

TITLE: “Predictors of post-operative mortality following total hip arthroplasty surgery: a population-based cohort study.”

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OBJECTIVE/S

Data from the UK National Joint Registry have reported on predictors of post-operative mortality following Total Hip Arthroplasty (THA)[1]. We aimed to develop and validate a predictive model for post-THA mortality using data from primary care and hospital records linked to the Catalan Arthroplasty Registry (RACat).

METHODS

-Setting and participants: RACat collects information on patient, centre, and implant-related variables for patients undergoing THA in Catalonia (Spain). Patients aged ≥ 40 years undergoing THA in the period 2005-June/2012 in RACat were eligible. Primary care and hospital records together with pharmacy dispensations data were

extracted for the linked population from SIDIAP, a large representative database including >80% of the population of Catalonia. Patients in RACat but not present in SIDIAP, and those undergoing THA for hip fracture or malignancy were excluded.

-Outcome: 6-month all-cause mortality following THA.

-Potential predictors: a list of pre-operative potential risk factors was pre-defined: age, sex, body mass index, smoking, alcohol drinking, Charlson co-morbidity index (CCI), healthcare resource use (number of GP visits), hospital volume (THAs per annum), drugs used in the previous year, and indication.

-Analyses: Backwards logistic regression (p exit 0.1) was used to identify key predictors, and the obtained coefficients combined to derive a predictive tool. Area under the ROC curve (AUC-ROC) and Hosmer-Lemeshow test (HL) were used to estimate discrimination and calibration.

RESULTS

156/11,427 (1.4%) subjects died in the 6 months post-THA. Key predictors of mortality are detailed in Table 1. A predictive tool based on these variables had good discrimination (AUC ROC 87.3%) [Figure 1], and calibration (HL p=0.83) [Figure 2].

CONCLUSIONS

Pre-operative patient characteristics can be used to identify high-risk patients for early post-THA mortality. The proposed tool could be used to improved informed decision making.

REFERENCES: 1.Hunt LP et al. Lancet 2013 Sep 28;382(9898):1097-104.

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TABLE. Key predictors of 6-month post-THA mortality.

Predictor	Value	Adjusted Odds Ratio [95%CI]
Age	Per year (older)	1.09 [1.07-1.11]
Sex	Female	0.66 [0.46-0.95]
Alcohol drinking	Mild	0.27 [0.12-0.60]
BMI	Underweight	REF
	Normal (18.5 to <25)	0.50 [0.33-0.75]
	Overweight (25 to <30)	0.33 [0.18-0.59]
	Obese (30 and over)	0.42 [0.19-0.96]
CCI	0	REF
	1	1.97 [1.14-3.42]
	2	1.57 [0.95-2.59]
	3+	2.21 [1.41-3.47]
Previous non-hip fracture	GP diagnosis	0.62 [0.38-1.04]
Polyarticular osteoarthritis	GP diagnosis	0.66 [0.44-0.99]
NSAID use (previous year)	Lowest (first quintile)	REF
	Second quintile	0.52 [0.31-0.85]
	Third quintile	0.61 [0.37-0.99]
	Fourth quintile	0.38 [0.22-0.68]
	Highest (fifth quintile)	0.48 [0.27-0.85]
Oral corticosteroids (previous year)	≥3 months of ≥5mg/d prednisolone or equivalent	1.60 [1.00-2.58]
Oral anticoagulants (previous year)	≥1 month use	2.39 [1.40-4.09]
Tricyclic antidepressants (previous year)	≥1 month use	2.06 [0.91-4.66]
Aromatase inhibitor/s (previous year)	≥1 month use	2.49 [0.86-7.20]
Calcium/ D supplements (previous year)	≥1 month use	0.55 [0.35-0.87]
GP visits previous year	0	REF
	4	1.79 [1.15-2.78]
	5+	2.44 [1.56-3.80]
	Home visit (≥1)	2.43 [1.67-3.53]
Indication for THA (as in RACat registry)	Hip osteoarthritis	REF
	Rheumatoid arthritis	2.86 [1.58-5.18]
	Other inflammatory arthritis	3.16 [2.03-4.92]
Hospital volume	Medium	1.47 [1.05-2.07]

Figure 1. Receiver Operator Characteristics (ROC) plot.

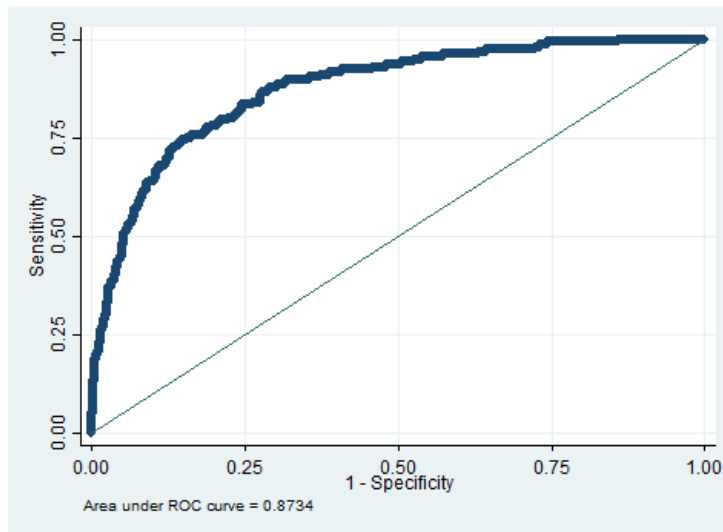


Figure 2. Calibration (expected/observed for each risk decile) plots.

