Abstract: BACKGROUND: The effect of corticosteroids on tendons is poorly understood, and current data are insufficient and conflicting. PURPOSE: To evaluate the effects of corticosteroid injections on intact and injured rotator cuffs (RCs) through biomechanical and radiographic analyses in a rat model. STUDY DESIGN: Controlled laboratory study. METHODS: A total of 70 rats were assigned to 7 groups. Uninjured rats (no tear) received either a single saline injection, a single methylprednisolone acetate (MTA) injection, or triple MTA injections. Injured rats (unilateral supraspinatus injury) received either a single saline injection, triple saline injections, a single MTA injection, or triple MTA injections (injections were subacromial; repeat injections were administered weekly). Rats were sacrificed 1 week after final injection. Shoulders were harvested and grossly inspected, and the supraspinatus tendon was evaluated biomechanically. Bone density at the tendon insertion site on the greater tuberosity was assessed by micro-computed tomography. RESULTS: Intact RCs exposed to triple MTA injections had significantly decreased maximal load and stiffness compared with the control group (14.43 vs 21.25 N and 8.21 vs 16.6 N/mm, respectively; P < .05). Injured RCs exposed to steroid treatment had significantly lower maximal load (single saline: 10.91 N, single steroid: 8.43 N [P < .05]; triple control: 15.77 N, triple steroid: 11.65 N [P < .05]) compared with the control at 3 weeks. Greater tuberosity volume density and connectivity density were significantly lower in undamaged rats after triple MTA injection (P < .05). CONCLUSION: The study results clearly showed that repeated doses of corticosteroids significantly weaken rat RC and negatively affect bone quality in addition to possibly causing deterioration of the osteotendinous junction. However, data retrieved from animals must be scrupulously analyzed before extrapolation to humans. As such, the potential benefits and harms of subacromial corticosteroid treatment must be considered before administration. CLINICAL RELEVANCE: The potential benefit and detrimental effects of corticosteroid injection should be thoroughly considered before it is administered subacromially in patients with RC injuries.