Case Report

Surgical Mini-Pharyngostoma: A Safe Technique for Unsafe Laryngectomy Patients

Martin Villares C1*, Gonzalez Gimeno MJ2, Diez Gonzalez L1, San Roman Carbajo J1, Dominguez Calvo J1, Valor Garcia C3, Arguello de Tomas M1

1Department of Otorhinolaryngology, Hospital El Bierzo, Spain
2Department of Otorhinolaryngology, Universidad Complutense de Madrid, Spain
3Department of Otorhinolaryngology, Hospital San Sebastian de los Reyes, Spain

Abstract

From the first laryngectomy performed by Billroth, pharyngocutaneous fistula has not been eradicated. Modern reconstructive techniques can solve almost any surgical problem in laryngectomy patients, but morbidity is still high in critical patients. In a effort to minimize morbidity in unhealthy patients, we used the surgical pharyngostoma technique as conservative approach for complex postlaryngectomy fistulas in selected patients, in which, aggressive surgical interventions were not safe.

INTRODUCTION

The laryngectomy technique has been established for decades and has not changed throughout the years, but Pharynx reconstruction after laryngectomy remains controversial [1]. Nowadays, there is no consensus about the best technique to optimize pharynx wound healing, so prevention is better than any treatment [2]. Current literature supports aggressive reconstructive techniques in patients with complex pharyngocutaneous fistulas [3], but sometimes they are associated with unacceptable high complication rates [4,5]. In a effort to minimize morbidity, some surgeons still recommend the controlled submental pharyngostoma technique as a simple and safe therapeutic approach for these complex postlaryngectomy patients [6-9]. We describe our experience with this conservative concept in five selected laryngectomy patients. The aim of our study is to revise the elective indication of surgical pharyngostoma for specially selected patients with unsafe wounds, in which, aggressive surgical interventions are not safe.

PATIENTS AND METHODS

General description

This is a retrospective study of a cohort of 100 consecutive laryngectomy patients. After laryngectomy, the general technique of pharyngeal closure was the primary suture of pharyngeal defects mucosa was sufficient or with a myocutaneous flap if the pharyngeal mucosa was not sufficient [3]. All the patients had similar postoperative nutritional support and nurse care (nasogastric tube with oral feeding on day 7-10, suction drains and antibiotic therapy). We present a case series of five patients underwent a surgical minipharyngostoma to assess the results for these specially cases from a rate of 19% of postlaryngectomy fistulas.

Classifications

1. Postlaryngectomy fistula [10]: any anomalous path connecting the pharynx and the skin.
2. Pharyngostoma [10]: direct and unplanned opening from the pharynx to the skin with frequent skin necrosis.
3. Surgical controlled pharyngostoma [6]: when the surgeon creates an artificial and controlled fistula between pharynx and skin for protecting suture line and skin flaps. These surgical pharyngostomas can be:

A) Planned [6,8]: if surgeon plan the artificial fistula preoperatively, before any fistula formation, as a prophylactic technique

B) Unplanned: when the surgeon create the artificial fistula to solve an unplanned chronic or infected fistula to avoid that infection spreads through all tissues planes of the neck [7,9].

Classification of surgical pharyngostomas

We created the surgical pharyngostomas in our laryngecto...
my patients in three clinical situations:

a) Intraoperative, after the laryngectomy, as a Planned Pharyngostoma, before the formation of a unplanned pharyngocutaneous fistula (prophylactic technique).

b) Along postoperative period, after the formation of a chronic or an infected fistula, as a Controlled Pharyngostoma, in order to protect the remaining pharyngeal suture and carotid or jugular exposure.

c) When the fistula began to bleed during nursing care because severe wound breakdown. After carotid or jugular system ligation, we made an Emergent Submental Pharyngostoma.

**General principles for management of postlaryngectomy fistula**

The fundamental principles in the management of fistula after laryngectomy were described by Stell and Cooney [11]. Planned submental pharyngostoma technique had been well described in the literature [6-9, 12, 13]. We used in our patients the classical technique, with no previous variations. Guidelines for pharyngostoma closure were well described [3,13]. In our patients, fasciocutaneous flap (deltopectoral flap of Bakamjian) and pediculated pectoral major flap were used for surgical closure after healing the pharyngostome [14].

**CASE PRESENTATION**

We made five surgical submental pharyngostomas in our patients. One of these surgical pharyngostomas were made intraoperatively, after the laryngectomy and before fistula formation (prophylactic planned pharyngostoma) and the other four pharyngostomas along the postoperative phase, after unplanned fistula formation. We describe each patient who needed a surgical pharyngostoma in our study:

**Patient 1**

In one patient we created a minipharyngostoma intraoperatively after a high risk salvage laryngectomy and before fistula formation, as a Planned Prophylactic Pharyngostoma. We could not use pectoral flap the laryngectomy due to a previous non-oncologic surgery in pectoral area. Vascular neck status was very poor because a heavy chemoradiation therapy. After 3 weeks, we closed the pharyngostoma successfully with circular inverted flaps and a submental flap.

**Patients 2, 3**

Along postoperative phase, two patients presented an unplanned infected fistula without healing after four weeks with intensive nursing and nutritional support. We returned to the operating room and, after a meticulous surgical wound debridement, we created a safe Controlled Submental Pharyngostome in each two patient. We closed the two pharyngostomas three weeks after with a fasciocutaneous deltopectoral flap in one patient and with a pediculated myocutaneous pectoral flap in the another patient. The surgery was successful.

**Case 4, 5**

In another two laryngectomy patients, the unplanned fistula began to bleed during nursing care in postoperative phase. We had to return immediately to the operation room. Patient exhibited vessel necrosis (thyroid artery necrosis in one patient and internal jugular vein rupture in the other patient). Urgent vessels ligation and a wide wound debridement were made in the two patients. In the patient with jugular rupture, a myocutaneous pectoral flap was used to cover the pharyngeal suture line and to protect the carotid artery. In the two patients, we created a controlled midline pharyngostoma for saliva (an Emergency Pharyngostoma). The surgery was successful and we closed these pharyngostomas four weeks later with a fasciocutaneous deltopectoral flap in one patient and with local flaps in the other.

**DISCUSSION**

In spite of the high incidence of fistula formation age of chemoradiation therapy [1], no consensus exit about the best technique to optimize pharynx wound healing. So, prevention is better than any treatment [2]. In effort to minimize wound healing complications in high risk laryngectomy patients, some surgeons recommend the conservative concept of intraoperative prophylactic planned pharyngostoma after laryngectomy [6-12]. Krespy [6] suggest to create a pharyngostoma during laryngectomy if we are sure that a complex pharyngostoma will take place during the postoperative phase. Sundaram [8], after a rate of 67% of unplanned fistulas after salvage laryngectomy, began to use the controlled pharyngostoma concept in his last 11 salvage laryngectomy without regional myocutaneous flaps or free-tissue transfers. No fistula formation developed in his patients. We created one surgical pharyngostoma in a salvage-laryngectomy patient with a poor physical health who needed a simple and safe reconstruction with low incidence of postoperative complications [5]. The patient had a pervious non-oncologic surgery in pectoral area and microvascular anastomosis was not possible due to the vascular status of neck after chemoradiation [4].

A comprehensive review of literature showed different and controversial results about the management after postlaryngectomy fistula formation. Until know, no study proposed a standard clinical guideline or rule for surgical management and closure of these unplanned chronic fistulas. Many surgeons published their techniques to manage the post-laryngectomy fistulas [6-11] but sometimes, modern reconstructive techniques are very aggressive operations for a our unhealthy patients [1,4,5]. After unfavorable results with a postlaryngectomy fistula with intensive nursing and nutritional support, we managed these complex pharyngostomes with conservative principles, in order to conversion an unsafe wound in a safe wound in a high-risk laryngectomy patient. Aggressive modern reconstructive techniques sometimes are not indicated in these patients [1,4,5]. Some authors still recommending considering the creation of a controlled pharyngostoma to minimized the risk of major wound complications in high risk patients [6-11]. We present our successfully experience with this conservative approach in two chronic and infected fistulas after four weeks of intense nutritional and nurse support. Neumann [7] treats these postlaryngectomy fistulas the sooner after diagnosis of fistula was archived, with his “early surgical pharyngostoma” concept: the unsafe fistula was modified by an early and safe artificial pharyngostoma. A very complex pharyngocutaneous fistula following a large onologic resection with a gastric transposition was solved by Stew [9] with an easy surgical pharyngostome in a T4 hypopharyngeal carcinoma.
FINAL CONSIDERATIONS

From the review the literature and from our limited surgical experience about five patients, we suggest some possible indications for surgical mini-pharyngostoma in very selected patients as a low-morbidity surgical alternative to aggressive modern reconstruction techniques. Further studies and experiences will be required to confirm these surgical indications.

CONFLICT OF INTEREST

This research is part of a communication in accept-process at IFOS2017.

REFERENCES