Fracture risk in transgender women after gender-confirming surgery

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Transgender women who take estrogen replacement therapy (ERT) after gender-confirming surgery have a high prevalence of low bone mass that is significantly linked to low estradiol levels and low compliance with ERT, according to an Italian study in the *Journal of Bone and Mineral Metabolism* (*JBMM*).

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The retrospective analysis included 57 transgender women (mean age 45.3 years) who were referred to the Gender Dysphoria Clinic at the Department of Medical Sciences, University of Turin, Italy, from January 2012 to May 2018.[1]

All patients had previously been diagnosed with gender dysphoria, according to criteria from the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5). All patients had also undergone gender-confirming surgery (orchiectomy and phallectomy plus vaginoplasty) at least 2 years prior to referral to the clinic.

Anthropometric parameters, biochemical assessment, vitamin D status, fracture risk factors, and bone mineral density assessed with dual-energy X-ray absorptiometry (DXA) and fracture risk evaluation were ascertained for each subject.

Body mass index (BMI) was within normal range for all patients, with a mean of 23.2 kg/m2. However, 56% of participants were sedentary and 37% were current smokers. In addition, the women reported slightly suboptimal dietary calcium intake overall.

The average risk of fracture over 10 years was 7%. However, of the patients, 14% (8 of 57) had intermediate–high fracture risk: 7 with intermediate and 1 with high fracture risk. But none of the women had fragility fractures.

Fracture risk was assessed with an adapted version of the Fracture Risk Assessment Tool (FRAX) called Derived FRAX (DeFRA) because no validated tool is available for risk evaluation specifically in the transgender population.

In the low-bone-mass group, 17β-estradiol levels were significantly lower than in the higher bone-mass group: median 21 pg/mL (25th to 75th percentile: 10.6 to 48.5 pg/mL) vs. 63 pg/mL (25th to 75th percentile: 38.5 to 99.5 pg/mL) ($P < 0.001$), respectively.

In total, 74% of subjects with low bone mass were nearly six times as likely to have estradiol levels in the lower two quartiles mass than those with higher estradiol levels.

The low-bone-mass group also had a higher prevalence of low compliance with ERT: 83% vs. 29% for the higher-bone-mass group ($P < 0.0001$). Overall, low compliance with ERT was seen in 51% of study subjects.

Patients with low bone mass had a longer duration of hormonal therapy use, before and after gender-confirming surgery, compared with those with normal bone mass, although this difference was not statistically significant: 8.5 vs. 17 years, respectively ($P = 0.09$).

At the time of referral to the clinic, 47% of the women in the sample were taking vitamin D supplements (cholecalciferol 25000 IU once a month), due to previous inadequate vitamin D status. And 26 of the remaining 30 patients had 25OH vitamin D levels below 30 ng/mL. Thus, 93% of all patients had hypovitaminosis D.

“Considering that one out of seven transgender women showed an intermediate-high 10-year fracture risk, such risk assessment may be considered to prevent and manage osteoporosis in this clinical setting,” the authors concluded.

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Reference

1. Motta G, Marinelli L, Barale M, et al. Fracture risk assessment in an Italian group of transgender women after gender-confirming surgery.