Introduction: Pharyngocutaneous fistula (PCF) is a typical complication after total laryngectomy. It results in important morbidity, prolonged hospital stay and delayed initiation of post-operative radiotherapy [1]. Its management is predominantly conservative. A surgical treatment is required when the fistula has a large orifice and/or a substantial loss of surrounding soft tissue is present.

Objective: To report a new endoscopic surgical approach for closure of post-laryngectomy pharyngocutaneous fistula using autologous fat graft injection.

Case report: A 61-year old male patient presented with a late PCF two years after total laryngectomy with partial resection of the tongue base for advanced laryngeal carcinoma with infiltration of the hypopharynx. Already at the time of the initial surgery the postoperative course was complicated with inflammation and early PCF, managed conservatively. A month after the surgery the patient underwent radiotherapy to a cumulative dose of 60 Gy. Two years later intrathoracic relapse with compression of the trachea developed. Chemotherapy was initiated. Concomitantly PCF developed.

Rhinopharyngoscopy with a flexible scope revealed a well identifiable epitelialized opening (4x4 mm) in the midline at the junction between the base of the tongue and the neohypopharynx (Fig 1). Further evaluation with CT and barium swallow radiographs showed a fistula between the neohypopharynx and the skin at the C2-C4 level (Fig 2) [2].

An endoscopic surgical repair was performed. The neohypopharynx was approached with the Weerda diverticuloscope (Fig 3) [3]. Fat tissue harvested from the abdomen was injected into the area surrounding the pharyngeal opening of the fistula. The repair was successful and for the next 6 months the patient had normal oral feeding without any signs of leakage or inflammation around the former PCF. The patient died of intrathoracic progression of the disease.

Discussion: PCF is a frequent non-fatal, but troublesome complication of the total laryngectomy [4,5]. In most of the cases the fistula is treated with local wound care and drainage and secondary healing is achieved. In 20-30% of the cases the fistula is persistent and a surgical intervention is required [6]. The major reconstruction techniques – usage of regional or distant flaps, are connected with high complication rates, frequent recurrent fistulizations and high morbidity [7]. It is believed that they can be avoided in certain cases, which do not definitely require large reconstructions [7] or in cases of comorbidities or advanced disease [6]. Fink et al. in 2015 are the first to report a new endoscopic approach with closure of PCF achieved via multiple stitches quilting the fistula [7]. Hespe et al. described successful closure of PCF with the use of autologous fat graft injected transcutaneously into the area surrounding the external defect [6]. Autologous fat transplantation has already been used for rehabilitation of irritated tissues in the head and neck region [8], but endoscopic reconstruction of a PCF with autologous fat injection has not been previously reported.

In the case we report, fat graft harvested from the abdomen was endoscopically injected in the soft tissue surrounding the pharyngeal opening of the fistula. The rationale was, that the orifice was clearly identifiable and accessible. On the other hand the major pathophysiological mechanism of these fistulas is the saliva flushing the fistula and preventing healing by secondary intention. We deliberately focused on the internal opening of the fistula to try to stop the saliva penetrating the channel and thus allowing for the surrounding tissues to fuse and obliterate the fistula. In our case this repair strategy was successful.

Conclusion: In conservative therapy-refractory cases of PCF surgical intervention is mandatory. Conventional reconstruction methods are effective, but are connected with a high rate of complications and recurrent fistulizations. In well selected cases a combination of endoscopic approach and autologous fat injection can be used as a less-invasive method with decreased morbidity and complication rates.