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## **Drill-Free Fillings? Researcher Says Antimicrobial Resin Could Lead to 'More Positive' Patient Experience**

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Hetal Desai's PhD research project will be welcome news to those who dislike having cavities filled.

The second-year PhD student in the [University of Toronto](#)'s Faculty of Dentistry is exploring a method to repair cavities without the need for a drill – typically used to remove decay from a tooth – by developing a low-viscosity resin with antimicrobial properties that would restore early carious lesions.

While there is currently a low-viscosity resin available that, when applied to the tooth's surface, acts like a barrier to prevent further damage, the material doesn't have antimicrobial properties. So, Desai hopes to use drug-loaded nanoparticles to levy antimicrobial properties onto this resin.

The nanoparticles are designed to carry a high drug load and are capable of gradually releasing the drug for a prolonged duration in order to maintain the antimicrobial effect for a long time. The result is the reduction of secondary decay occurrences around the restored tooth.

"Essentially, this resin will penetrate the tooth and form a barrier that will protect the tooth from being demineralized by the acids produced by the decay causing bacteria," Desai says. "Additionally, the drug from the nanoparticles incorporated within the resin will eliminate the bacteria and protect the tooth from the bacteria and bacterial enzymes."

An international student from [India](#), Desai says she chose to pursue her PhD at the Faculty of Dentistry because it allowed her the opportunity to do a dual degree. She also holds degrees from [Nair Hospital Dental College](#) in Mumbai, the [University of California](#), Los Angeles and the [University of Louisville](#).

“I came to the University of Toronto to investigate less invasive procedures for fixing dental caries,” she says. “This is especially important in children because fillings often need replacing years later. Finding a different solution has the potential to avoid multiple tooth restorations.”

She adds that she hopes her research will help ease people’s anxieties around dental appointments.

“There is a lot of fear associated with visiting the dentist for a cavity, especially for young children,” says Desai. “I hope this research will help eliminate the need for this procedure and a more positive experience for patients of any age.”

Read the [original article](#) on University of Toronto.