buffered Saline control (PBS). Incidence of adverse effects did not differ significantly between *Gel-One* Cross-linked Hyaluronate and PBS. There were no serious adverse effects or pseudoseptic reactions related to *Gel-One* Cross-linked Hyaluronate injection. Patients receiving *Gel-One* Hyaluronate experienced, on average, a nearly 40% reduction in pain from baseline (28 mm reduction in WOMAC pain on a 100 mm VAS, Visual Analog Scale).¹

Injection Technique

1. Using strict aseptic technique apply antiseptic and, if desired, local anesthetic. The knee joint space is accessed through the soft palpable anterolateral port that can be felt just lateral to the inferior pole of the patella and the proximal portion of the patella tendon.

2. If present, remove joint effusion through an 18-20 gauge needle before injecting Gel-One Hyaluronate. Maintain needle placement in the joint while disconnecting the syringe used to remove joint effusion. Discard the syringe containing the removed joint effusion.

3. Peel off the lid from the Gel-One Hyaluronate blister package and remove the syringe.

4. Carefully remove the tip cap of the Gel-One Hyaluronate syringe, and aseptically attach the syringe to an 18-20 gauge needle (if aspiration of joint effusion occurred, the same needle may be used). To ensure a tight seal and to prevent leakage during administration, secure the needle tightly while firmly holding the Luer-Lok. Twist the tip cap before pulling it off to minimize leakage.

5. Inject the full 3mL of Gel-One Hyaluronate into the knee joint through the needle using aseptic injection technique. If treatment is being administered to both knees, use a separate syringe of Gel-One Hyaluronate for each knee.

NOTE: Injection techniques will vary by physician and may include different approaches in patient positioning.

Important Safety Information

Before using Gel-One Hyaluronate, tell your doctor if you are allergic to hyaluronan products, cinnamon, or products from birds such as feathers, eggs, and poultry. Gel-One Hyaluronate is only for injection into the knee, performed by a doctor or other qualified health care professional. You should not receive a Gel-One Hyaluronate injection if you have a skin disease or infection around the area where the injection will be given. Gel-One Hyaluronate has not been tested to show pain relief in joints other than the knee and for conditions other than OA. Gel-One Hyaluronate has not been tested in patients who are pregnant, mothers who are nursing, or anyone under the age of 21. You should tell your doctor if you think you are pregnant or if you are nursing a child. Talk to your doctor before resuming strenuous or prolonged weight-bearing activities after treatment. The safety and effectiveness of repeat treatment cycles of Gel-One Hyaluronate have not been established. The side effects most commonly seen after injection of Gel-One Hyaluronate in the clinical trial were knee pain, swelling, and/or fluid build-up around the knee. These reactions are generally mild and do not last long. Other conditions, including but not limited to skin redness and rash, knee stiffness, knee muscular weakness and dizziness, were also reported rarely. If any of these symptoms or signs appear after you are given Gel-One Hyaluronate or if you have any other problems, you should call your doctor.

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Clinical Summary

Product | Gel-One Cross-linked Hyaluronate (Gel-One Hyaluronate)
Authors | V. Strand, H.S.B. Baraf, P.T. Lavin, S. Lim, H. Hosokawa
Title | A multicenter, randomized controlled trial comparing a single intra-articular injection of Gel-200 (Gel-One Cross-linked Hyaluronate), a new cross-linked formulation of hyaluronic acid, to phosphate buffered saline for treatment of osteoarthritis of the knee
Language | English

Methodology

A study was conducted to compare the safety and efficacy of Gel-One Hyaluronate with phosphate buffered saline (PBS) in the treatment of osteoarthritis (OA) of the knee. Gel-One Hyaluronate is a sterile, clear, viscoelastic hydrogel composed of crosslinked hyaluronate, which is a derivative of a highly purified sodium hyaluronate. Gel-One Hyaluronate is indicated for the treatment of pain in OA of the knee in patients who have failed to respond adequately to non-pharmacologic therapy, non-steroidal anti-inflammatory drugs (NSAIDs) or simple analgesics (e.g., acetaminophen). Currently, there are five intra-articular hyaluronic acid (IAHA) products offered in the United States, ranging from single injection treatment (Hylan G-F 20) to multi injection (3-5 injections) treatment. Past studies have shown that IAHA injections are effective in relieving pain due to OA. This report summarizes the efficacy of Gel-One Hyaluronate in human subjects as compared with PBS. In a double-blind, multi-center RCT, the safety and effectiveness of a single injection of Gel-One Hyaluronate were demonstrated by treating patients with either Gel-One Hyaluronate or PBS in a 2:1 randomization ratio, with the majority of patients receiving Gel-One Hyaluronate. In the publication (and clinical study), Gel-One Hyaluronate was referred to as Gel-200. The primary measure of effectiveness was Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) by 100 mm Visual Analog Scale (VAS).

Results

The results indicate that a single intra-articular injection of Gel-One Hyaluronate is effective at week 13 and safely relieves pain associated with OA of the knee. Neither allergic reactions nor pseudosepsis were reported during this trial. Measurements were taken at weeks 3, 6, 9, and 13 and included WOMAC pain subscores, Total WOMAC score, and WOMAC physical function subscores. No significant differences between Gel-One Hyaluronate and the PBS control were observed in the incidence of AEs related to the study treatment or overall. The below figure summarizes the results of the WOMAC Pain Subscore.

Key Take-Aways

1. At week 13, a statistically significant advantage of 6.39mm in the WOMAC pain subscore was observed for Gel-One Hyaluronate. Furthermore, the study showed a favorable safety profile for Gel-One Hyaluronate.
2. On average, patients in the Gel-One Hyaluronate study group experienced average pain relief of 39.3% (27.8 mm) from baseline.
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Tourniquet Use Reduces Blood Loss in Total Knee Arthroplasty

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Summary
Traditionally, tourniquets have been commonly used during total knee arthroplasty (TKA) because they are believed to decrease blood loss and create a dry field that facilitates exposure and helps with the cementing technique. Although some studies have shown that a tourniquet can reduce blood loss, others have shown the opposite effect (Arch Orthop Trauma Surg. 2007 Oct;127[8]:671-5, Int Orthop. 2002;26[5]:306-9, J Arthroplasty. 1997 Apr;12[3]:291-6, Int Orthop. 2009 Oct;33[5]:1263-8, and Clin Orthop Relat Res. 2000 Feb;371:169-77). In addition, it has been found that some patients complain of postoperative thigh pain, which is presumably caused by the pressure from the inflated tourniquet on the nerves and local soft tissue. Because of these various issues, Tai and coauthors performed a prospective randomized trial to evaluate the effects of tourniquets on reducing blood loss and to assess soft-tissue damage.

In this study, seventy-two patients undergoing a primary TKA were randomized equally to a tourniquet group or a non-tourniquet group. All of the procedures were performed through a medial parapatellar approach, with an intramedullary guide for both the tibial and the femoral cuts, and no drains were used. The authors noted that more electrocautery was used to facilitate the procedure in patients without a tourniquet. Patients in the tourniquet group had smaller decreases in hemoglobin levels and less blood loss compared with the non-tourniquet group (p < 0.05). The patients in the tourniquet group also had smaller increases in levels of C-reactive protein and creatine phosphokinase compared with the non-tourniquet group (p < 0.05). The non-tourniquet group had slightly less postoperative thigh pain and knee pain, which was significant only on postoperative day 4 (p = 0.014 for thigh pain and p = 0.033 for knee pain). There was no difference in the average duration of hospital stay between the groups.

Discussion
It was surprising to me that in this prospective study there was potentially more soft-tissue injury when a tourniquet was not used. Perhaps this is reflected in the more extensive dissection that was necessary or the limitations of the exposure when there was a bloodier field. On the other hand, it was nice to see that a tourniquet did not have any apparent untoward soft-tissue effects and did achieve the goal, resulting in less blood loss. There were also no differences between the groups in terms of postoperative swelling, duration of hospital stay, and recovery progress. The small increase in pain that was found in the tourniquet group is not clinically relevant, in my opinion, and was found to be significant only on day 4. This certainly does not justify omitting the use of a tourniquet. I liked this study because it was conducted in a prospectively randomized manner. Its shortcomings include the difficulty in drawing conclusions from such a small number of patients (n = 72). I would like to see whether these types of results hold up in studies that are done with a much larger group of patients, as well as at multiple centers. It is possible that the use of a tourniquet may lead to other problems that might not be found in such a small study. The authors are to be commended for performing this prospective randomized trial focused on an important topic.


More Complications Found with Bilateral Total Knee Arthroplasties

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Summary
It has been noted that approximately 6% of all total knee arthroplasties (TKAs) performed in the United States are done bilaterally at the same time, which may reflect an increase since the 1990s (Arthritis Rheum. 2005 Dec;52[12]:3928-33 and Clin
Registry data associate worse rates of implant survival for unicompartmental knee arthroplasty (UKA) compared with total knee arthroplasty (TKA). Baker et al. performed survival analyses to assess revisions for unexplained knee pain after both types of knee arthroplasties. Using Cox regression analysis (adjusting for age, sex, American Society of Anesthesiologists grade, and indication), they determined that revision for unexplained knee pain was more common after UKA. Even when revisions for unexplained knee pain were discounted, UKA still had a higher risk of revision.

DISCUSSION
Baker et al. discussed the use of revision for any reason as an end point for TKA analysis and the fact that it has been challenged. Orthop Relat Res. 2009 Jun;467[6]:1568-76). There is still controversy concerning the safety of performing these procedures (Clin Orthop Relat Res. 2008 Nov;466[11]:2617-27, Anesthesiology. 2009 Dec;111[6]:1206-16, and J Bone Joint Surg Am. 2007 Jun;89[6]:1220-6). In light of these factors, Memtsoudis et al. used data collected between 1999 and 2008 to assess whether there were any changes in the demographic characteristics of patients having bilateral TKAs over time, in the length and cost of hospitalization, and in the incidence of major complications and mortality.

To perform the study, the authors assessed the Nationwide Inpatient Sample data files (www.hcup-us.ahrq.gov/nisoverview.jsp). The authors found that an estimated 258,524 bilateral TKAs were performed between 1999 and 2008 in the United States. In the same time period, the number of annual bilateral TKAs increased from approximately 19,000 procedures in 1999 to >33,000 procedures in 2008, an increase of 75%. In this bilateral subgroup, the patient age and the number of patients insured through Medicare also decreased each year. There was a trend toward more women having bilateral TKAs, and there was an increase in their overall comorbidity burden. The average length of stay decreased from 4.98 days to 4.01 days. In-hospital mortality decreased at an average rate of 9.8% per year, with an unadjusted decrease in incidence from 0.42% to 0.16% per 1000 inpatient days. When adjustments for length of stay were considered, the authors found an increased rate in the occurrence of pneumonia, pulmonary embolism, and nonmyocardial infarction cardiac complications.

DISCUSSION
This was certainly an interesting study because of the many prior attempts to assess the safety and efficacy of performing simultaneous bilateral TKAs. It is surprising to this reviewer that although the patients were younger and would be presumed to be healthier, there was an increased rate of morbidity over time in terms of postoperative complications. It is nice to see that the mortality rate of this procedure greatly decreased during this time period. One should also note that although the number of bilateral procedures has increased tremendously, it has been coincident with a larger increase in the number of unilateral TKAs, so the proportion of bilateral procedures has remained fairly constant at 6%. Other findings that should be noted are that many reports have shown that the majority of life-threatening complications after TKA occur in the first few days postoperatively, with most of these patients having no identifiable risk factors (Anesthesiology. 2002 May;96[5]:1140-6 and J Bone Joint Surg Am. 2007 Jan;89[1]:27-32). Therefore, shortening the length of stay may have an effect on perioperative safety, and this may be even more important for patients undergoing more extensive bilateral TKAs. This study had the limitations associated with using any nationwide database, i.e., that it may not capture all of the complications and there is a risk of missing data. To this reviewer, these limitations were minor and the authors are to be commended for tackling such an important issue. This work encompassed trends up to 2008; I would be quite interested in knowing how the data have further changed from 2009 to the present, as there have been dramatic changes in medical care. I am sure these and other authors will undertake further analyses of this question in the future.
Long-Term TKA Outcomes of LCS Design, RP Versus non-RP: A Meta-Analysis

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SUMMARY
Hopley et al. evaluated twenty-nine papers of varying levels of evidence reporting Knee Society scores and survivorship using the Low Contact Stress (LCS) Rotating Platform (RP; DePuy) for primary total knee arthroplasty (TKA). These data were compared with non-RP TKAs gathered from various registries. Knee Society scores, both clinical and functional, were comparable for the RP group and the non-RP group for up to fifteen years following primary TKA. Rates of survivorship for up to fourteen years were higher for RP than for the non-RP TKAs.

DISCUSSION
By including all levels of evidence in their search for published data on RP TKA, Hopley et al. were able to create a large dataset of 6437 TKAs. This dataset was then compared with national joint registry data when the performance of non-RP TKAs could be separated out or when the population of designs that were neither LCS nor RP was <3% of the whole. This method of constructing a meta-analysis is a bit unorthodox, because meta-analyses usually contain comparative studies only (treatment group versus control group) and ideally contain random control studies only. However, this was a well-developed method that is not patently wrong when comparing two populations in this manner.

The findings for RP and non-RP TKAs were also clearly presented in that (1) there were no significant differences in preoperative Knee Society clinical or functional scores, an indication of well-matched populations; (2) there were no significant differences in postoperative Knee Society clinical or functional scores, leading to the conclusion that there were no differences for these populations; and (3) significant differences were detected in the rates of survivorship at all time points between five and ten years, indicating that patients in the RP group were less likely to undergo revision for any reason compared with those in the non-RP group.
In conclusion, Hopley et al. were correct that definite conclusions are limited by the observational nature of their datasets and by confounding factors, which they could not control. It is critical, whether writing or reading meta-analyses, to be aware of the limitations of the conclusions.

Hydrocortisone to Regulate Cytokine Release and Lung Injury in Bilateral Total Knee Arthroplasty

SUMMARY

In this study, Jules-Elysee et al. investigated whether three doses of hydrocortisone (given at eight-hour intervals) improved levels of interleukin-6 (IL-6) and desmosine (a lung injury marker) in patients undergoing bilateral total knee arthroplasty (TKA). In this double-blind, randomized controlled trial, the treatment group received 100 mg of hydrocortisone and the control group received a placebo. Thirty-four patients were randomized to the treatment group (seventeen patients) or the control group (seventeen). Blood levels of IL-6 were determined at six, ten, twenty-four, and forty-eight hours postoperatively. Urine levels of desmosine were determined at one day and three days postoperatively. The primary outcome measure was the level of IL-6; the secondary outcome measures were the level of urinary desmosine, the visual analog scale (VAS) score for pain and rehabilitation milestones, the presence of fever, the progress of wound healing, and the postoperative course (possible infection, patient satisfaction, and mortality) at three and six months. There were no infections (fevers) or delayed wound healing. The IL-6 level increased in both groups but was significantly higher in the control group (p = 0.006). The level of urinary desmosine did not increase in the treatment group and increased significantly in the control group (p = 0.006). Additionally, the treatment group had significantly lower pain scores (p = 0.01) and significantly greater range of motion (p = 0.02 for right knee and p = 0.03 for left knee).

DISCUSSION

The key premise of Jules-Elysee et al. was that “high levels of IL-6 have been linked to postoperative fever, confusion, symptoms of depression, acute respiratory syndrome, and fat embolism syndrome.” Thus, if the level of IL-6 can be lowered in patients having bilateral TKA, there should be a reduction in these complications.

The VAS pain scores and rehabilitation milestone outcomes were significantly better in the treatment group as well. This result should not be surprising; the function of hydrocortisone is to reduce inflammation, which in turn reduces pain. Many current multimodal pain management protocols use a nonsteroidal anti-inflammatory component to help decrease inflammatory mediators that contribute to postoperative pain by evoking central nervous system excitability and decreasing swelling at the operative site. The combination of anti-inflammatory medications and the reduced use of opioids have been shown to allow patients to participate in their rehabilitation program with less pain and return to function more quickly.