

Dental anesthesia may interrupt development of wisdom teeth in children

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Researchers from Tufts University School of Dental Medicine have discovered a statistical association between the injection of local dental anesthesia given to children ages two to six and evidence of missing lower wisdom teeth. The results of this epidemiological study, published in the April issue of *The Journal of the American Dental Association*, suggest that injecting anesthesia into the gums of young children may interrupt the development of the lower wisdom tooth.

"It is intriguing to think that something as routine as [local anesthesia](#) could stop [wisdom teeth](#) from developing. This is the first study in humans showing an association between a routinely- administered, minimally-invasive clinical procedure and arrested third molar growth," said corresponding author, Anthony R. Silvestri, D.M.D., clinical professor in the department of prosthodontics and operative dentistry at Tufts University School of Dental Medicine.

Wisdom teeth are potentially vulnerable to injury because their development – unlike all other teeth – does not begin until well after birth. Between two and six years of age, wisdom tooth (third molar) buds begin to develop in the back four corners of the mouth, and typically emerge in the late teens or [early adulthood](#). Not everyone develops wisdom teeth, but for those who do, the teeth often become impacted or problematic.

The American Association of Oral and Maxillofacial Surgeons reports that nine out of 10 people will have at least one impacted wisdom tooth,

which can cause bad breath, pain, and/or infection. For this reason, many dentists recommend surgery to remove wisdom teeth to prevent disease or infection.

A developing wisdom tooth, called a bud, is vulnerable to injury for a relatively long time because it is tiny, not covered by bone, and only covered by a thin layer of soft tissue. When a tooth bud first forms, it is no bigger than the diameter of the dental needle itself. The soft tissue surrounding the budding tooth is close to where a needle penetrates when routine dental anesthesia is injected in the lower jaw, for example when treating cavities.

Using the Tufts digital dental record system, the researchers identified records of patients who had received treatment in the Tufts pediatric dental clinic between the ages of two and six and who also had a dental x-ray taken three or more years after initial treatment in the clinic. They eliminated records with confounding factors, such as delayed dental development, and analyzed a total of 439 sites where wisdom teeth could develop in the lower jaw, from 220 patient records.

Group one, the control group (376 sites), contained x-rays of patients who had not received anesthesia on the lower jaw where wisdom teeth could develop. Group two, the comparison group (63 sites), contained x-rays from patients who had received anesthesia.

In the control group, 1.9% of the sites did not have x-ray evidence of wisdom tooth buds. In contrast, 7.9% of the sites in the comparison group – those who had received anesthesia – did not have tooth buds. The comparison group was 4.35 times more likely to have missing wisdom tooth buds than the control group.

"The incidence of missing wisdom teeth was significantly higher in the group that had received dental anesthesia; statistical evidence suggests

that this did not happen by chance alone. We hope our findings stimulate research using larger sample sizes and longer periods of observation to confirm our findings and help better understand how wisdom teeth can be stopped from developing," Silvestri continued. "Dentists have been giving local anesthesia to children for nearly 100 years and may have been preventing wisdom teeth from forming without even knowing it. Our findings give hope that a procedure preventing third molar growth can be developed."

Silvestri has previously published preliminary research on third molar tooth development, showing that third molars can be stopped from developing when non- or minimally-invasive techniques are applied to tooth buds.

More information: Swee J, Silvestri AR, Finkelman MD, Rich AP, Alexander SA, Loo CY. 2013. Inferior Alveolar Nerve Block and Third-Molar Agensis: A Retrospective Clinical Study. *The Journal of the American Dental Association*, 144(4), 389-395.

Provided by Tufts University

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