

# Dental X-rays can predict fractures



**Fig. 1** Reference images presenting the trabecular pattern as dense trabeculation in a woman with small intertrabecular spaces ...

**Fig. 2** ... mixed dense plus sparse trabeculation in a woman with small intertrabecular spaces cervically and larger spaces more apically ...

**Fig. 3** ... and sparse trabeculation in a woman with large intertrabecular spaces.

By using dental X-rays, the risk of fractures can now be predicted long before a fracture actually occurs, Swedish researchers at the University of Gothenburg's Sahlgrenska Academy have found.

In a previous study, researchers at the Academy and the Public Dental Service of the Region Västra Götaland had demonstrated that a sparse bone structure in the trabecular bone in the mandible is linked to a greater probability of having previously had fractures in other parts of the body.

The Gothenburg researchers followed this research with a new study that demonstrates that it is possible to use dental X-rays to investigate the bone structure in the lower jaw, which enables doctors to predict who is at greater risk of fractures in the future.

"We have discovered that sparse bone structure in the lower jaw in mid-life is directly linked to the risk of fractures in other parts of the body later in life," said Prof Lauren Lissner, researcher at the Institute of Medicine at the Sahlgrenska Academy.

The study draws on data from *The prospective population study of women in Gothenburg*, which was begun in 1968. "Given that this study has now been running for over 40 years, the material is globally unique," the Academy stated. The ongoing study includes 731 women, who have been examined on several occasions since 1968, when they were 38 to 60 years old. X-ray images of their jaw bone were analysed in 1968 and 1980 and the results related to the incidence of subsequent fractures. "The youngest cohort is now over 80 years old. Many of the cohorts, who were

born earlier, have died. We regularly check the cohorts' status by monitoring the mortality and hospital registries," Lissner told **roots**.

According to the Academy, for the first 12 years, fractures were self-reported during follow-up examinations. It is only since the 1980s that it has been possible to use medical registers to identify fractures. A total of 222 fractures were identified during the whole observation period.

The study found that the bone structure of the jaw was sparse in around 20 per cent of the participants aged 38 to 54 when the first examination was carried out, and that these participants were at a significantly greater risk of fractures.

The researchers also concluded that the older the person, the stronger the link between sparse bone structure in the jaw and fractures in other parts of the body. Although the study was carried out on women, the researchers believe that the findings could be generalised to men.

"Dental X-rays contain lots of information on bone structure," said Grethe Jonasson, researcher at the Research Centre of the Public Dental Service in Västra Götaland, who initiated the fractures study. "By analysing these images, dentists can identify people who are at greater risk of fractures long before the first fracture occurs."

The study *A prospective study of mandibular trabecular bone to predict fracture incidence in women* was published in the October issue of the *Bone* journal.

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