

Range of elbow movement predict a normal elbow x ray?

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Abstract:

BACKGROUND: Elbow injuries account for approximately 2-3% of presentations to the emergency department. This is associated not only with a very high rate of x rays but also with a very high rate of "missed fractures" This study examines which components of elbow examination have the best correlation with a normal radiograph. **DESIGN SETTING:** A district general hospital's emergency department seeing 83,000 new attendances per annum (pa) (approximately 1600 elbow injuries pa). **METHODS:** After estimating the power before data collection, all patients presenting with elbow injuries were considered for inclusion, and were excluded only if they were unable to follow instructions owing to either reduced conscious levels or mental conditions. A proforma was completed after patient examination, indicating the features of clinical examination, and the results of radiographs if any. The formal report of all radiographs taken was sought from the radiology department. **RESULTS:** 407 patients were entered into the study, of whom 331 received a radiograph of the elbow. Full extension of the elbow had a specificity of 0.916 (95% confidence interval (CI) 0.863 to 0.969, sensitivity 0.478) for detection of a normal radiograph. An equal range of movement ROM had a specificity of 0.976 (95% CI 0.940 to 0.991, sensitivity 0.211). Subgroup analysis of patients aged < 16 years showed a specificity of equal ROM of 1 (95% CI 0.941 to 1.000) for the detection of a normal x ray. Logistic regression analysis showed that best predictive values were achieved by a combination of full extension, flexion and supination. **CONCLUSION:** A two-tier clinical rule for management of elbow injury is proposed: (1) Those patients aged < or = 16 years with a ROM equal to the unaffected side may be safely discharged; (2) Those patients with normal extension, flexion and supination do not require emergent elbow radiographs.