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, Sebastin 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%) of patients were given Keflex, 2 were given Augmentin, 1 received 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
related to prophylactic antibiotic use include enhanced resistance patterns, hypersensitivity or anaphylactic reactions, and clostridium difficile infection. This retrospective review demonstrates that bedside management of the tip amputations including irrigation and debridement, repair, and initial revision/completion amputations can be performed safely, and that a prolonged course of antibiotics is unnecessary.

Abbreviations: IF-index finger; MF - middle finger, RF-ring finger, SF - small finger

Anatomical Study of the First Dorsal Extensor Compartment

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The first dorsal extensor compartment (1st EC) of the wrist is important in treating de Quervain’s disease, which causes stenosing tenosynovitis of the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles. Its anatomical variations are commonly noted, and hand surgeons should be aware of this possibility during the procedures.

Forty cadaver hands were dissected to define the anatomic variations of the 1st EC. Through the gross findings, we classified the contents into several ways, according to the presence of septation, subcompartment, and variation of tendons. Bony cross-section of the wrist was also performed to reveal any bony ridge or groove within the 1st EC. We measured the anatomical structures of the 1st EC based on the radial styloid process.

A septum that results in subcompartments in the 1st EC was present in 24 (60%); complete in 2 (8.3%), and incomplete in 22 (91.7%) distally. The mean size of the 1st EC was 21.2±3.2mm in length, and 7.9±1.6mm in width. The mean length of the septum was 10.7±5.5mm, while the mean width of the subcompartment was 3.0±0.9mm. All the subcompartments enclosed only EPB tendons. The mean number of APL and EPB tendon slips was 2.6±0.5 and 1.1±0.2, respectively. The bony floor of the 1st EC was classified into 5 types. Two distinctive grooves separating 2 tendons with protruding osseous ridge (type I, n=8), two distinctive grooves separating 2 tendons without protruding osseous ridge (type II, n=10), a single distinct groove with osteophytes (type III, n=13), indistinct groove with fibrous septum separating 2 tendons (type IV, n=6), and indistinct groove without fibrous septum (type V, n=3).

Based on our study, the 1st EC revealed relatively high anatomical variations, and acknowledgement of this abnormality is mandatory for the successful treatment of de Quervain’s disease.

RECONSTRUCTIVE SESSION 1

Risk Factors for Amputation Following Lower Extremity Free Tissue Transfer

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PURPOSE: There is a paucity of outcome-data regarding lower extremity limb salvage among diabetic patients undergoing free tissue transfer, specifically post-operative amputation. The purpose of this study was to evaluate potential risk factors for lower extremity amputation following lower extremity free tissue transfer for limb salvage among a diabetic patient population.

METHODS: A retrospective review of all diabetic patients who underwent lower extremity free tissue transfer for the purpose of limb salvage was conducted at a single center.

RESULTS: 61 lower extremity free flaps were performed among diabetic patients from a single institution from 04/2011-08/2017. The overall microsurgical success rate in this patient population was 93.4% (57/61). Most commonly performed free flaps were Anterolateral thigh (27/61), Vas-tus Lateralis (17/61), and Gracilis (6/61). 45 patients were male (77%), mean A1C was 7.37 (SD 0.41), and mean BMI was 29.86 (SD 5.52). 16 (26.2%) patients eventually underwent lower extremity amputation. Mean time to amputation