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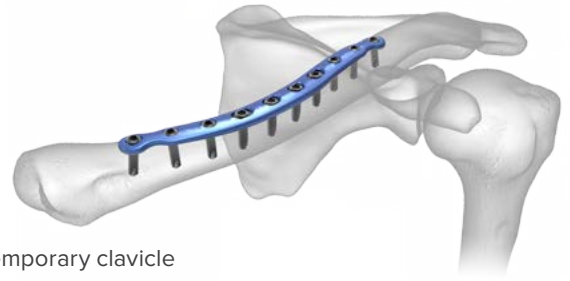
Technical Article List

Clavicle Plating System

The Acumed Clavicle Plating System provides surgeons with the ability to address acute fractures, malunions, and nonunions of the clavicle with 33 different clavicle-specific plating options. The Clavicle Plating System offers low and narrow-profile plate solutions that are precontoured to match the natural shape of the clavicle.



1. Renfree T, Conrad B, Wright T. Biomechanical comparison of contemporary clavicle fixation devices. *J Hand Surg Am.* 2010;35(4):639-44.
2. VanBeek C, Boselli KJ, Cadet ER, Ahmad CS, Levine WN. Precontoured plating of clavicle fractures: decreased hardware-related complications? *Clinical Orthop.* 2011;469:3337-3343.
3. Longo UG, Banerjee S, Barber J, et al. Conservative management versus open reduction and internal fixation for midshaft clavicle fractures in adults – the clavicle trial: study protocol for a multicentre randomized controlled trial. *Trials.* 2011;12:57.
4. Klein SM, Badman BL, Keating CJ, Devinney DS, Frankle MA, Mighell MA. Result of surgical treatment for unstable distal clavicular fractures. *J Shoulder Elbow Surg.* 2010;19(7):1049-55.
5. McKee MD, Wild LM, Schemitsch EH. Midshaft malunions of the clavicle. *J Bone and Joint Surg Am.* 2003;85A:790-797.
6. Demirhan M, Bilsel K, Atalar AC, Bozdag E, Sunbuloglu E, Kale A. Biomechanical comparison of fixation techniques in midshaft clavicular fractures. *J Orthop Trauma.* 2011;25:272-278.
7. Goswami T, Markert RJ, Anderson CG, Sundaram SS, Crosby LA. Biomechanical evaluation of a pre-contoured clavicle plate. *J Shoulder Elbow Surg.* 2008;17(5):815-8.
8. Kleweno CP, Jawa A, Wells JH, et al. Midshaft cavicular fractures: comparison of intramedullary pin and plate fixation. *J Shoulder Elbow Surg.* 2011;20(7):1114-7.
9. McKee MD, Wild LM, Schemitsch EH. Midshaft malunions of the clavicle. Surgical technique. *J Bone Joint Surg Am.* 2004; 86-A Suppl 1:37-43.
10. Canadian Orthopaedic Trauma Society. Nonoperative treatment compared with plate fixation of displaced midshaft clavicular fractures. A multicenter, randomized clinical trial. *J Bone Joint Surg Am.* 2007;89:1-10.

Callos

Acumed offers a variety of synthetic calcium phosphates to support surgeons' needs for bone void filler cement. Callos, backed by more than 15 years of scientific development, is intended for bony voids and defects in cancellous bone. Callos offers high compressive strength where host bone may be comprised.

Callos products are manufactured by Skeletal Kinetics and exclusively sold by Acumed.

1. Fulmer MT, Ison IC, Hankermayer CR, Constantz BR, Ross J. Measurements of the solubilities and dissolution rates of several hydroxyapatites. *Biomaterials.* 2002;23(3):751-5.

Fibula Rod System

The Acumed Fibula Rod System offers an alternative approach to traditional fibular plating by providing fracture stability with a minimally invasive surgical technique. Utilizing a targeting guide, the fibula rod and interlocking screws can be inserted through small incisions, which may help minimize valuable surgery room time.

1. Appleton P, McQueen M, Court-Brown C. The fibula nail for treatment of ankle fractures in elderly and high risk patients. *Techniques in Foot & Ankle Surg.* 2006;5(3):204-208.

Acu-Loc® 2 Wrist Plating System

The Acumed Acu-Loc 2 Plating System is a next-generation solution in plating fixation that focuses on complete implant options and a streamlined surgical process. This comprehensive system includes several plate families to give surgeons the freedom to choose between distal or proximal sitting plates, three different plate extension options, and fragment specific plating options. The system also includes instrumentation for plate placement and fracture management.

1. Dahl WJ, Nassab PF, Burgess KM, et al. Biomechanical properties of fixed-angle volar distal radius plates under dynamic loading. *J Hand Surg Am.* 2012;37(7):1381-7.
2. Minegishi H, Dohi O, An S, Sato H. Treatment of unstable distal radius fractures with the volar locking plate. *Ups J Med Sci.* 2011;116(4):280-4.
3. Iba K, Ozasa Y, Wada T, Kamiya T, Yamashita T, Aoki M. Efficacy of radial styloid targeting screws in volar plate fixation of intra-articular distal radial fractures: a biomechanical study in a cadaver fracture model. *J Orthop Surg Res.* 2010;5:90.
4. Lozano-Calderón SA, Souer S, Mudgal C, Jupiter JB, Ring D. Wrist mobilization following volar plate fixation of fractures of the distal part of the radius. *J Bone Joint Surg Am.* 2008;90(6):1297-304.
5. Buzzell JE, Weikert DR, Watson JT, Lee DH. Precontoured fixed-angle volar distal radius plates: A comparison of anatomic fit. *J Hand Surg Am.* 2008;33(7):1144-52.

SLIC Screw® System

Scapholunate instability remains an unsolved indication in orthopaedics. The Acumed SLIC Screw System is an adjunct to the biological healing of soft tissue repair or reconstructions that treat scapholunate instability. The system includes system-specific instrumentation, a specialized targeting guide, and multiple-size screws to accommodate varying patient anatomy. The Acumed SLIC Screw can be used to hold the reduction of the scapholunate interval while the soft tissue repair heals. The jointed screw allows relative rotation and an anatomic toggle of 15–22 degrees, allowing the scaphoid and lunate to move anatomically while the soft tissue heals.

1. Geissler WB. Arthroscopic management of scapholunate instability. *J Wrist Surg.* 2013;2:129-135.
2. Larson TB, Gaston RG, Chadderdon RC. The use of temporary screw augmentation for the treatment of scapholunate injuries. *Tech Hand Up Extrem Surg.* 2012;16(3):135-40.

Elbow Plating System

The Acumed Elbow Plating System has revolutionized the way orthopaedic surgeons treat and manage elbow fractures. This system offers multiple fixation options for fractures of the distal humerus, olecranon, and coronoid, and osteotomies of the olecranon, in order to address a variety of patient anatomies.

1. Mighell MA, Harkins D, Klein D, Schneider S, Frankle M. Technique for internal fixation of capitellum and lateral trochlea fractures. *J Orthop Trauma*. 2006;20(10):699-704.
2. Wong AS, Baratz ME. Elbow fractures: distal humerus. *J Hand Surg Am.* 2009;34(1):176-90.
3. Mighell MA, Harkins D, Klein D, Schneider S, Frankle M. Technique for internal fixation of capitellum and lateral trochlea fractures. *J Orthop Trauma.* 2006;20(10):699-704.
4. Anderson ML, Larson AN, Merten SM, Steinmann SP. Congruent elbow plate fixation of olecranon fractures. *J Orthop Trauma.* 2007;21(6):386-393.
5. Shin SJ, Sohn HS, Do NH. A clinical comparison of two different double plating methods for intra-articular distal humerus fractures. *J Shoulder Elbow Surg.* 2010;19(1):2-9.
6. Zalavras CG, Vercillo MT, Jun BJ, Otarodifard K, Itamura JM, Lee TQ. Biomechanical evaluation of parallel versus orthogonal plate fixation of intra-articular distal humerus fractures. *J Shoulder Elbow Surg.* 2011;20(1):12-20.
7. Schwartz A, Oka R, Odell T, Mahar A. Biomechanical comparison of two different periarticular plating systems for stabilization of complex distal humerus fractures. *Clin Biomech.* 2006;21(9):950-955.
8. Mighell M, Virani NA, Shannon R, Echols EL Jr, Badman BL, Keating CJ. Large coronal shear fractures of the capitellum and trochlea treated with headless compression screws. *J Shoulder Elbow Surg.* 2010;19(1):38-45.
9. Puchwein P, Schildhauer TA, Schöffmann S, Heidari N, Windisch G, Pichler W. Three-dimensional morphometry of the proximal ulna: a comparison to currently used anatomically preshaped ulna plates. *J Shoulder Elbow Surg.* 2012;21(8):1018-23.
10. Rebuzzi E, Vascellari A, Schiavetti S. The use of parallel pre-contoured plates in the treatment of A and C fractures of the distal humerus. *Musculoskelet Surg.* 2010;94(1):9-16.
11. Celli A, Donini MT, Minervini C. The use of pre-contoured plates in treatment of C2-C3 fractures of the distal humerus: Clinical experience. *Chir Organi Mov.* 2008;91:57-64.
12. Kaiser T, Brunner A, Hohendorff B, Ulmar B, Babst R. Treatment of supra- and intra-articular fractures of the distal humerus with the LCP distal humerus plate: a 2-year follow-up. *J Shoulder Elbow Surg.* 2011;20(2):206-212.
13. O'Driscoll SW. Optimizing stability in distal humeral fracture fixation. *J Shoulder Elbow Surg.* 2005;14(1 Suppl S):186S-194S.
14. O'Driscoll SW. Supracondylar fractures of the elbow: open reduction, internal fixation. *Hand Clin.* 2004;20(4):465-74.
15. Kollias CM, Darcy SP, Reed JGR, Rosvold JM, Shrive NG, Hildebrand KA. Distal humerus internal fixation: a biomechanical comparison of 90 degrees and parallel constructs. *Am J Orthop.* 2010;39(9):440-444.

Polarus Humeral Rod System

The Polarus Humeral Rod System is designed to provide fixation for 2-, 3-, and some 4-part fractures of the proximal humerus through a minimally invasive surgical technique. The Polarus Locking Humeral Rod and Polarus Plus Humeral Rod are cannulated intramedullary humeral rods that feature a tapered profile with a spiral array of proximal screws designed to target the best quality bone. Multi-planar fixation acts as a scaffold, aiding in fracture reduction and realignment. One of the additional values of intramedullary rodding compared to competing technologies is its percutaneous approach, designed to minimize soft tissue disruption and support periosteum healing.

1. Giannoudis PV, Xypnitos FN, Dimitriou R, Manidakis N, Hackney R. Internal fixation of proximal humeral fractures using the Polarus intramedullary nail: our institutional experience and review of the literature. *J Orthop Surg Res.* 2012;7:39.
2. Georgousis M, Kontogeorgakos V, Kourkouvelas S, Badras S, Georgaklis V, Badras L. Internal fixation of proximal humerus fractures with the polarus intramedullary nail. *Acta Orthop Belg.* 2010;76(4):462-7.
3. Adedapo AO, Ikpeme JO. The results of internal fixation of three- and four-part proximal humeral fractures with the Polarus nail. *Injury.* 2001;32(2):115-21.
4. Wheeler DL, Colville MR. Biomechanical comparison of intramedullary and percutaneous pin fixation for proximal humeral fracture fixation. *J Orthop Trauma.* 1997;11(5):363-7.
5. Rajasekhar C, Ray PS, Bhamra MS. Fixation of proximal humeral fractures with the Polarus nail. *J Shoulder & Elbow Surg.* 2001;10(1):7-10.

Anatomic Radial Head System

The Acumed Anatomic Radial Head System provides a comprehensive solution that includes the first and only anatomically-shaped radial head prosthesis on the market and is equipped with the tools needed to properly restore the patient's anatomy in a radial head replacement surgery. The system offers 250 standard head and stem combinations, including ten left and ten right stem options in five diameters and five collar heights. These choices provide the surgeon with multiple implant options and accommodate the individual differences in natural anatomic head and neck shape.

1. El Sallakh S. Radial head replacement for radial head fractures. *J Orthop Trauma.* 2013;27(6):e137–e140.
2. Chanlalit C, Shukla DR, Fitzsimmons JS, An KN, O'Driscoll SW. Influence of prosthetic design on radiocapitellar concavity-compression stability. *J Shoulder Elbow Surg.* 2011;20:885–890.
3. Moon JG, Berglund LJ, Zachary D, An KN, O'Driscoll SW. Radiocapitellar joint stability with bipolar versus monopolar radial head prostheses. *J Shoulder Elbow Surg.* 2009;18(5):779–784.

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