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PURPOSE: Our anatomical knowledge of Madelung deformity is limited due to the rarity of the condition. Our purpose was to develop a 3D statistical shape model to quantify distal radius shape, visualize the shape spectrum, and assess the efficacy of shape information in predictive modeling.

METHODS: CT scans of 26 Madelung deformity, and 26 healthy wrists were processed and brought into correspondence using a parametric, non-rigid registration algorithm. Three statistical shape models were developed: a Madelung deformity model (n=26), a healthy model (n=26), and a mixed model (n=52) containing shapes of both sets. Models could represent shape variations as ‘modes’ of variation. A binary logistic regression model was developed to assess the predictive ability of shape information.

RESULTS: Over 80% of variation can be explained using five modes. Combining modes, a binary logistic regression model can accurately (94%) predict radius bones to belong to either Madelung deformity or healthy wrists.

CONCLUSION: These findings show promise for the use of shape quantifications in future diagnostic predictive models. Quantifying three-dimensional shapes, even if the absolute number of shapes is small, could be especially useful in rare congenital conditions in which minimal patient numbers have limited clinicians’ anatomical exposure.

P142. PREDICTION OF ADVERSE OUTCOMES FOLLOWING FREE TISSUE TRANSFER USING LACE INDEX FOR THE TREATMENT OF CHRONIC LOWER EXTREMITY WOUNDS

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PURPOSE: As healthcare costs rise, scales that predict hospital readmission are needed to identify at-risk patients. The LACE Index is used to predict readmission and mortality within 30 days of discharge. LACE has been studied in plastic surgery populations, but evidence among specific cohorts is lacking. Our aim was to evaluate the utility of LACE in patients undergoing free tissue transfer (FTT) to the lower extremity (LE), a population at high risk of poor outcomes.

METHODS: Patients undergoing FTT for chronic LE wounds at our institution between 2013 and 2019 were included. Retrospective chart review was performed for univariate analysis and to calculate LACE Index. Outcomes were defined as emergency department (ED) and inpatient admissions, re-operation, and mortality within 30 and 90 days of discharge.

RESULTS: 170 patients were included in our analysis. Post-hoc multivariable logistic regression including age, previous admissions, and different LACE score thresholds found LACE ≥11 was significantly associated with higher odds of 90-day ED admission (OR: 2.424, p=0.023). No association was found between LACE and inpatient readmission or re-operation. No patients died within the follow-up period.

CONCLUSION: Our analysis demonstrates that certain LACE Index score cut-offs may predict 90-day ED admissions, but LACE may not be suitable to predict readmission following LE FTT. Further studies should ascertain whether LACE is an important risk stratification tool for patients undergoing FTT.

P143. MANAGEMENT OF RADIAL NERVE PALSY: SYSTEMATIC REVIEW AND POOLED ANALYSIS

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PURPOSE: Isolated radial nerve palsy is a debilitating injury treated with tendon transfers, nerve grafts, and nerve transfers. There is no consensus on the optimal technique for reconstruction. Therefore, we performed a systemic review and pooled analysis to determine which surgical intervention provides the best outcomes.

METHODS: A systematic review was conducted according to PRISMA guidelines. Twenty-four papers met inclusion criteria. Grading scales were converted into a tripartite scoring
system to compare outcomes between techniques. Pooled Chi-squared analyses were performed with a p-value < 0.05.

RESULTS: Three hundred seventy patients were analyzed. Tendon transfers resulted in the greatest percentage of good outcomes (82%) and the lowest percentage of poor outcomes (9%). Outcomes in nerve transfer were superior in proximal joints. Rates of good and poor outcomes were equivalent at all joint levels for tendon transfers and nerve grafts. At the wrist, tendon transfers were superior to nerve grafts and nerve transfers. Nerve grafts and nerve transfers provided equivalent outcomes at all three levels.

CONCLUSION: Our study analyzed reported outcomes of tendon transfers, nerve grafts, and nerve transfers for reconstruction of isolated radial nerve palsy. Pooled analysis demonstrated that tendon transfers had higher rates of superior outcomes with similar rates of inferior outcomes as compared to nerve transfers and nerve grafts. Our findings suggest that tendon transfers should always be considered for reconstruction of patients with isolated radial nerve palsy because nerve-based reconstruction is less reproducible.

P144. TERTIARY HOSPITAL TRANSFERS FOR EVALUATION AND TREATMENT OF THE INFECTED HAND: A HEALTHCARE CROSS-SECTIONAL ANALYSIS

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PURPOSE: Previous publications regarding hand patient transfers focus primarily on traumatic injuries or in combination with infections; many are single institution experiences. There has not been a large-scale healthcare analysis regarding patients transferred for hand infections; this is the purpose of our investigation.

METHODS: A cross-sectional analysis was performed using the Texas Healthcare Information Collection Database between 2015-2019. Data was queried for CPT and ICD 10 codes associated with infections distal to the elbow. Statistical analyses were performed for several patient demographics and healthcare metrics. Surgeries were categorized based on the ICD-10.

RESULTS: 3,581 patients were transferred for hand infections. Patients most common primary insurance (34.7%) was self-pay. 50.5 % of patients had Surgeries. Subcutaneous tissue was the most common operative layer. Most common surgeries were drainage 46.7 % or excision 41.1%. Operative patients’ LOS was 7.7 days, versus 14.9 for non-operative (p<0.001). Weekend transfers had decreased average LOS relative to weekday (mean 7.7 ± 9.5 days versus 12.3 ± 15.2 days; p<0.001), but a 94.7% increased odds of operation (OR=1.947 [95% CI, 1.652-2.294]; p<0.001).

CONCLUSION: Many patients are transferred to tertiary centers within Texas for hand infections annually. Roughly 1/3 of transferred hand infection patients were self-pay. Patients managed with operations most frequently had a drainage procedure. Operative patients had a shorter average LOS especially those transferred on a weekend.

P145. THE IMPACT OF A “NO-TOUCH” APPROACH ON BREAST IMPLANT INFECTION

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PURPOSE: Intraoperative contamination of the surgical field during aesthetic breast augmentation may lead to implant infection with devastating consequences. This study covers a period of 29 years and is divided into two phases: a retrospective phase from 1992 to 2004 when a “standard” approach was used and a prospective phase from 2004 to 2021 when a “No-Touch” approach was implemented to prevent implant infections.

METHODS: Patients in the “Standard” and “No-Touch” groups underwent aesthetic breast augmentation by the same senior surgeon (FDP) in the same outpatient surgical facility during the 29-year period of the study. Patients are divided into two groups: from 1992 to 2004, and from the implementation of the “No-Touch” protocol in 2004 to 2021.

RESULTS: Patients that underwent breast augmentation using the “No-Touch” approach developed no infections, whereas the “standard” group had an infection rate of 3.54% (p = 0.017).

CONCLUSION: Based on the findings of this study we strongly recommend the use of the “No-Touch” approach