

# Videofluoroscopic swallowing study to detect pharyngeal leak after total (pharyngo-)laryngectomy: Retrospective assessment of a single-institution protocol

Emilien Chabrillac, L. Baudel, S. Vergez, V. Woisard, JC. Farenc, M. Morisseau, A. Dupret-Bories  
Institut Unversitaire du Cancer Toulouse – Oncopole, Toulouse, France

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## INTRODUCTION

PharyngoCutaneous Fistula (PCF) occurs after 15% to 25% of cases of Total Laryngectomy (TL)<sup>1,2</sup>.

Systematic screening of subclinical pharyngeal leak (PL) by videofluoroscopic swallowing study (VFSS) may allow an early management of the leak and decrease the risk of subsequent PCF.

**Aim** = to assess the effectiveness of a single-institution protocol of VFSS for the detection of PL and its usefulness to mitigate evolution into subsequent PCF after total (pharyngo-) laryngectomy.

## METHODS

Retrospective single-center study (2014 to 2022).

**Our institution's protocol** = VFSS before oral refeeding, at postoperative Day 7 (primary TL, no flap) or Day 10 (salvage TL and/or flap required).

**Inclusion criteria** = all patients who underwent TL/TPL and performed a VFSS between postoperative Day 7 and 14 without clinical signs of PCF.

Exclusion criteria = salivary bypass tube.

## RESULTS

331 TL were performed during the study period.

248 patients met the inclusion criteria:

- 186 patients (75%) had a negative VFSS
- 62 patients (25%) had a positive VFSS (showing a PL in most cases and a PCF in 2 cases)



Among those who had a positive VFSS, the occurrence of a **PCF was avoided in 59.7% of cases**.

A repeat VFSS was performed 3 to 10 days later and became negative in one third of cases.

Among those who had a negative VFSS, 11 patients (5.9%) developed a secondary PCF after oral intake resumption (**false negative**). The origin of this secondary leak was as follows: lower (n = 6), middle (n = 2), or upper pharyngeal sutures (n = 2), unknown (n = 1).

In univariate analysis, no difference was found in the rate of PCF avoided and of false negative among the following groups:

- Primary vs salvage surgery
- Primary closure vs pharyngeal reconstruction flap
- Early VFSS (day 7-9) vs late VFSS (day 10-14)

No risk factor for PCF were identified in multivariate analysis.

## DISCUSSION

Sensitivity, specificity, positive and negative predictive values of VFSS could not be studied as it must rely on a comparison with a gold standard test for the diagnosis of PL, which does not exist. Main limitation of this study = interpretation bias (can be equivocal – no gold standard).

### Systematic review of the literature:

- 8 articles
- Up to 232 patients
- False-negative rate = 2.7% to 13.3%
- Rate of PCF avoided = 25% to 84.1%

## CONCLUSION

1. This study showed a good effectiveness of our institution's protocol in the detection of PL by VFSS, with a low rate of false negative, mainly due to leaks originating from the lower mucosal sutures.
2. Early detection of PL may have mitigated evolution into PCF in almost 60% of cases, and probably allowed to delay the occurrence of PCF or decrease their severity in the remaining 40% of cases.

Future studies are needed to determine the best timing for VFSS performance.

The authors have no conflict of interest to declare.

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