The Use Of Intravenous Tranexamic Acid Does Not Improve Arthroscopic Visualization In Shoulder Surgery: A Randomized Controlled Trial

Abstract ID# 21638
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Summary:
Intravenous administration of TXA is not an effective alternative to epinephrine in the irrigation fluid to improve visualization during routine arthroscopic shoulder surgeries although its application is safe. There is no additional improvement in visualization when TXA is used in combination with epinephrine beyond the effect of epinephrine alone.

Data:
Purpose: Adequate visual clarity is paramount to performing arthroscopic shoulder surgery safely, efficiently, and effectively. The addition of epinephrine in irrigation fluid and the intravenous or local administration of tranexamic acid (TXA) have independently been reported to decrease bleeding thereby improving the surgeon’s visualization during arthroscopic shoulder procedures. No study has compared the effect of systemic administered TXA, epinephrine added in the irrigation fluid, or the combination of both TXA and epinephrine on visual clarity during shoulder arthroscopy with a placebo group. The purpose of this study is to determine if intravenous TXA is an effective alternative to epinephrine delivered by a pressure-controlled pump in improving arthroscopic shoulder visualization during arthroscopic procedures and whether using both TXA and epinephrine together has an additive effect in improving visualization. Method: The design of the study was a double-blinded, randomized controlled trial with four 1:1:1:1 parallel groups conducted at one center. Patients aged 18–18 years undergoing arthroscopic shoulder procedures including rotator cuff repair, arthroscopic biceps tenotomy/tenodesis, distal clavicle excision, subacromial decompression, and labral repair by five fellowship-trained upper extremity surgeons were randomized into one of four arms: Pressure pump-controlled regular saline irrigation fluid (control), epinephrine (1ml of 1:1000) mixed in irrigation fluid (EPI), 1g intravenous TXA (TXA), and epinephrine and TXA (EPI/TXA). Visualization was rated on a 4-point Likert scale every 15 minutes with 0 indicating ‘poor’ quality and 3 indicating ‘excellent’ quality. The primary outcome measure was the unweighted mean of these ratings. Secondary outcomes included mean arterial blood pressure (MAP), surgery duration, surgery complexity, and adverse events within the first postoperative week. Unweighted means (SD) were calculated for visualization and mean arterial pressure (MAP) for each patient. Study group allocation was represented with epinephrine and tranexamic acid being coded in dichotomous variables (used or not used) for each patient. A step-wise linear regression was performed using visualization as the dependent variable and a series of independent variables considered for inclusion: epinephrine, tranexamic acid, surgery duration, complexity, mean arterial pressure, increase in pump pressure, and volume of irrigation fluid. All statistical tests were considered significant if p<0.05. Results: One hundred and twenty-eight participants with a mean age (± SD) of 56 (± 11) years were randomized. Mean visualization quality for the control, TXA, EPI, and EPI/TXA groups were 2.1 (±0.40), 2.1 (±0.52), 2.6 (±0.37), 2.6 (±0.35), respectively. In a regression model with visual quality as the dependent variable, the presence/absence of EPI was the most significant predictor of visualization quality (R^2=0.525, p<0.001). TXA presence/absence had no effect, and there was no interaction between TXA and EPI. The addition of MAP and surgery duration strengthened the model (R^2=0.529; p<0.001). Increased MAP and surgery duration were both associated with decreased visualization quality. When surgery duration was controlled, surgery complexity was not a significant predictor of visualization quality. No adverse events were reported by any of the groups. Conclusions: Intravenous administration of TXA is not an effective alternative to epinephrine in the irrigation fluid to improve visualization during routine arthroscopic shoulder surgeries although its application is safe. There is no additional improvement in visualization when TXA is used in combination with epinephrine beyond the effect of epinephrine alone.
and posterior superior labral detachment were identified in 35 patients and anterior dislocation and massive rotator cuff tear were diagnosed in 5 patients. Anterior SSN decompression was performed in 5 patients, posterior decompression in 23 and mixed SSN decompression in 12 patients. Post-operatively all patients experienced complete pain relief, particularly at the posterior shoulder. Muscle atrophy was significantly improved at 14 months post-operatively. All athletes gradually regained full ROM. 35 patients returned to pre-injury level and were very satisfied, 3 were satisfied and 2 were partially satisfied. Conclusion: Arthroscopy to address intra-articular pathology along with simultaneous arthroscopic SSN release in the spinoglenoid and/or suprascapular notch can effectively and safely prevent irreversible muscle wasting which occurs in advanced SSN entrapment in volleyball players and has been associated with patients’ high levels of satisfaction.

Category: Shoulder - Other

Does Needle Penetration of the Shoulder Joint Prior to Arthroscopy Increase Infection Risk? The Effect of Preoperative Magnetic Resonance Arthrogram or Corticosteroid Injection

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Summary:
This large database study demonstrates that corticosteroid injection within 4 weeks of shoulder arthroscopy and Magnetic Resonance Arthrogram within 2 weeks of shoulder arthroscopy increases the risk of post-operative infection.

Introduction: Prior literature has associated preoperative corticosteroid shoulder injection (CSI) with infection following shoulder surgery. A recent study found an equally elevated risk of total knee arthroplasty infection with preoperative injection of either CSI or hyaluronic acid. The implication is that violation of a joint prior to surgery, even in the absence of corticosteroid, may pose an elevated risk of infection following orthopaedic surgery. The aim of the present study was to determine whether violation of the shoulder joint for Magnetic Resonance Arthrogram (MRA) poses an elevated risk of infection following shoulder arthroscopy and to compare this risk to that introduced by preoperative CSI. Methods: A national, all-payer database was queried to identify patients undergoing shoulder arthroscopy between January 2015 and October 2020. Patients were stratified into the following groups: (1) no CSI or MRA within 6 months of surgery (n = 5,000), (2) CSI within 2 weeks of surgery (n = 1,055), (3) CSI between 2 and 4 weeks prior to surgery (n = 2,575), (4) MRA within 2 weeks of surgery (n = 414), (5) MRA between 2 and 4 weeks prior to surgery (n = 1,138). Postoperative infection (septic shoulder or surgical site infection) was analyzed at 90-days, 1-year, and 2-years postoperatively. Multivariable logistic regression analysis controlled for differences among groups. Results: MRA within 2 weeks prior to shoulder surgery was associated with an increased risk of infection at 1 year (OR, 2.17; P = 0.007), while MRA 2-4 weeks preceding surgery was not associated with an increased risk of postoperative infection at any time point. By comparison, CSI within 2 weeks prior to surgery was associated with an increased risk of postoperative infection at 90-days (OR, 1.72; P = 0.022), 1-year (OR, 1.65; P = 0.005) and 2-years (OR, 1.63; P = 0.002) following surgery. Similarly, CSI 2-4 weeks prior to surgery was associated with an increased risk of postoperative infection at 90-days (OR, 1.83; P < 0.001), 1-year (OR, 1.62; P < 0.001), and 2-years (OR, 1.79; P < 0.001). Conclusion: Preoperative CSI within 4 weeks of shoulder arthroscopy elevates the risk of postoperative infection. Needle arthrotomy for shoulder MRA elevates the risk of infection in a more limited fashion. Avoidance of MRA within 2 weeks of shoulder arthroscopy may mitigate postoperative infection risk. Additionally, the association between preoperative CSI and postoperative infection may be more attributed to medication profile than to needle arthrotomy.