Predictors of Radial Nerve Position on the Humerus: An MRI-based Anatomical Study

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Introduction

- Trauma involving the humerus may cause injury to the radial nerve.
- Awareness of the anatomy of the radial nerve as it courses along the humerus is important for surgical approaches to the humerus.
- We explore possible patient predictors for variation in the anatomy of the radial nerve, including gender, height, ethnicity, obesity, humerus length and distal width.

Methods

- Retrospective review of 49 MRI studies of the upper extremity.
- Patient variables reviewed:
  - Gender and Ethnicity
  - Height and BMI
  - Humerus Length
  - Humerus Width (distal)

Figure 1

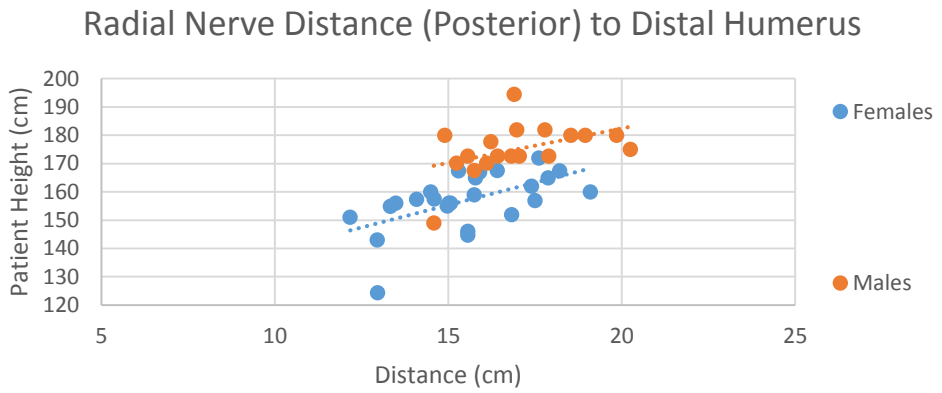
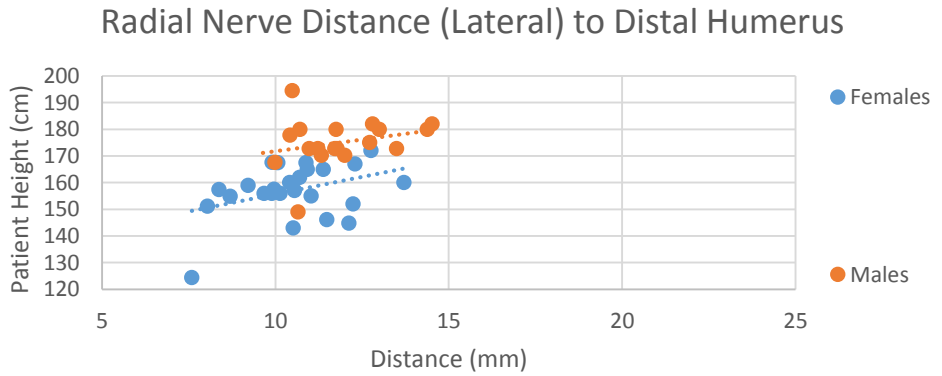


Figure 2



Results

- Radial nerve distance from distal humerus epicondyles:
  - Posterior 16.3 cm ± 1.8cm
    - Males 17.0 cm ± 1.5 cm
    - Females 15.8 cm ± 1.9 cm
  - Lateral 11.1 cm ± 1.5 cm
    - Males 11.8 cm ± 1.3 cm
    - Females 10.5 cm ± 1.4 cm

Conclusions

- Positive linear correlation was observed for patient height vs:
  - Humerus Length (R=0.86)
  - Humerus Width distal (R = 0.46)
  - Lateral Radial Nerve distance to Lateral Epicondyle (R=0.52)
- Positive correlation was noted for gender and radial nerve measurements ($p<0.05$).
- No significant correlation was observed between radial nerve measurements and BMI or ethnicity.