

# Hip fractures and thyroid disease linked in study

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New research from UC Davis Health System finds that older men with subclinical thyroid dysfunction have an increased risk of suffering hip fractures and suggests that screening and treatment for thyroid dysfunction in its most subtle forms could reduce the incidence of this common injury.

The large prospective study, published in the Nov. 22 issue of the [Archives of Internal Medicine](#), begins to put to rest an ongoing controversy about the significance of subclinical thyroid dysfunction.

"One of the biggest questions among health-care providers, especially endocrinologists, is what do we do, if anything, about subtle degrees of an underactive or overactive thyroid, since we do not have sufficient information for clear clinical guidelines," said Jennifer Lee, UC Davis assistant professor of endocrinology, diabetes and metabolism and lead author of the study. "Our study elevates the clinical importance of these thyroid disorders by showing that they predict fractures of the hip, which can be debilitating and devastating."

A normal functioning thyroid is essential to overall metabolic health, including maintaining [bone strength](#), heart functions, normal weight, adequate energy and an overall sense of well-being. A blood test to identify levels of the thyroid gland's regulating hormone — thyrotropin, or TSH — followed by a blood test for levels of thyroid hormone, or T4, is a widely used screening and diagnostic process for thyroid dysfunction.

Overt, or clinical, hypothyroidism (underactive thyroid) or hyperthyroidism (overactive thyroid) is diagnosed when T4 and TSH are both too high or too low. People with these thyroid conditions can have obvious symptoms with potential long-term consequences, so treatment is generally recommended.

But subclinical underactive and overactive thyroid conditions typically have no obvious physical symptoms and are diagnosed when blood tests show an abnormal TSH level, along with a normal T4 level. These conditions may progress at some point to overt thyroid dysfunction. In their subclinical forms, however, these conditions tend to go untreated.

The UC Davis study is the first to evaluate the link between subclinical thyroid function and hip fractures, which can limit independence, mobility and lifespan. Each year, hip fractures result in hundreds of thousands of hospital admissions and billions in Medicare costs.

For the study, Lee and her colleagues used data for more than 3,500 participants in the Cardiovascular Health Study, a national assessment of risk factors for heart disease and other conditions among men and women at least 65 years of age in four U.S. communities. Launched in 1989, the study included blood tests for thyroid function. Follow-up exams and phone interviews over 15 years gathered additional medical information, including hospitalizations for hip fractures.

Hip fracture incidence among Cardiovascular Health Study participants with subclinical hypothyroidism or subclinical hyperthyroidism was compared with hip fracture incidence for those with healthy thyroids. While no significant links between hip fractures and thyroid disease were noted for women, men with subclinical hypothyroidism had a 2.3 times higher risk of [hip fracture](#) than men with normal thyroids. Men with subclinical hyperthyroidism had a 3.2 times greater risk.

"This study suggests that it is time to stop thinking about thyroid dysfunction and fractures as health problems for just women. It also suggests that in older men as high as 13 percent of all hip fractures could be attributed, at least in part, to subclinical thyroid dysfunction," said Lee.

The study does not answer the question as to why subclinical thyroid dysfunction increases fracture vulnerability. Lee said that animal studies have shown that thyroid dysfunction can alter bone architecture and the healthy process of continuously replenishing bone mass, and it is possible that the same could be true for humans.

The outcome also raises questions as to why men were more vulnerable to fractures than women. Based on her own clinical experiences, Lee said that women — including those in the study — are more actively screened and treated for both thyroid and bone-health problems, so the plausible effects of subclinical thyroid dysfunction on bone health in women would not be detected in the study.

"Once our results are confirmed, clinical trials will be needed to determine if treating subclinical thyroid dysfunction can promote healthy bone and reduce hip fractures," said Lee.

Provided by University of California - Davis

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