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Case report

Transoral surgery for an infant thyroglossal duct cyst

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ABSTRACT

A 2-month-old female infant with respiratory distress, cyanosis and swallowing difficulties following birth was referred to our hospital by the pediatric clinic. Flexible fiber optic laryngoscopic examination of the patient revealed a red–purple smooth-surfaced mass inside the tongue base and vallecula. No additional features were identified by otorhinolaryngological examination. A 2-cm cystic mass located at the tongue base was identified by neck computed tomography (CT) imaging. The cystic mass was marsupialized transorally with the assistance of the da Vinci robotic surgery system (TORS) and histopathologically diagnosed as a thyroglossal duct cyst. Surgery was completed with TORS without complications and prolonged intubation was extubated carefully. No respiratory distress or other complications were observed. All symptoms were completely resolved with surgery and the patient was discharged on the third postoperative day. The patient is still undergoing follow-up and no recurrence has been observed up to the eighth post-operative month.

1. Introduction

TORS is a novel surgical technique initially studied using mannequins, animals and cadavers in 2005, which began to be actively used in patients from 2007. With TORS, it is possible to approach and treat benign and malignant disease of the oral cavity, oropharynx and larynx. Techniques for supraglottic partial laryngectomy, cordectomy, radical tonsillectomy, tongue base resection, and oral cavity and oropharynx procedures have been described for adults [1,2]. In recent times, neck surgery techniques such as robot-assisted total thyroidectomy, transaxillary and retroauricular neck dissection have also been reported [3].

Thyroglossal duct cysts (TDC) are congenital masses that develop when the embryonic thyroglossal canal remains open. TDC most frequently presents itself as a lesion of the middle line of the neck. These are observed below the hyoid bone in 85% of cases, above the hyoid bone in 8% of cases, at the tongue base in 1–2% of cases, and on the lower neck in 5% of cases. Only 11 intralaryngeal cases have been reported [4].

Neck ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI) and thyroid scintigraphy are crucial for the differential diagnosis of TDC. Sistrunk surgery is classically the oldest and most effective method reported for the treatment of neck lesions. Incomplete removal of the cyst and tract can lead to recurrence. In recent years, cases in which transoral or combined removal of TDC was used have also been reported.

This paper describes the first reported case of a lingual TDC marsupialization surgery performed transorally with the assistance of da Vinci robotic surgery systems on an infant with respiratory and feeding difficulties.

2. Case

A 2-month-old female with complaints of respiratory distress, stridor, cyanosis and feeding difficulties following birth was referred to our department by the pediatric clinic. During the otorhinolaryngological examination, the otoscopy, rhinoscopy and neck examination results were normal. A smooth-surfaced, dark red–purple colored mass was observed when the tongue was pressed down during oropharynx examinations. The flexible fiber optic laryngoscopic examination revealed a mass originating from the tongue base inside the vallecular region. It was not possible to view the epiglottis and larynx due to obstruction of the laryngeal aditus (Fig. 1).

Neck CT evaluation revealed a well-circumscribed lesion 1.5 cm in diameter, extending to the vallecula from the midline of the tongue base. The CT images were not clear and there were artifacts due to movement of the patient, and for this reason the density of the mass could not be determined (Fig. 2a and b). The thyroid gland

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Fig. 1. Endoscopic image of the da Vinci system before the operation displaying a mass originating from the tongue base.

shape and size were normal, displaying a homogenous density. Based on existing findings, surgery was planned for the patient with a pre-diagnosis of congenital cystic lesion in the base of the tongue.

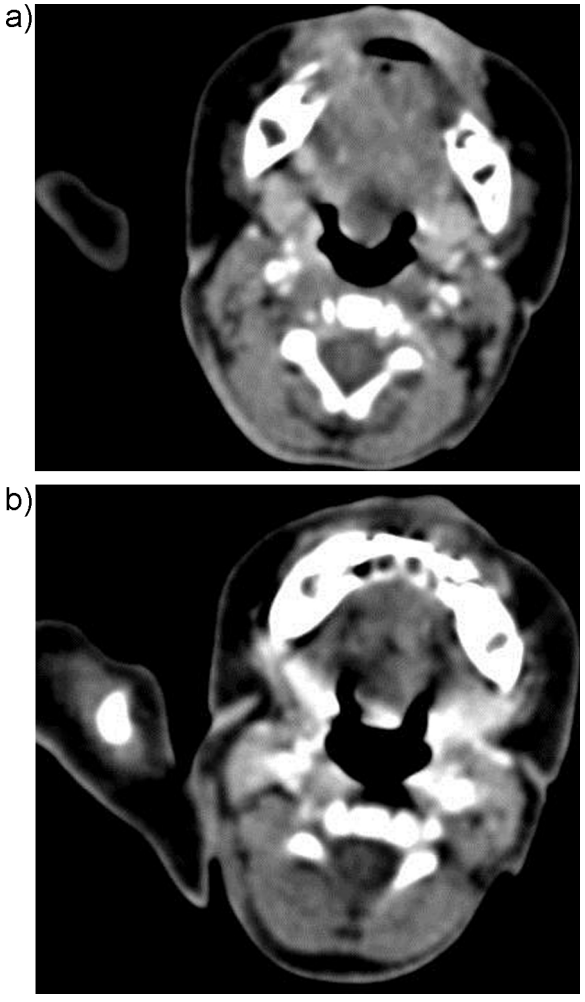

Fig. 2. (a) and (b) Neck CT evaluation displaying a well-circumscribed lesion of 1.5-cm diameter.

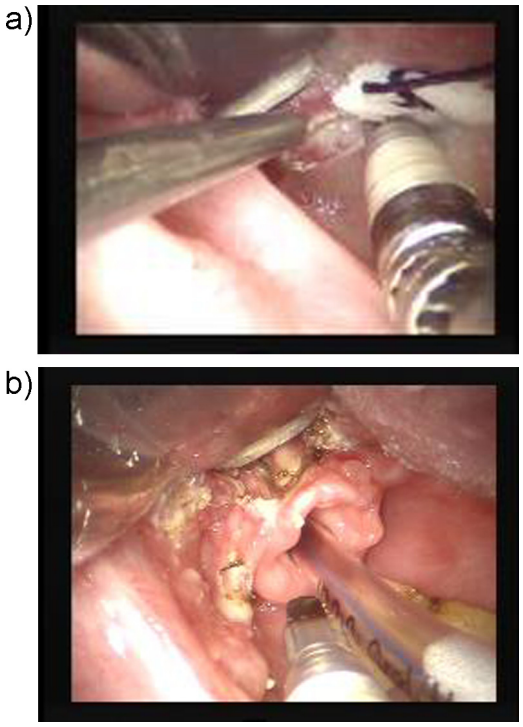

Fig. 3. (a) and (b) A cystic mass in the tongue-base was marsupialized using the da Vinci surgical system.

The patient's parents were offered three approaches to cyst removal: conventional open surgery, transoral laser microsurgery, or transoral robotic surgery. They approved of the transoral robot-assisted approach, and provided full informed consent.

As a result of our clinic's experience with TORS, marsupialization of the cystic mass in the base of the tongue was performed with the assistance of the da Vinci robotic surgery system under general anesthesia. Oral intubation was applied to the patient, and manual exposing was performed with a Farabeuf retractor. Docking procedures were performed using the da Vinci surgery system. A 0-degree three-dimensional endoscope was used on the first arm; 5-mm monopolar cautery and a Maryland dissector were attached to the second and third arms, respectively. The cystic mass in the tongue-base was marsupialized by cauterization with the aid of monopolar cautery (Fig. 3a and b). The excised cyst wall was sent for pathological evaluation. A thick glue-like transparent fluid was drained from the cyst.

As a result of electrocautery use, no bleeding was observed during the procedure. The system setup time was 10 min, and the surgical procedure time was 3 min.

To avoid potential respiratory tract obstruction, the patient was taken to the pediatric intensive care unit and carefully extubated at the second hour after surgery. Oral nutrition (breastfeeding) was initiated at the sixth hour post-operatively. Respiratory distress disappeared instantly. The follow-up was continued at our department and the patient was discharged after the flexible fiber optic laryngoscopic examination showed healing at the surgical site on the third day of the surgery.

Histopathologically the cyst was lined with non-keratinized stratified squamous epithelium and mucus glands, and skeletal muscle bundles were seen in the stroma. A thyroglossal duct cyst was diagnosed via exclusion from the differential diagnoses.

No problems were observed during the patient's first, second and fourth week controls (Fig. 4). No recurrence was observed on the control MRI taken in the tenth month after the operation (Fig. 5).