

Place an Airway Prosthesis and you Will Adopt a Patient: Complications Associated with the Montgomery Prosthesis

Ponga una prótesis en vía aérea y adoptará un paciente: las complicaciones asociadas a la prótesis de Montgomery

Gando, Sebastián¹ 

The Montgomery T-tube prosthesis is one of the tracheobronchial prostheses commonly used in interventional pulmonology.

Its design, with an external limb that anchors to the tracheostomy opening and two internal limbs with smooth outer edges, gives it advantages over closed tracheobronchial stents. Its advantages include a lower tendency for displacement and reduced risk of tracheal wall injury.

They are not magical devices; when we place a Montgomery prosthesis, we replace a difficult-to-manage problem with others that are easier to manage.

In this issue, Cerruti et al¹ present a retrospective analysis from a single center on complications associated with the Montgomery prosthesis in a group of 15 patients at a mechanical ventilation weaning center.

The results must be interpreted in the context of the study population: patients with a median of 160 days from admission to placement of the prosthesis (more than five months), most of whom had previously undergone tracheostomy and had complex airway pathology, such as tracheal stenosis or tracheoesophageal fistula. In their results, they report a high rate of complications, considering the increase in secretions (80% of patients) and the complexity of their management as one of them.

In this regard, some authors^{2,3} –and we agree with them– do not consider the increase in secre-

tions to be a complication, but rather part of the effects of the treatment.

The accumulation of secretions is a common event with this type of prosthesis. Its length and lack of compressibility mean that the patient's secretions must “jump” over the prosthesis with a cough in order to progress, so inadequate management may lead to prosthesis failure.

The instillation of saline solution or nebulizations (we prefer the latter so as not to open the prosthesis to the outside) is required to improve the fluidity of secretions and prevent the formation of mucus plugs and respiratory obstruction.

The most frequent indication for prosthesis placement, as described in the article by Ceruti et al, is subglottic and/or tracheal stenosis. At the time of implantation, it is essential to trim the prosthesis to the strictly necessary length to treat the stenosis, in order to avoid accumulation of secretions.

Some patients require surgical intervention but must await availability, while others are unsuitable candidates for surgery. The description of complications might lead one to think that managing these lesions without a prosthesis would be more effective.

However, Feng-Jie Wu et al⁴ showed that the Montgomery prosthesis is more effective than serial endoscopic treatments for stenosis, both in maintaining airway patency and in having a lower complication rate.

The eligibility of patients who are candidates for Montgomery prosthesis placement is crucial. Patients with bronchorrhea, ineffective cough, swallowing disorders that make the airway unsafe, obesity –especially morbid obesity– and kyphoscoliosis may be factors that predispose to prosthesis failure.

Swallowing is an important screening factor. The Montgomery prosthesis restores airway patency at the aerodigestive junction, and its safety may be compromised if at-risk patients are not properly identified –for example, by previously performing an endoscopic evaluation of swallowing (FEES).

Two patients in the group had transcordal prostheses. The transcordal prosthesis is indicated specifically for subglottic lesions close to the vocal cords or for vocal cord or laryngeal lesions that require it. The prosthesis should be of the smallest possible diameter, and the portion that contacts the vocal cords is polished to reduce thickness and allow cord mobility. Aspiration and pain are the most common adverse effects of this type of placement.

The article also highlights the number of patients who required secretion suctioning (93%), which is not common and may indicate that the study population had less effective secretion management, something that should be assessed before placing a Montgomery prosthesis.

Complications associated with this type of prosthesis have been reported with variability; however, no mortality directly attributable to its use has been documented. Reported complications include subcutaneous emphysema following insertion, migration requiring removal and reinsertion, posterior displacement toward the trachea causing acute airway obstruction (reports of displacement are rare and described as isolated cases), accumulation of dry intraluminal respiratory secretions requiring bronchoscopic aspiration or removal of the T-tube, airway infection, tracheal hemorrhage, granulation tissue formation, and prolonged healing of the tracheocutaneous fistula.

Juan Margallo Iribarnegaray et al² reported a 50% complication rate in a series of 32 patients, excluding accumulation of secretions, bacterial colonization of the MP, or infection of the subcutaneous tissue.

In a retrospective review by Gaissert et al⁵ of 140 patients who underwent T-tube placement

over a 23-year period, long-term airway patency was achieved in 80% of patients, and the T-tube was the only intervention required in 11%. In the remaining 20%, T-tubes were removed within the first two months after insertion, mainly due to airway obstruction.

Ortiz Naretto⁶ and the team from the Hospital Muñiz in Buenos Aires, in another local experience, did not find any complications in nine patients with tracheoesophageal fistula, even when larger-than-usual prostheses were required to occlude the fistulous opening.

The article by Cerruti et al provides insight into the complexity of managing this type of prosthesis and the need for specific training in its care within rehabilitation, progressive care, and weaning centers.

The acquisition of easy-to-use, low-cost disposable bronchoscopes could play an important role in these institutions. They may be useful for the assessment of swallowing, identification of airway lesions, and follow-up of airway prostheses, in addition to serving as a bedside tool in emergency situations.

These centers should maintain close and fluid communication with the teams responsible for prosthesis placement and the management of its complications.

In conclusion, appropriate patient selection, placement by experienced hands, and proper care and follow-up are crucial to reducing the complication rate. The authors help us better understand the complications that may arise based on local experience in an increasingly relevant group of patients with complex airway lesions.

As the saying goes: “Place an airway prosthesis and you will adopt a patient”.

Conflict of interest

The author has no conflicts of interest to declare.

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