The Prevalence and Epidemiology of A0 Trigger Finger: A Novel Characterization

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PURPOSE: Though trigger finger is traditionally associated with A1 pulley constriction, the A0 pulley, customarily known as the palmar aponeurosis, has been observed clinically to be responsible for trigger finger pathology. Previous cadaver studies have biomechanically implicated the A0 pulley in trigger finger, if not more so than the A1 pulley. This study attempts to outline the clinical prevalence and patient factors related to A0 pulley trigger finger in surgical patients.

METHODS: This was a prospective IRB approved randomized clinical trial. Patient demographics, medical history, and trigger finger history (i.e. not triggering, triggering, locked in flexion, incomplete flexion) were documented prior to trigger finger release. Intra-operatively, a coin toss was used to randomize initial release of either the A0 or A1 pulley. Following release, the patient was asked to flex and extend the fingers under careful examination and documentation by the surgeon. The remaining pulley was then released and clinical trigger status was recorded. The A0 pulley was deemed responsible if the initial release of A1 failed, but subsequent release of A0 successfully resolved triggering. The A0 pulley was deemed at least partially involved if the initial A0 release completely or incompletely resolved the trigger status of the patient. Statistical analysis was performed with Chi square and multivariate regressions.

RESULTS: To date, twenty-two fingers belonging to fourteen patients (11 (79%) right handed, 3 (21%) left handed; average age 56 yrs; 9 male (64%) and 5 female (36%)) have been released. Of the 22 fingers, 2 (9%) resolved after subsequent A0 release following a failed initial A1 release. Nine (41%) showed resolution of symptoms following the initial release of A0, and 1 (5%) showed incomplete resolution following initial A1 release and complete resolution following the subsequent A0 release. Neither initial A1 or A0 release was significantly associated with complete release, incomplete release, or complete release failure. Multivariate regression revealed that diabetes status(p<0.001), occupation requiring manual labor(p=0.002), presence of past hand procedures(p=0.003), increased pain level at baseline(p=0.020), and absence of a palpable nodule(p=0.009) predicted incomplete resolution at first release. Incomplete release was independent of A1 or A0 release, age, sex, finger, smoking status, or steroid injections. We aim to recruit up to 50 fingers by study completion.
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.