

Bicondylar Plateau Fractures: What Predicts Infection

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Purpose: The purpose of this study was to identify the patient, injury, and treatment factors associated with infection of bicondylar plateau fractures.

Methods: We reviewed consecutive patients with bicondylar plateau fractures at 16 centers. Demographics (treating hospital, age, gender, mechanism of injury, ISS, BMI, smoking, diabetes, medications, ETOH, IVDA, OTA type, compartment syndrome (CS)) and treatment variables (temp ex fix, plate location, incisions, time to surgery, and operative time) were tabulated. Superficial or deep infection within 120 days was the primary outcome.

Results: There were 1094 patients, (647M; 447F) aged 18-89 (avg 46) with OTA 41C1-3 fxs. Avg BMI = 29, ISS = 10. There were 105 open (64 type 3), 138 CS, 103 diabetes (DM), 128 ETOH, and 318 smokers. Median F/U = 357 days. There were 78 (7%) infections. Time to surgery (11vs 8 days p=0.002) and surgical time (224 vs. 171 mins p=0.0001) were greater in infected patients. Univariate analysis showed smoking, DM, IVDA, ETOH, BMI, open fx, 41C3 (vs C1,2), temporary ex fix, deep fasciotomy site used for definitive fixation, and dual plating (vs unilateral) were associated with infection. Multivariate analysis showed DM (OR 2.8; p=0.003), grade 3 open (OR 2.7; p=0.015), and dual plating (OR 2.2;p=0.008) were associated with, and temporary ex fix (OR 1.7;p=0.08) and ETOH (OR 1.8; p=0.07) trended towards, infection. Compartment release was not associated with infection (p=0.8); fixation through the deep fasciotomy wound was associated with infection (p=0.04) while use of the same skin incision but different deep incision trended towards association (p=0.1). There was statistical site variation with 1 center statistically below (p=0.016) and 2 trending above (p=0.07) predicted infection rates when accounting for DM, grade 3 injury, and ETOH.

Conclusion: Infection after ORIF of bicondylar plateau fractures was 7% and associated with DM and grade 3 open fracture. Alcohol use trended toward association. Several factors that reflect worse soft tissue injury were associated with infection: time from injury to surgery, use of temporary ex fix, operative time, and dual plating. The only surgeon-controlled factor in the multivariate analysis was the use of dual plates while OTA fracture type was not. Fixation through the same fascial incisions as a compartment release was associated with infection. Finally, center expertise may play a role as one center had a statistically lower and two trended towards higher adjusted infection rates.

See the meeting app for complete listing of authors' disclosure information.