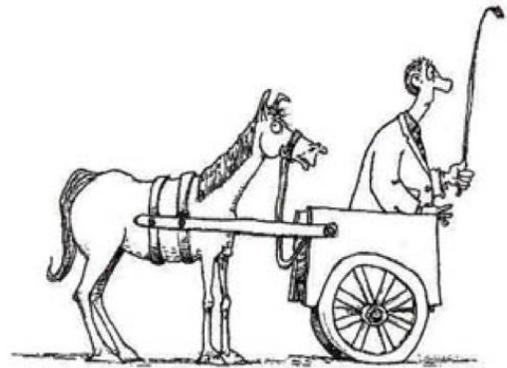


Fits Like a Glove. *Advances in Technology have improved results of Knee Replacement.*

Customization has become *de rigueur* in almost every facet of modern life. Very few things, today, are “one size fits all.” The same is true for knee replacement (TKA or total knee arthroplasty).

For years manufacturers and surgeons have tried in vain, to personalize the fit and match of joint replacement prosthesis to the exact physiology and mechanics of each individual patient. All too often the end result of these labors represents a triumph of marketing over science—the so-called *gender-specific knee* is a classic example. Recently much has been made of *computer assisted surgery*. We have all read about and seen television images of large computers in the operating suite directing a “robot” to make “incisions and cuts.” These purport to improve accuracy and imply better performance and longevity of the implant. Unfortunately, and not surprisingly, the results have yet to meet the expectations of such promising technology. As *computer assisted surgery* is dependent upon collection of independent patient data obtained in the Operating Room, the results are necessarily limited by the quality of the collection method. The accuracy of the data varies greatly by surgeon and by individual patient-- “Garbage in=Garbage out.”

As the data entered into the computer is obtained via relatively inaccurate means, the results are little improved compared to earlier techniques employed by surgeons for decades. Even more, this method requires significantly increased OR time.

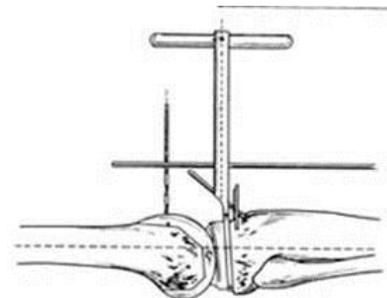


“Ok . . . so, computer assisted surgery offers no advantage in performance but adds cost and time. So far, doc, you are not selling me on this concept. What gives?”

It is important to understand that while the results engendered by the implementation of computer assisted surgery have been mixed, at best, the concept is excellent—Personalization of the surgical procedure to meet the exact biomechanical needs of the patient has been the Holy Grail of joint replacement surgeons.



Traditionally, TKA is performed utilizing cutting blocks, “jigs,” alignment rods, plumb lines, etc.; not dissimilar from standard cabinetry techniques. These have provided good to excellent results for decades.



Unfortunately these methods are limited by individual patient factors (body weight, joint alignment, range of motion) that make it difficult, time consuming, and sometimes impossible to restore the appropriate anatomic alignment for any given patient.



Traditional TKA- one size fits all?

Many manufacturers, in response to this dilemma, now offer a solution to this problem. In particular, I find the Biomet Signature system to provide the most intuitive and elegant approach. This is the system that I use for all TKA that I perform.



Signature is a software-based system that allows the measurement and much of the technical work to be completed on computer BEFORE the patient enters the OR. Imagine that! Doing one's homework, before the test-- What a novel idea!

Not surprisingly, the results are just as predictable (study before attending class, Ace the test). The concept and execution are rather simple. MRI images are obtained of the patient's Hip, Knee and Ankle. This information is used to determine the limb alignment and to create a 3-D model of the knee. This then allows the surgeon to essentially "perform" the surgery on the computer to correct the limb alignment to normal. Once this data is finalized, a model of the knee is created and precision cutting instruments are manufactured that are unique to each patient. These models and instruments are then used by the surgeon to perform the procedure according to plan. Restoration of the patient's natural limb alignment, improved fit and range of motion are the typical result.



Utilizing this technique, the procedure can be performed more quickly and with less blood loss when compared to the traditional method of knee replacement. Patients normally report less pain, improved range of motion and sometimes a shorter duration of hospitalization and outpatient rehab.

Today, for the first time in history, with modern surgical and computer assisted techniques you can finally have a knee replacement that “fits like a glove”



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