

Missed on X-Ray, found on CT: Diagnostic yield and clinical consequences of occult posterior malleolus fractures in tibial shaft fractures - a retrospective study

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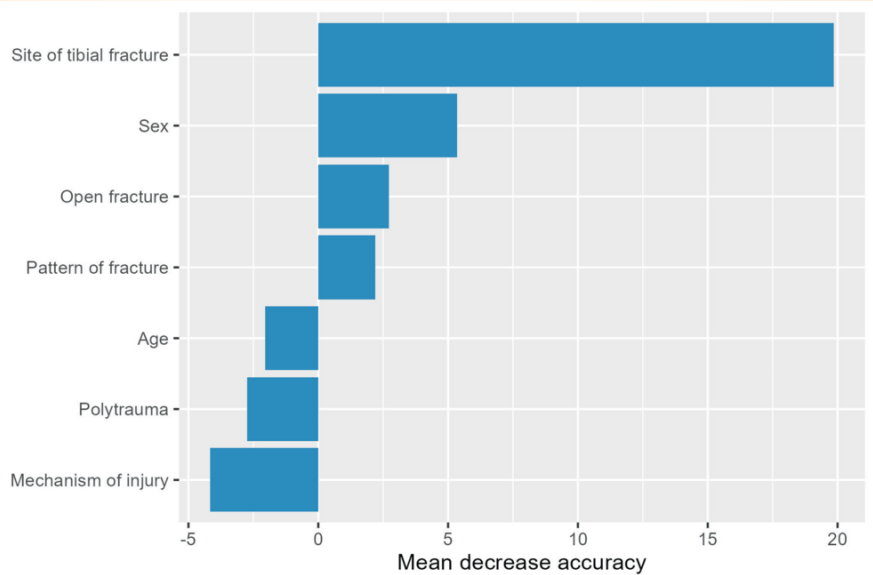
Aim and Objectives:

- 1) To evaluate the diagnostic value of CT imaging vs XR detecting posterior malleolus fragments in distal tibial shaft fractures.
- 2) To correlate the degree of posterior malleolus fragment displacement and its influence on the choice of surgical approach.

Method: 36 months Retrospective analysis of orthopaedic service in a UK Major Trauma Centre.

Result:

1. PM fragment was present in nearly 40% of distal tibial shaft fractures - occurring more often in women and after low-energy, closed injuries.
2. PM fragment is missed on 19.7% of XR reporting, Male, Old age and Spiral fracture pattern to be significant in predicting which PM fragments are likely to be missed.
3. Neither fragment location (posteromedial, posterolateral, or undisplaced) nor fragment size independently predicted failure of full weight bearing, infection, or mal-/non-union after fixation.
4. In comparative effectiveness analyses among operatively treated fractures, intramedullary nailing yielded higher odds of full weight bearing than plate and external fixation



Fixation Strategies	Odds ratio (95% CI)	P value
Screws - Nail	0.37 (0.03–4.66)	0.740
Screws - Plate	4.47 (0.34–59.54)	0.446
Screws - (Ex-fix)	4.59 (0.30–69.65)	0.474
Nail - Plate	12.24 (4.24–35.37)	<0.001
Nail - (Ex-fix)	12.57 (3.62–43.66)	<0.001
Plate - (Ex-fix)	1.03 (0.26–4.04)	1.000

Variable	Adjusted OR (95 % CI)	p-value
Age (per 10-year increase)	0.90 (0.67–1.18)	0.445
Male sex	2.70 (0.99–7.65)	0.055
Low-energy mechanism	1.52 (0.45–5.82)	0.516
Open fracture	2.01 (0.68–5.85)	0.200
Poly-trauma	1.48 (0.30–6.78)	0.619
Mid-shaft tibial site †	NE	—
Oblique fracture pattern	0.18 (0.04–0.60)	0.011
Spiral fracture pattern	4.17 (0.81–22.29)	0.084
Transverse fracture pattern	0.40 (0.02–2.66)	0.421

Table 5: Multivariable Logistic Regression Predicting Missed Posterior Malleolus Fragments

Detect	Total	≤33%	33–50%	>50%
Total	147	96	30	19
XR	116 (78.9%)	76 (79.2%)	20 (66.7%)	19 (100.0%)
CT	120 (81.6%)	70 (72.9%)	30 (100.0%)	19 (100.0%)
Intra-op	26 (17.7%)	12 (12.5%)	14 (46.7%)	0 (0.0%)
Missed XR	29 (19.7%)	18 (18.8%)	10 (33.3%)	0 (0.0%)