Prevalence of acute kidney injury in hip fracture patients

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Introduction

- Increasing incidence of fragility fractures requiring surgery
- AKI is a preventable clinical syndrome
- Meta-analysis [1] = 17% AKI with hip fractures
- 75,000 hip fractures per year [2]
- 40,000 patient deaths associated with the development of AKI with hip fractures [3]
- AKI costs £1 billion annually [4]
- Hip fractures set to reach 100,000 by 2025 = £3 billion per year [5]
- AKI with hip fracture has a 3-fold increase in mortality rate [6,7]

Objectives

"Investigate the prevalence of AKI in patients with hip fractures"

1. Prevalence of AKI on admission
   - (pre-operative)
2. Prevalence of AKI developed during admission
   - (post-operative)

	Population group (n=190)
Mean Age (yrs) (range)	81.9 (60 to 103)
Mean Height (m) (SD)	1.62 (0.1)
Mean Weight (kg) (SD)	62.3 (15.0)
Mean BMI (kg/m²)	23.6 (4.8)
Gender (Male : Female) (%)	36 (18.9) : 154 (18.1)
Laterality (Right : Left) (%)	78 (41.1) : 112 (58.9)
Operation performed (n) (%)	187 (98.4)
ASA grade (n = 187) (%)	
1	3 (1.6)
2	58 (30.5)
3	112 (58.9)
4	14 (7.4)

BMI: Body mass index
ASA: American society of Anaesthesiologists

Methods

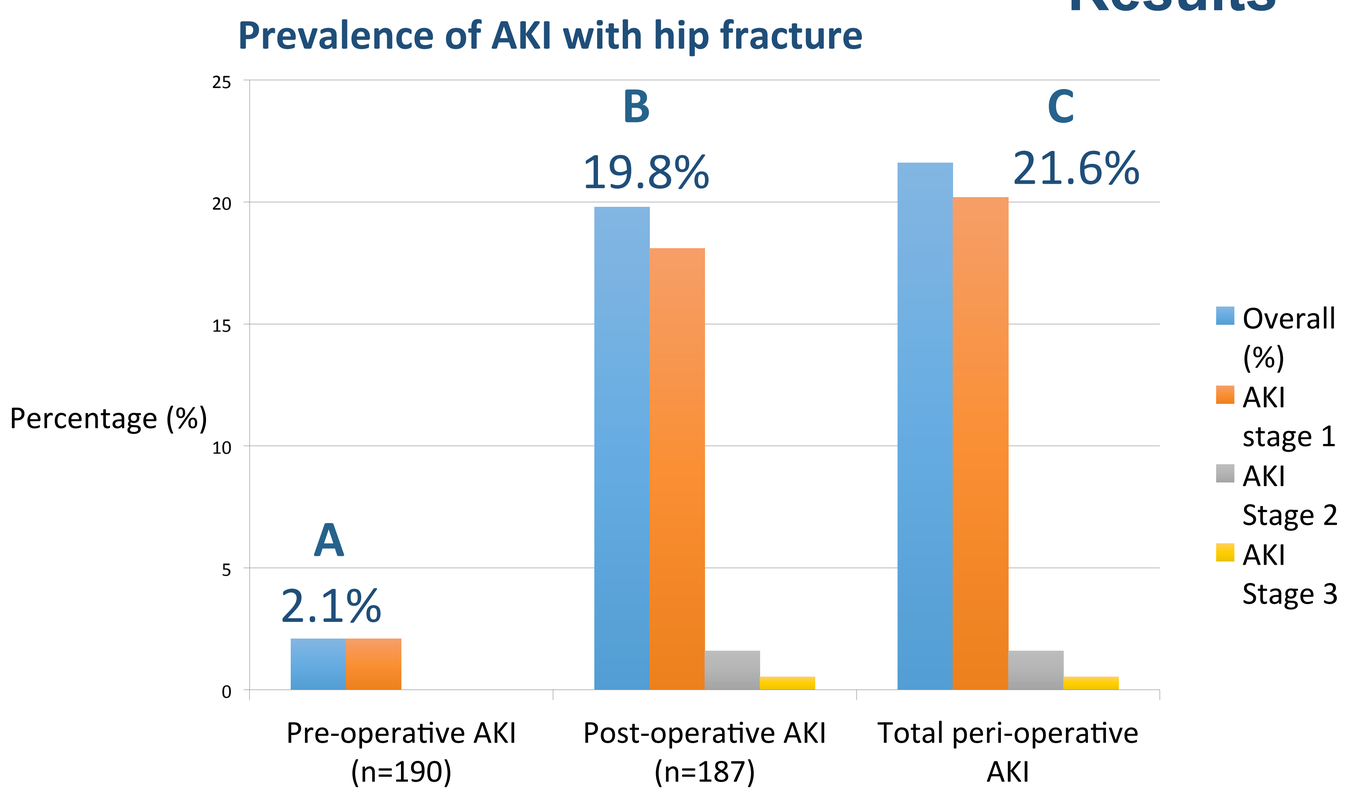
1. All hip fractures in 2020 were analysed

- 190 patients in total (excluding: extra-capsular fracture, <18yo, revisions)

2. Risk factors for AKI collected (quoted in current literature)

- Serum blood tests: ↑Urea, ↓albumin, ↑ potassium, ↑CRP
- Anthropometric data: Age, height, weight, BMI
- Surgical factors: Time to surgery, type of operation/ anaesthetic
- Length of inpatient hospital stay, delirium development, nutritional MUST score
- If AKI documented and treated

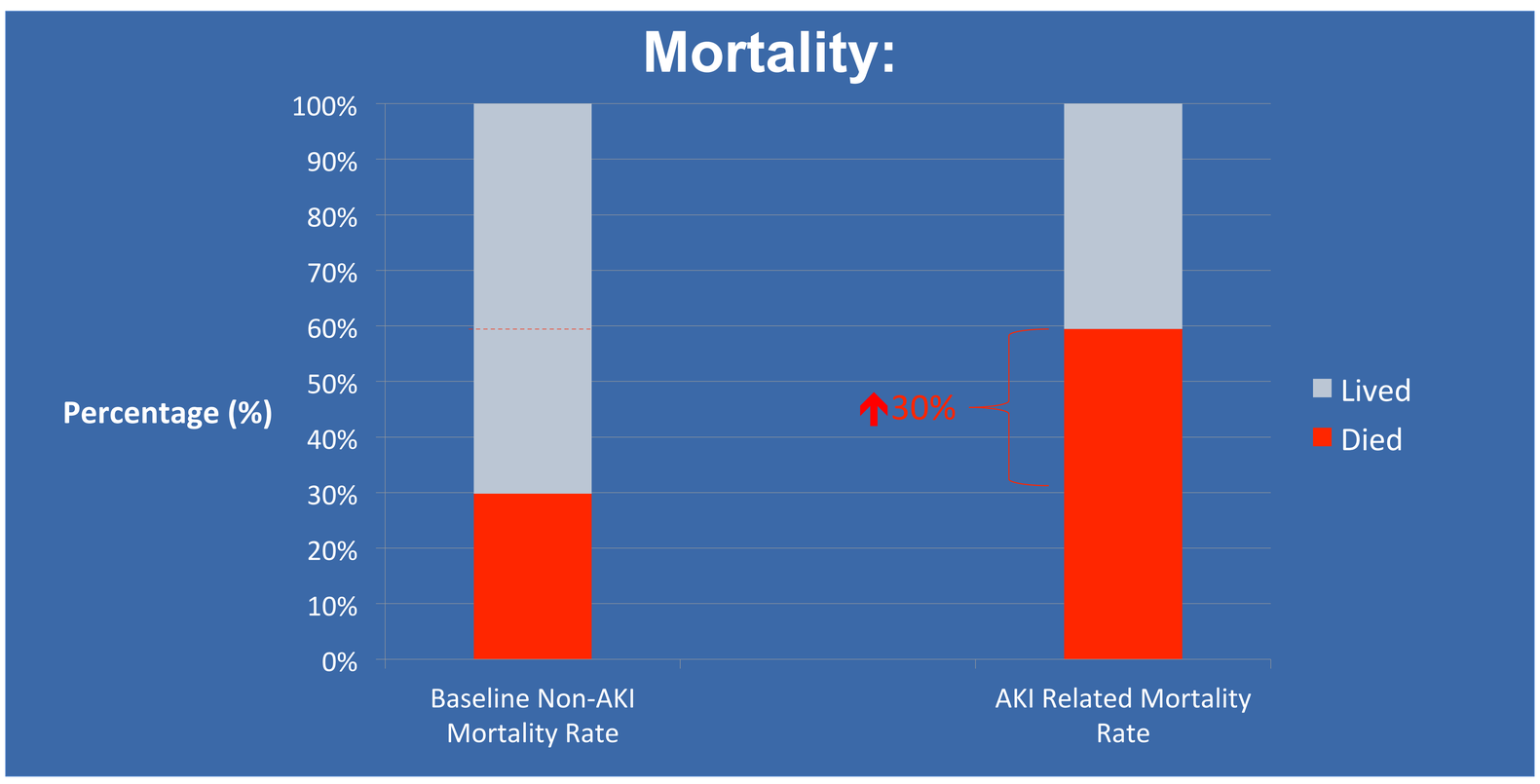
Results



A: On admission: 4/190 = 2.1%

B: Post-operative: 37/187 = 19.8%

C: Overall: 41/190 = 21.6%



Factors affecting development of AKI (P<0.05)

- ↑Age
- ↑Length of hospital stay
- Admission route (inpatient > outpatient)

Factors affecting mortality (P<0.05)

- ↑Age
- ↑Weight
- ↑BMI
- ↑Time to surgery
- Delirium (↑4AT)
- Malnutrition (↑MUST score)
- Pre-admission residence (care > home)
- **Post-operative AKI developed**

Conclusion:

1. 1/5th patients have AKI associated with hip fracture

2. Post-operative AKI is a significant risk factor for mortality

Impact of research:

1. Corroborates current research
2. Prompt a higher focus on monitoring renal bloods peri-operatively
3. Identifies space for an AKI scoring tool

Limitations:

1. System alerts for AKI could be incorrect/not flagged up
2. May have treated AKI but not been documented
3. Confounding variables that could have contributed to mortality alongside AKI
4. Small sample sizes
5. No guidance as to when the post-operative blood tests should be taken

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