

Pre-operative Thyroid Dysfunction and Cardiovascular History Does Not Predict Mid and Long Term Mortality In Elderly Fragility Hip Fractures

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INTRODUCTION: Hip fractures are associated with significant morbidity, mortality, loss of independence and socioeconomic burden. Incidence continues to rise as life expectancy increases. About 14% of demographically similar patients die within the first year of fracture despite surgery being done. There is an increased 30-day complication rate amongst patients with biochemically overt hyperthyroidism in the pre-operative period – however the long-term outcomes remain unanswered. The authors aim to investigate the relationship between pre-operative thyroid dysfunction and middle to long-term survival rates amongst elderly patients undergoing surgery for hip fracture.

METHODS: An IRB approved cohort study of 1855 patients who underwent surgery for low energy hip fractures was conducted between January 2009 and December 2012.

A total of 1519 patients met both inclusion and exclusion criteria (Figure 1). Biochemical thyroid parameters (namely serum free-T4 and thyroid stimulating hormone) were routinely taken pre-operatively and used to group patients into the following categories – hypothyroid, euthyroid, hyperthyroid or others (Table 1). Charlson-Comorbidity Index (CCI) as well as medical conditions commonly associated with thyroid dysfunction (cardiovascular disease, arrhythmia) and fragility fractures (age, end-stage renal disease) were studied. One-year, five-year and ten-year survival was plotted on a Kaplan-Meier survival chart. Pearson's Chi-Square was used to study correlation with related co-morbidities.

RESULTS: Majority of patients were female (n = 1070, 70.4%) and the mean age was 75.6 (± 11.0) years. 34.0 % (n = 516) were euthyroid, 11.8 % (n = 179) were hyperthyroid, 6.4 % (n = 97) were hypothyroid and 47.9 % (n = 727) were non-classifiable thyroid dysfunction. Survival outcomes were comparable between all groups at one-year, five-year as well as at ten-years after surgery (p > 0.05). Mean ten-year survivorship was 35.2 %. There were no significant difference in terms of survivorship between all groups at ten-years – 36.2% (n = 187) of euthyroid, 31.8 % (n = 57) hyperthyroid and 36.1 % (n = 35) hypothyroid (p > 0.05) (Figure 2). Age, end stage renal disease as well as CCI were independent predictors for mortality at one-year, five-years and ten-years.

DISCUSSION: Thyroid derangement is commonly associated with cardiac and endocrine-related dysfunction. Contrary to previous studies, pre-operative thyroid derangement and pre-existing cardiovascular disease did not have a significant effect on long-term mortality. Instead, CCI, end-stage renal failure were independent predictors of long-term survivorship. The findings suggest that surgery for hip fractures should proceed at earliest date once patient is optimised. Further endocrine and cardiovascular evaluation for patients with peri-operative thyroid dysfunction or cardiovascular history may have limited benefit on long-term mortality and should not delay surgical intervention.

SIGNIFICANCE/CLINICAL RELEVANCE: Contrary to previous studies, pre-operative thyroid derangement and pre-existing cardiovascular disease did not have a significant effect on long-term mortality. Further endocrine and cardiovascular evaluation for patients with peri-operative thyroid dysfunction or cardiovascular history may have limited benefit on long-term mortality and should not delay surgical intervention.

REFERENCES:

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2. Ling, X. W., Howe, T. S., Koh, J. S. B., Wong, M. K. & Ng, A. C. M. (2013) Preoperative Thyroid Dysfunction Predicts 30-Day Postoperative Complications in Elderly Patients With Hip Fracture. *Geriatr Orthop Surg Rehabil* 4, 43–49.

IMAGES AND TABLES:

Table 1: Thyroid Status Classification

TSH	Free T4	Category	n =
Low	High	Hyperthyroidism	179
Normal	Normal	Euthyroid	516
High	Low	Hypothyroidism	97
Other combinations		Non-Classifiable Thyroid Dysfunction	727

Figure 1

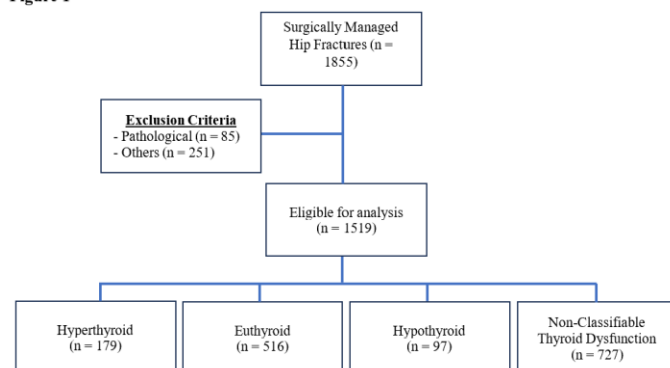


Figure 2

