

Damage Control Plating in Open Tibial Shaft Fractures: A Cheaper and Equally Effective Alternative to Spanning External Fixation

Aaron M. Perdue, MD; Arnold J. Silverberg, BS; Rachel V. Thakore, BS;
Vasanth Sathiyakumar, BA; Daniel J. Stinner, MD; Hassan R. Mir, MD;
David J. Polga, MD; William T. Obrebsky, MD, MPH, MMHC; Manish K. Sethi, MD;
Vanderbilt University, Nashville, Tennessee, USA

Background/Purpose: External fixation has traditionally been utilized to provisionally stabilize open tibial shaft fractures when definitive fixation is not advisable. An alternative to external fixation is temporary damage control plating (DCP), which utilizes temporary internal fixation with a single plate to give temporary stability, length, and alignment. The purpose of this study is to determine whether DCP is a good alternative to external fixation for open tibial shaft fractures by comparing complication rates and implant costs.

Methods: A retrospective chart review at a Level I trauma center identified patients who underwent operative management of open tibial shaft fractures from 2008 to 2012. Radiographs were reviewed to identify patients who underwent DCP or external fixation followed by definitive fixation. Initial implants were removed at time of definitive fracture stabilization. Rates of complication requiring an unplanned surgical intervention were compared using a χ^2 analysis. The implant costs were provided by the institution's financial services.

Results: 445 patients who underwent operative management of an open tibial shaft fracture were identified. 31 patients met inclusion criteria, 12 (39%) of whom had DCP and 19 (61%) of whom had external-fixation. Both DCP and external fixation samples were composed of mostly Gustilo grade III fractures (67% and 58%, respectively). There was no significant difference in the rate of complications between DCP (25.0%) and external fixation (26.3%). The average implant costs for DCP ranged from \$360.50 to \$1,879.50, which was 2.7 to 14 times less than the average costs for external fixation at \$5073 (Figure 1).

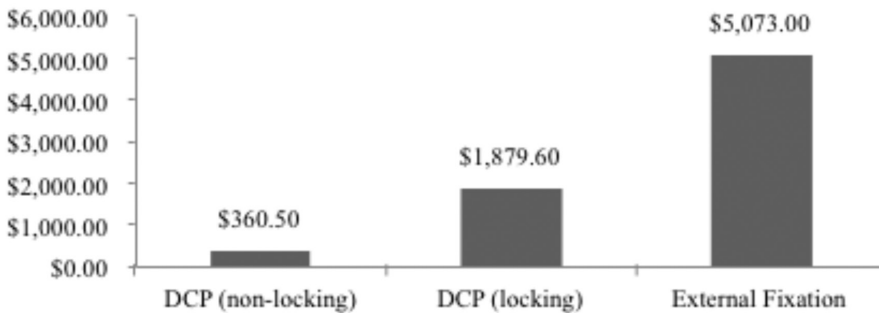


Figure 1. Costs for DCP and external fixation

Conclusion: As our health-care system renews focus on cost-cutting efforts, orthopaedic trauma surgeons must explore less expensive yet equally effective treatment alternatives. In this study, which is the first to compare the use of DCP and external fixation to temporize open tibial shaft fractures, data suggest that DCP is an equally safe yet less expensive alternative to external fixation for a tibial shaft fracture.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.