

# The growing menace of HPV-related throat and mouth cancers

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Head and neck surgeon Dr. Matthew Rigby (left) discusses the appearance of throat tumours with surgery resident, Dr. Ben Taylor

There's a new cancer epidemic on the rise. It's an aggressive throat and mouth cancer caused by the human papillomavirus (HPV)—the same sexually transmitted virus that leads to cervical cancer—but it's affecting mostly men in the prime of their lives. Public health officials estimate

that nearly 90 per cent of the adult population has been infected with HPV. Most people spontaneously clear the virus within 18 months of exposure; it's not known why or how it stays around and develops into cancer in some.

Surgeons, physicians and scientists at Dalhousie Medical School are striving to better understand, treat and cure these HPV-related throat and mouth cancers, rates of which have more than quadrupled in just the past ten years.

"Rates of HPV-positive oropharyngeal cancers are predicted to climb until at least 2030, before levelling off and declining as more and more people are vaccinated against the virus," notes Dr. Matthew Rigby, assistant professor in the Division of Otolaryngology in Dalhousie Medical School's Department of Surgery and a head and neck surgeon at the QEII Health Sciences Centre.

Grade seven girls in Nova Scotia have been vaccinated to protect them against cervical cancer since 2007; this year, grade seven boys started getting the vaccine to protect them from throat and mouth cancers. "In the meantime, we have growing numbers of younger people, mostly men, to treat for this cancer," adds Dr. Rigby

HPV-positive oral cancers tend to develop on the base of the tongue, the tonsils, the soft palate or the back of the throat, an area collectively known as the oropharynx. This makes them harder to detect than cancers closer to the front of the mouth, which are often identified by dentists and dental hygienists. And, unlike cervical cancer, there is no screening test for cancers in the throat.

"The first symptom many men notice with these cancers is a lump in their neck when they're shaving," Dr. Rigby says. "This means the cancer has already spread to the lymph nodes by the time they see a doctor."

## Leading the country in laser surgery for oral cancer

Dr. Rigby is one of a handful of surgeons in Canada—indeed, across North America—with the training and skills to remove tumours from the back of the mouth and the throat with a laser beam.

"Many centres in Europe are using lasers to resect oropharyngeal cancers, and a few centres in the United States, but we are the only centre in Canada that's using [laser surgery](#) extensively to remove large tumours from the base of the tongue and other areas of the oropharynx," Dr. Rigby says. "It would be impossible to manoeuvre a scalpel in this area, going in through the mouth, but we can get there safely with lasers."

Dr. Rigby learned the fine art of transoral laser microsurgery at the Mayo Clinic in Scottsdale, Arizona, after completing his medical, residency and head and neck surgery fellowship training at Dalhousie. One of his Dal mentors, Dr. Mark Taylor, is also skilled in the technique, having trained in it at another leading U.S. centre, Washington University in St. Louis, Missouri. Drs. Rigby and Taylor now train fellows in this advanced surgical technique here in Halifax, which offers many advantages to patients.

"The laser beam spot welds as it cuts the tissue, which substantially reduces bleeding and speeds up the healing process," Dr. Rigby explains. "And, in contrast to procedures that require us to split the jaw and move it aside to access the tumour, post-op recovery is much faster, with fewer complications and long-term problems."

In the absence of the laser-surgery option, patients with advanced throat and mouth cancers are usually treated with radiation and chemotherapy alone. HPV-related oropharyngeal cancers respond very well to these treatments, but their toxicity can leave patients with long-term problems

swallowing, tasting, chewing and/or speaking. Chemo can also damage the kidneys, hearing, and nerves in the hands and feet.

Dr. Rigby and his colleagues on the Head and Neck Cancer Site Team at the QEII Health Sciences Centre are increasingly recommending laser surgery as the first step in treatment, cutting down the amount of radiation a patient needs and potentially avoid chemotherapy altogether. By involving a pathologist to examine tissues as they're resected, during the surgery, the team hopes to ensure the most thorough surgical removal of cancerous tissues possible.

"Our goal, as a team, is to cure these cancers while preserving important functions," says Dr. Rigby, who began amassing a database of oral cancer treatments and their outcomes in 2004, while he was still a medical student. He continues to build and analyze this now-extensive database. "Our research and findings from other studies suggest that using laser surgery as a first step improves long-term functional outcomes."

## **Searching for the treatments of the future**

While Dr. Rigby and his colleagues seek to improve the outcomes of treatments available today, another Dalhousie head and neck surgeon, Dr. Robert Hart, is searching for clues to the cures of tomorrow. He's working with Dalhousie pharmacology professor, Dr. James Fawcett, and pathology professor, Dr. Martin Bullock, to learn how HPV triggers the growth of cancers in the mouth and throat.

"We're looking at the molecular pathways that lead from HPV infection to oropharyngeal cancer, to identify exactly which proteins are involved, what they can tell us about how advanced or aggressive a cancer is, and how that cancer may best be treated," explains Dr. Hart, a key spokesperson for "Manuary," a public awareness and fundraising

campaign for head and neck cancers spearheaded locally by the QEII Foundation.

The Dalhousie Department of Surgery has awarded Drs. Hart and Fawcett \$50,000 to unravel the chain of molecular events that take place in the cells that line the mouth and throat, once they've been infected with HPV. They're examining human tumour tissues provided to them by Dr. Bullock, and tracing the cancer's development in cell lines and mouse models.

"We see the potential for antibody-based therapies that target a key pathway we've identified, known as the hippo pathway," says Dr. Fawcett, who along with Dr. Hart is supervising surgery resident, Dr. Faisal Alzahrani, to conduct much of the laboratory work on the project. "Patients with HPV-related throat and mouth cancers require significant surgery, radiation and chemotherapy—more targeted treatments could dramatically reduce the need for such traumatic and costly procedures."

Provided by Dalhousie University

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