

In debated surgical procedure, technique trumps technology

March 26 2015

A team of orthopedic surgeons from the Perelman School of Medicine at the University of Pennsylvania has found that modern technology for healing distal femur fractures is as safe and effective as its more established alternative, without a potential shortfall of the older approach. The team found that when done correctly, there are no significant differences between the two approaches - "locked plating" and "non-locked plating" - in terms of healing rates, need for corrective surgery, or hardware failure. The findings are being presented on Thursday, March 26, 2015, at the American Academy of Orthopaedic Surgeons Annual Meeting in Las Vegas.

The team examined medical records of 95 patients who underwent [surgery](#) to repair distal femoral fractures. Though relatively uncommon in the general population, an increase in the number of these fractures is expected as the population ages. For 80 percent of the patients studied, the fracture healed within 3.5 months of surgery, while 20 percent needed [corrective surgery](#). The researchers found that patients whose surgeons used locked plating - which historically required a second revision surgery roughly 40 percent of the time - had no more setbacks than patients whose providers used non-locked plating.

The two methods differ by virtue of their use of locking and non-locking screws, respectively, to attach metal plates to fractured bone in order to provide stability and promote healing. While locked plating virtually eliminates the possibility of the plate moving, it has been associated with pronounced stiffness and rigidity around the healing bone, which can

prevent the broken bone from healing.

"Plates used in distal femur surgery come in various sizes, and have as many as 16 to 20 apertures, or screw holes," explained the study's senior author Samir Mehta, MD, chief of the division of Orthopaedic Trauma at the Perelman School of Medicine at the University of Pennsylvania. "In the early days of locked plating, some surgeons used screws in every one of these apertures, which we think lead to stiffness, rigidity and pain for patients. Today, surgeons are more judicious, using far fewer screws and picking and choosing which holes to insert the screws in based on factors in the case at hand. This improved decision-making on the part of surgeons is what we believe has resulted in the significant decrease in technical problems associated with locked plating."

According to the researchers, the one factor that had a significant impact on fracture healing was if the fracture was open. Additionally, two factors increased the risk of poor healing for the participant population, but did not reach statistical significance: diabetes and non-weight bearing status post-operatively. The latter finding points the way toward early weight-bearing by patients, typically within a few days of surgery, rather than remaining in bed.

"As [surgeons](#) become more adept at application of both established and developing implant technologies, outcomes will continue to improve," said lead investigator Ryan M. Taylor, MD, a fifth-year resident in the department of Orthopaedic Surgery at the Perelman School of Medicine at the University of Pennsylvania. "However, we must remain cognizant of patient specific variables such as age, weight, and pre-existing comorbidities, which can affect overall care strategies and management."

Provided by University of Pennsylvania School of Medicine

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