CONCLUSIONS: Our preliminary data suggest that 9% of trigger fingers may be primarily caused by the A0 pulley. Furthermore, the data suggest that up to 55% of trigger fingers have at least some involvement of the A0 pulley system. While literature documented factors such as diabetes status and past hand pathology appropriately predicted poor results from initial release, the actual pulley released did not. This implicates both pulleys in trigger finger and suggests that release of both the A1 and A0 may be necessary for comprehensive treatment. As our sample size increases, our results will become more generalizable, and patient factors potentially correlated with A0 pulley involvement will be clarified.

Preoperative Hypoglycemia Increases Infection Risk Following Trigger Finger Injection and Release

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BACKGROUND: Diabetes mellitus is a well-known risk factor for infection following trigger finger (TF) injection and/or release. However, the effect of preoperative hypoglycemia prior to TF injection or release is currently unknown. The purpose of this study is to determine the effects of hypoglycemia or hyperglycemia on infection incidence following TF injection or release.

METHODOLOGY: A retrospective cohort review between 2007 and 2015 was conducted using a national private payer database within the PearlDiver Supercomputer. Preoperative, fasting, glucose levels were collected for each patient and these ranged from 20 mg/dL to 219 mg/dL. Infection rates at 90-day and one-year post-procedural intervals were determined using ICD-9 codes.

RESULTS: The query of the PearlDiver database returned 153,479 TF injections, of which 3,479 (2.27%) and 6,276 (4.09%) had infections at the 90-day and one-year intervals, respectively. There were 70,290 TF releases identified, with 1,887 (2.68%) 90-day and 3,144 (4.47%) one-year infections. There was a statistically significant increase in infection rate in patients with hypoglycemia at the 90-day \((p=0.006)\) and one-year \((p<0.001)\) time interval following TF injection. Likewise, a statistically significant increase in infection rate in patients with hypoglycemia undergoing TF release at the one-year time interval was seen, \(p=0.003\). There was no statistical relation between hyperglycemia and infection after TF injection or release at the 90-day or one-year time intervals.

CONCLUSION: Hypoglycemia prior to TF injection or release increases the risk for infection. Tight glycemic control may be warranted to mitigate this risk. Further studies are needed to investigate the effect of hypoglycemia as an independent risk factor for infection.

Comparing Various Suture Techniques for Lacerated Muscle Repairs

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PURPOSE: While closed muscle injuries are usually treated conservatively, the optimal treatment technique for open muscle lacerations is still unknown. Only three studies have compared the biomechanical strength of muscle repairs however they had conflicting results. Very few studies have looked at the time required for each suture technique. The purpose of this study was to examine the biomechanical properties of common muscle repair techniques to determine the superior repair in terms of strength and time required to achieve approximation.

METHODS: Forty-two fusiform porcine muscle specimens were dissected to comparable sizes and used for testing the suture repair techniques. We investigated three traditionally known repairs: Figure Eight, Mason-Allen, and Perimeter. Each muscle was completely transected and then repaired using one of the three techniques. Fourteen muscle-tendon specimens were prepared for each group. We recorded the time for each repair and the force at repair failure utilizing a materials load bearing testing system.
We recorded biomechanical properties including breaking strength and stiffness as well as the time required for each approximation.

RESULTS: There were no statistical differences found between the three techniques in regards to breaking strength. Both the Figure Eight (p = 0.039) and Perimeter techniques (p = 0.001) were significantly stiffer than the Mason-Allen technique. The figure eight technique was the quickest repair in terms of time.

CONCLUSION: Given the equivalent breaking strength, increased stiffness, and relatively quickest time to perform we found the Figure-Eight technique should strongly be considered for muscle laceration repair.

REFERENCES:
1. Menetrey J, Kasemkijwattana C, Day CS, et al. Growth factors improve muscle healing in vivo. J Bone Joint Surg Br. 2000;82(1):131–137.
2. Chance JR, Kragh JF, Jr., Agrawal CM, Basamania CJ. Pullout forces of sutures in muscle lacerations. Orthopedics. 2005;28(10):1187–1190.
3. Kragh JF, Jr., Svoboda SJ, Wenke JC, Ward JA, Walters TJ. Suturing of lacerations of skeletal muscle. J Bone Joint Surg Br. 2005;87(9):1303–1305.
4. He M, Sebastian SJ, Gan AW, Lim AY, Chong AK. Biomechanical comparison of different suturing techniques in rabbit medial gastrocnemius muscle laceration repair. Ann Plast Surg. 2013;73(3):333–335.

Management of Tip Amputations: A Case for Reduced Prophylactic Antibiotics

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HYPOTHESIS: Despite the general acceptance of management practices for tip amputations including debridement, cleansing, and local wound care, there is limited evidence regarding the specific treatment of tip amputations, including duration or type of antibiotic regimen. We predict that there is little indication for prolonged antibiotics in tip amputations, including the prevention of potential infection or revision amputations.

METHODS: We performed a retrospective chart review of 106 patients seen by the plastic surgery hand service in a single level A trauma center between 2011 to 2016. Inclusion criteria included any fingertip amputation at the distal interphalangeal joint or beyond without any attempt at revascularization. Exclusion criteria included any bite wound. Charts were subsequently evaluated for phalynx injured, mechanism, history of smoking or diabetes, antibiotic duration, and intervention in the emergency department, with the primary outcome being infection or revision amputation.

RESULTS: Demographics-wise, 84/106 (79.2%) patients were male and 22/106 (21.8%) were female. 9/106 (8.5%) had diabetes. In regards to smoking history, 73/106 (68.9%) patients were never smokers, 26/106 (25.5%) were current smokers, and 7/106 (6.6%) were former smokers. Among the 106 patients, 36 (33.9%) had a tip amputation of the MF, 28 (26.4%) of the IF, 24 (22.6%) of the RF, 17 (16.0%) of the SF, and 14 (13.2%) of the thumb. 11/106 (10.4%) of patients had multiple simultaneous tip amputations. 45/106 (42.5%) patients had tip amputations involving the dominant hand, 46/106 (43.4%) the non-dominant hand, and 15/106 (14.2%) patients either had dominance not established or not documented in their chart. 60/106 (56.6%) patients had a crush injury while 46/106 (43.4%) had a sharp injury.

Of the 106 patients, 89 (84.0%) received antibiotic treatment in the ED and 93 (87.7%) were discharged on antibiotics. Of the 93 patients discharged on antibiotics, 85 were given Keflex, 4 were given Augmentin, 2 were given Bactrim, 1 received Duricef, and 1 received Clindamycin. The average duration of antibiotics was 7.0 ± 2.3 days, ranging from 3 to 14 days. 2/106 (1.9%) patients developed a subsequent infection, most severely a superficial cellulitis. 1/2 (50.0%) of those patients who developed infections only did so after operative management of the initial injury. 10/106 (9.4%) patients required operative management after the initial injury of which 5/10 (50.0%) had revision amputations. Univariate logistic regression demonstrated that the duration of antibiotics had no significant effect on the development of infection (p= 0.521) as well as no significant effect on the need for a revision amputation (p=0.902).

CONCLUSION: There is limited evidence surrounding the treatment of tip amputations of the phalanges, particularly regarding prophylactic antibiotic use. Adverse effects