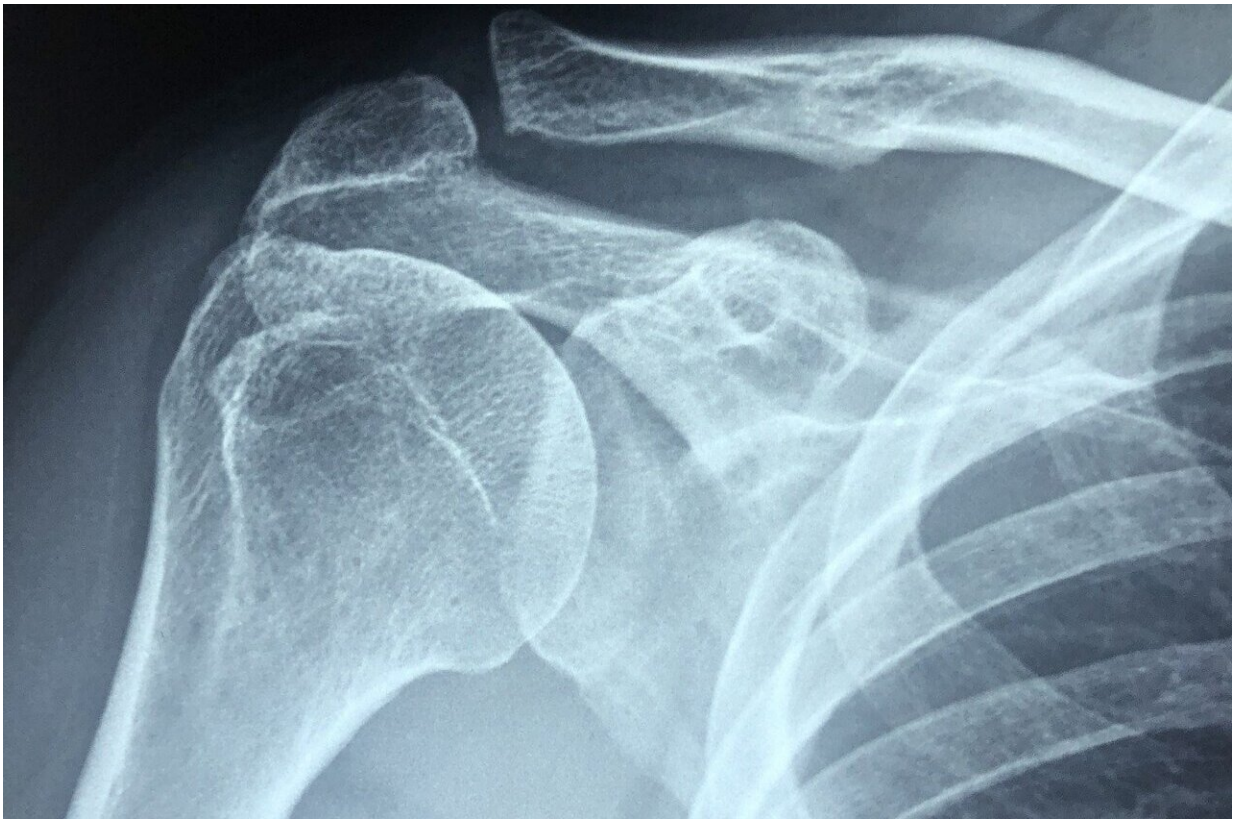


Estrogen and testosterone deficiency linked to higher rates of rotator cuff repair

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Patients with lower levels of sex hormones—testosterone in men and estrogen in women—are more likely to undergo surgery for rotator cuff tears, suggests a study in *The Journal of Bone & Joint Surgery*.

Sex [hormone](#) deficiencies "was associated with a significantly increased incidence of RCR within [two] independent databases," according to the new research by Peter N. Chalmers, MD, and colleagues of University of Utah, Salt Lake City. These findings add to previous evidence that [hormone levels](#) may be a systemic factor contributing to the development of rotator cuff tears, a common condition that is a major cause of shoulder pain.

In both men and women, sex hormone deficiency associated with rotator cuff repair

The study included nearly 230,000 adults under age 65 who underwent surgery to repair a torn rotator cuff from 2008 through 2017, with data drawn from a nationwide health insurance database. The [patients](#) were matched for age, sex, and type of insurance to an equal number of patients who did not undergo rotator cuff surgery.

Patients undergoing rotator cuff repair had an average age of 54 years, and 58% were men. Most patient characteristics were similar between those who underwent rotator cuff repair and those who did not, except tobacco use, which was more common in the surgical cohort.

On analysis of insurance records, 27% of women and 7% of men undergoing rotator cuff surgery had diagnosed sex hormone deficiency, compared with 20% and 4% in the [control group](#), respectively. After adjustment for other factors, the odds of rotator cuff repair were 48% higher in women with estrogen deficiency and 89% higher in men with testosterone deficiency.

To confirm their findings, the researchers evaluated the Veterans Administration Genealogy database, which includes data on millions of individuals linked to Veterans Administration health data. In this

independent database, rotator cuff repair was about 2.5 times more likely for women with estrogen deficiency and three times more likely for men with testosterone deficiency.

This study builds on a prior study by the same research group, which demonstrated that women with mutations in an estrogen receptor gene were more likely to develop rotator cuff disease, with higher rates of failed rotator cuff surgery.

This new study is the first to directly analyze the effects of estrogen or testosterone deficiency on the incidence of rotator cuff repair in humans. The authors note some limitations of their study, which does not include Medicaid patients and cannot account for the effects of hormone replacement therapy.

However, the observed association between sex hormone deficiency and rotator cuff repair strongly supports the theory that low estrogen and testosterone levels may contribute to the development of rotator cuff tears. Dr. Chalmers and colleagues conclude, "Future prospective studies will be necessary to understand the relationship of sex hormones to the pathophysiology of rotator cuff disease."

More information: Smith, Karch M et al, The Effect of Sex Hormone Deficiency on the Incidence of Rotator Cuff Repair Analysis of a Large Insurance Database, *The Journal of Bone and Joint Surgery* (2022). [DOI: 10.2106/JBJS.21.00103](https://doi.org/10.2106/JBJS.21.00103)

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