

Donor aortic graft improves reconstruction after partial laryngectomy

May 21 2012

Massachusetts General Hospital (MGH) surgeons have developed a new technique for reconstructing the larynx after surgery for advanced cancer. In the May *Annals of Otology, Rhinology and Laryngology*, they describe how this approach – which uses cryopreserved aortas from deceased donors to replace removed larynx tissue – allowed patients to avoid a permanent tracheotomy and maintain voice and swallowing function with no need for immunosuppressive medications. The pioneering surgery was a collaborative effort between Steven Zeitels, MD, director of the MGH Center for Laryngeal Surgery, and John Wain, MD, surgical director of the MGH Lung Transplantation Service.

"Without this new reconstructive technique, most of these [patients](#) would have required a total laryngectomy," says Zeitels, corresponding author of the report. "I don't believe anything like this has been achieved before – especially for [larynx](#) cancer reconstruction in patients whose tumors recurred after radiotherapy."

Although small laryngeal tumors can be successfully removed through minimally invasive laser surgery or treated with radiation, advanced tumors require more invasive procedures to remove the affected area, especially when chemotherapy and radiation have failed as initial treatment. In these situations, problems with the healing of tissues previously exposed to radiation and the lack of reliable reconstructive techniques have meant that a majority of patients having partial laryngectomy still needed a permanent tracheotomy – an opening through the neck and into the trachea – resulting in substantial voice and

swallowing dysfunction. Since the quality of life would probably be better with removal of the entire larynx, patients and their surgeons often chose a total laryngectomy.

To address the reconstructive limitations of partial laryngectomy, Zeitels and Wain developed an approach using the body's largest blood vessel, the aorta, to reconstruct the larynx. The MGH surgeons first used a previously frozen aortic graft for reconstruction after partial laryngectomy for recurrent [cancer](#) in 2009. Over the next two years, they performed the procedure on 15 patients, 8 of whom had previously received radiation therapy. All of these procedures were performed in one operation, combining both the tumor removal and reconstruction at the same time, and no immunosuppressive medications were needed.

Of that initial group of patients, all were able to have their postoperative tracheotomy tubes removed and resume breathing normally. All resumed speaking without the need for assistive devices, although their vocal quality depended on how much tissue had been removed, and all but one recovered and maintained swallowing function. Two patients had recurrence of their advanced tumors that required subsequent total laryngectomy. No stents were needed to keep patients' airways open, unlike in pilot trials using similar aortic grafts to reconstruct the trachea, which have had limited success.

"The shape of the aorta, which approximates that of the removed laryngeal tissue, and its ability to serve as a surface for healing within the airway are unique characteristics of these grafts that other forms of reconstruction do not provide," says Wain.

Zeitels adds, "The success of this procedure is remarkable, since the aortic tissue has held up extremely well against the stresses of a non-sterile environment, exposure to refluxing stomach fluids and the mechanical forces of swallowing and coughing. Given the success in this

extremely challenging surgical scenario, it's likely that there will be many other uses for cryopreserved vascular grafts as supportive structures and tissue patches for surgery in other parts of the body."

Provided by Massachusetts General Hospital

Citation: Donor aortic graft improves reconstruction after partial laryngectomy (2012, May 21)
retrieved 3 May 2024 from

<https://medicalxpress.com/news/2012-05-donor-aortic-graft-reconstruction-partial.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--