

## Transoral robotic surgery (TORS) in head and neck area.

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### Commentary

Transoral robotic surgery (TORS) is a technique used to treat oral, throat, and skull base cancers using a minimally invasive robotic approach through the mouth and throat. The TORS procedure allows deeper access and dissection of suspicious lesions and neoplastic growths in the oral cavity and those that extend from the throat to the base of the skull. Robotic surgery allows the surgeon to operate in tight spaces without a large open incision. Morbidity and mortality associated with increasingly radical doses of chemoradiotherapy have led many to question the current standard of care in head and neck cancer. Recently, surgeons have developed minimally invasive, transoral techniques which have demonstrated excellent survival and favourable functional outcomes. Transoral Robotic Surgery (TORS) is the most recent, cutting edge in the evolution of transoral techniques; TORS allows surgeons unprecedented access to and visualisation of the upper aerodigestive tract. Robotic surgery has been more recently introduced for the treatment of benign and malignant diseases of head and neck area, known as Transoral Robotic Surgery (TORS). The most common indication for benign pathology is sleep apnea syndrome. TORS has been used for the removal of laryngeal cancers with the objective to improve functional and aesthetic outcomes without worsening survival. Robotic surgery has several advantages.

- Three-dimensional vision.
- Stable vision, as the camera is maintained and mobilized by one of the articulated arms of the robot.
- More precise and finer instrument control with greater freedom of motion in all three dimensions.
- Suppression of physiological tremor.

Due to these advantages, TORS decreases the number of tracheotomies, and allows more rapid swallowing rehabilitation and a shorter length of hospital stay. However, its disadvantages, mainly high cost amongst others, do not make robotic surgery the current treatment of choice for laryngeal tumours; transoral laser surgery is superior in most cases. When compared with open surgical approaches, TORS may

avoid disfiguring mandibulotomy; it reduces the need for adjuvant radio and/or chemotherapy and for tracheostomy/gastrostomy, improves the return to normal speech and swallowing, and reduces blood loss and postoperative pain. Minimal scarring with reduced risk of wound infection, shorter hospital stays, and shorter recovery times may also improve patients' quality of life. TORS used in skull base surgery was first assessed in on animal and cadaver models. They also reported one case of benign neoplasm of the parapharyngeal space and infratemporal fossa treated with TORS. Robotic approach allowed an excellent access, visualisation, and tissue dissection within the parapharyngeal space and infratemporal fossa, providing a safe identification of the internal carotid artery and cranial nerves, and excellent haemostasis. However, certain limitations were observed in the TORS approach, notably its inability to perform wide resection, which may be required for invasive malignant neoplasm. Therefore, the authors concluded that TORS may be best suited for excising well-circumscribed benign lesions, adenomas or schwannomas, and possibly limited parapharyngeal metastatic lymph nodes.

TORS is an efficient tool for exposure and resection of early staged tumors, situated in head and neck anatomical sites with difficult endoscopic access. Nevertheless, the following aspects of robotic surgery need to be studied: indications and oncological results in patients treated by TORS. Technical improvements are expected to the new-generation robots, in order to expand the use of robotic surgery in the ENT field.

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