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CUSTOM-FIT KNEE REDUCES PAIN

The pain associated with total knee replacement surgery makes the procedure a challenge in an outpatient surgery setting. A smaller incision does not necessarily translate to less pain. In fact, a total knee replacement is significantly more painful than either a partial knee or total hip replacement.

Initially, we believed cutting into the muscle was responsible for the pain, until we realized that the same muscle-cutting approach to a partial knee leads to minimal pain. We now know the pain relates to the amount of bone-cutting required. Here's why: bone architecture is like a household wall, which consists of a hard plaster surface and then scaffolding for support. A conventional implant sits on soft, rather than hard, bone — meaning it sits on the scaffolding rather than the plaster part of the bone. When your weight is transferred from the implant to soft bone, the resultant bending causes severe pain.

The new method of customization allows an implant to sit on hard bone because the implant is made to fit the bone; whereas conventional custom knee replacements make the custom bone cuts to fit the implant, thereby removing the hard bone, which protects against severe pain. Fitting the implant to the bone results in less surgical trauma to the bone and significantly decreases pain. This customization pro-

cess begins with a CAT scan of the knee to map the anatomy, after which the personalized implant is manufactured over a period of six weeks for the upcoming surgery.

In addition to sparing bone, custom-fit implants also involve less ligament resection. Since the anterior cruciate ligament (ACL) is removed in all total knee replacement, most patients complain of less proprioception (i.e., balance) issues than a natural knee. Custom-fit implants preserve the ACL, which helps improve balance. The improved proprioception results in better balance and a more natural motion of the knee.

The opportunity to have custom-fit knee replacements results in less pain and better balance than that found in conventional total knee replacements, thereby adding to the viability of knee replacements as another option in an outpatient surgery setting.