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Supraclavicular Artery Island Flap as a Reliable Option for Pharyngoesophageal Reconstruction: Evidence from 30 Consecutive Cases

Abstract

Background: This study aimed to evaluate the outcomes of the supraclavicular artery island flap (SAIF) reconstruction in patients with stage III–IV laryngeal and hypopharyngeal carcinoma, focusing on flap survival, swallowing function, complications, and survival.

Methods: We conducted a prospective study of 30 consecutive male patients with stage III–IV squamous cell carcinoma of the larynx or hypopharynx treated at Ho Chi Minh City Oncology Hospital between January 2021 and September 2023. All underwent total laryngectomy with partial or total hypopharyngectomy, followed by immediate SAIF reconstruction. Primary endpoints were flap survival and swallowing function assessed by the MD Anderson Dysphagia Inventory (MDADI). Secondary endpoints included postoperative complications and overall survival.

Results: All flaps survived without necrosis. The mean defect size was 63 cm², and flap dimensions averaged 20.6 × 7.0 cm. Pharyngocutaneous fistula occurred in 10%, seroma in 26.7%, and superficial donor site necrosis in 20%, all managed conservatively. At follow-up, 90% of patients resumed oral intake, with 81.5% tolerating a solid or soft diet; the mean MDADI score was 92. Mean overall survival was 19.6 months, with 1- and 2-year survival rates of 66.5% and 60.7%. Multivariate analysis confirmed pharyngocutaneous fistula as an independent predictor of poor survival (HR 5.98; p = 0.01).

Conclusions: SAIF is a safe, reliable, and resource-appropriate option for pharyngoesophageal reconstruction, offering excellent flap survival, favorable swallowing outcomes, and acceptable morbidity.

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INTRODUCTION

Laryngeal and hypopharyngeal cancers represent a significant global health burden, accounting for a substantial proportion of head and neck malignancies and disproportionately affecting populations in low- and middle-income countries. Despite advances in diagnostics and multimodal therapy, most patients continue to present with locally advanced disease; more than 60–80% are diagnosed at stage III or IV, when organ preservation strategies are often no longer feasible. At this stage, laryngopharyngectomy with pharyngoesophageal reconstruction remains the cornerstone of curative treatment, yet it is accompanied by formidable surgical and functional challenges.

The oncological resections required for these tumors are extensive, owing to the propensity of hypopharyngeal cancers for submucosal spread, multifocality, and invasion of adjacent structures such as the tongue base, pharyngeal wall, and cervical esophagus. These characteristics frequently result in complex circumferential or near-circumferential pharyngoesophageal defects, where reconstruction must achieve not only reliable closure but also restoration of swallowing and long-term quality of life. Numerous reconstructive techniques have been proposed, including jejunal free flap, radial forearm free flap, and anterolateral thigh flap, but these approaches require microsurgical expertise, long operative times, and specialized postoperative resources, all of which may limit their accessibility and reproducibility, especially in resource-constrained settings.

The supraclavicular artery island flap (SAIF), first described by Lamberty in 1979 and later refined by Baudet in 1983.[1,2] has re-emerged as an appealing alternative. It combines the advantages of a reliable vascular supply, a favorable arc of rotation, and relative technical simplicity. Recent anatomical studies have elucidated the robust collateral vascular network of the cervicothoracic region, enabling expanded flap design and application to extensive defects. Unlike free flaps, SAIF can be harvested in a shorter operative time without microsurgical anastomosis, thereby reducing morbidity and resource dependence. Early reports from international centers have confirmed its safety and versatility, yet its clinical use remains underreported in many regions, including Vietnam, where head and neck cancer burden is rising rapidly.

This underutilization underscores a critical gap in the literature: there is limited high-quality clinical evidence on the outcomes of SAIF in pharyngoesophageal reconstruction for advanced laryngeal and hypopharyngeal cancer in Southeast Asia. Generating such evidence is essential not only to inform reconstructive practice in this population but also to contribute to the broader global discussion about context-appropriate surgical oncology. Therefore, the objective of this study was to evaluate the effectiveness and clinical outcomes of supraclavicular artery island flap reconstruction following laryngopharyngectomy in patients with advanced laryngeal and hypopharyngeal cancer.

METHODS

Study Design and Setting

This was a descriptive, interventional, non-controlled clinical study. All patients were treated at the Department of Otorhinolaryngology – Head and Neck Surgery, Ho Chi Minh City Oncology Hospital (Vietnam). The study period extended from January 2021 to September 2023. All procedures were performed by the same surgical team specialized in head and neck oncology and reconstructive surgery, ensuring uniformity in surgical technique and perioperative care.

Patients

This study enrolled patients with histologically confirmed squamous cell carcinoma of the larynx or hypopharynx who presented with locally advanced disease, defined as stage T3–T4, N0–3, M0 according to the AJCC 8th edition (2017). Eligible patients were those considered suitable for radical surgery, including total laryngectomy combined with either partial or total hypopharyngectomy. All patients were required to have a Karnofsky Performance Status (KPS) score ≥ 80 , ensuring adequate functional reserve to tolerate major surgery lasting more than four hours, even in the presence of controlled comorbidities. Both primary cases and salvage cases following previous chemotherapy and/or radiotherapy were included, provided that tumors remained resectable and radical surgery was feasible.

Patients were excluded if they had unresectable disease, distant metastasis, or a KPS score < 80 . Additional exclusion criteria included refusal of surgery, medical contraindications to general anesthesia, or conditions precluding flap harvest due to vascular compromise or prior surgical intervention at the donor site. Over the study period (January 2021 to September 2023), 30 consecutive eligible patients fulfilling these criteria were prospectively enrolled into the study cohort.

Study Variables

The study collected a comprehensive set of variables to capture both baseline characteristics and treatment outcomes. Baseline data included patient demographics (age, occupation), lifestyle risk factors (smoking and alcohol consumption), body mass index (BMI), comorbidities, and performance status assessed by the Karnofsky Performance Scale (KPS). Surgical and reconstructive parameters comprised the extent of resection (partial versus total hypopharyngectomy and any additional resections), type of neck dissection, flap dimensions, viability, and donor site status.

Outcomes were divided into primary and secondary endpoints. The primary outcomes focused on flap survival and restoration of swallowing, evaluated through time to nasogastric tube removal and patient-reported swallowing function using the MD Anderson Dysphagia Inventory (MDADI). Secondary outcomes included postoperative complications such as infection, seroma, chyle fistula, pharyngocutaneous fistula, donor site necrosis, as well as overall survival.

Preoperative Evaluation

Before surgery, all patients underwent a standardized preoperative workup to ensure accurate staging and safe surgical planning. Clinical evaluation included a detailed medical history, full physical examination, and assessment of performance status. Cross-sectional imaging with contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI) of the head and neck was performed in every case to define tumor extent and evaluate regional lymph node involvement. Chest imaging, either by plain radiography or CT scan, was routinely obtained to exclude pulmonary metastases. Direct laryngoscopy was used to assess tumor extension and to obtain biopsies for histopathological confirmation of squamous cell carcinoma.

Laboratory investigations comprised a complete blood count, renal and liver function tests, and coagulation profile to establish baseline fitness for surgery. Nutritional evaluation included calculation of body mass index (BMI), and patients identified as malnourished received preoperative optimization following the Enhanced Recovery After Surgery (ERAS) protocol. This multidisciplinary approach allowed correction of modifiable risk factors and improved overall readiness for major head and neck surgery.

Surgical Technique

Tumor Resection

All patients underwent total laryngectomy combined with either partial or total hypopharyngectomy, depending on the extent of tumor involvement. Resection margins were carefully defined with the goal of achieving at least 1–1.5 cm of macroscopic clearance. When indicated, additional resections such as oropharyngectomy or partial esophagectomy were carried out to obtain complete tumor clearance. Neck dissection was performed according to nodal status or oncologic risk, with unilateral or bilateral dissections undertaken when appropriate.

Flap Harvest and Reconstruction

Reconstruction was performed in all cases using the supraclavicular artery island flap (SAIF). The flap was designed along the line from the midpoint of the supraclavicular vascular pedicle triangle to the superior margin of the defect, with dimensions tailored to the size and shape of the pharyngo-esophageal defect. Dissection proceeded in a plane superficial to the platysma and extended inferiorly to the second intercostal space, medially to the lateral border of the sternocleidomastoid muscle, and posteriorly beyond the anterior margin of the trapezius. During harvest, anastomotic branches from the posterior circumflex humeral artery and deltoid perforators were preserved whenever possible. In some cases, a cuff of deltoid muscle was incorporated to protect the pedicle and increase tissue bulk.

Once elevated, the flap was tunneled beneath the sternocleidomastoid muscle and transferred to the defect. Perfusion of the distal tip was confirmed before final inset. This technique allowed reconstruction of both partial pharyngeal defects and circumferential tubular

defects (Image 1, Image 2, Image 3). Donor sites were closed primarily in all patients, with careful attention to reducing closure tension and maintaining acceptable cosmetic outcomes.

Postoperative Management

Following surgery, patients were closely monitored in the intensive care setting during the immediate postoperative period. Enteral feeding was maintained through a nasogastric tube until safe swallowing was documented on clinical and endoscopic assessment. Prophylactic antibiotics and analgesics were administered in line with institutional protocols. Wound care included routine monitoring of surgical drains, application of compression dressings to minimize seroma formation, and early recognition of complications such as chyle leak.

Decisions regarding adjuvant treatment were made in a multidisciplinary tumor board. Postoperative radiotherapy or chemoradiotherapy was recommended for patients with advanced pathological stage, nodal involvement, or other high-risk features. This integrated management aimed to maximize local control while preserving functional outcomes.

Follow-Up and Functional Assessment

Patients were scheduled for follow-up visits at one, three, six, and twelve months after surgery. Endoscopic examinations were conducted at each visit to evaluate flap healing, airway and pharyngeal patency, and to detect complications such as stenosis or fistula formation. Swallowing function was assessed using the MDADI questionnaire, which ranges from 20 to 100, with higher scores reflecting better swallowing-related quality of life. Feeding outcomes were categorized as return to solid diet, soft or liquid diet, or continued tube dependency. Although not considered a primary endpoint, voice rehabilitation was also documented. Patients who used an electrolarynx or alternative communication methods were noted, although functional voice outcomes were not analyzed in detail. This structured follow-up protocol ensured comprehensive assessment of both oncologic and functional outcomes in the study population.

Statistical Analysis

Data were analyzed using SPSS software (IBM Corp., Armonk, NY, USA). Continuous variables were described as means with standard deviations or ranges, while categorical variables were expressed as frequencies and percentages. Overall survival was estimated using the Kaplan–Meier method, and survival differences between groups were assessed with the log-rank test. Variables considered clinically relevant were entered into a multivariate model using the Cox proportional hazards regression to identify independent prognostic factors. In this study, tumor stage, nodal status, and pharyngocutaneous fistula were examined, and pharyngocutaneous fistula emerged as an independent adverse predictor of overall survival. A two-sided *p*-value <0.05 was regarded as statistically significant.

RESULTS

Table 1. Baseline Demographic and Clinical Characteristics of the Patients (N=30)

Characteristics	Patients (N=30)
Age, years	
Mean $\pm$ SD	57.6 $\pm$ 7.9
Range	39–75
Gender, %	
Male	30 (100.0)
Female	0 (0.0)
Occupation, %	
Farmer	16 (53.3)
Office worker	8 (26.7)
Others	6 (20.0)
BMI (kg/m ²)	
Mean $\pm$ SD	19.55 $\pm$ 1.9
Range	16–24.5
BMI category, %	
Underweight (<18.5)	11 (36.7)
Normal weight (18.5–24.9)	19 (63.3)
Overweight/obese ($\geq$ 25)	0 (0.0)
Smoking history, %	25 (83.3)
Alcohol consumption, %	22 (73.3)
Comorbidities	
Hypertension, %	1 (3.3)
Ischemic heart disease, %	2 (6.7)
KPS score $\geq$ 80, %	30 (100)

The study included 30 male patients with a mean age of 57.6 $\pm$ 7.9 years (range, 39–75). Farmers constituted the largest occupational group (53.3%), followed by office workers (26.7%) and others (20.0%). The mean BMI was 19.55 $\pm$ 1.9 kg/m² (range, 16–24.5), with 36.7% of patients underweight and 63.3% within the normal range. A history of smoking was present in 83.3% and alcohol consumption in 73.3%. Hypertension was recorded in 3.3% and ischemic heart disease in 6.7%. All patients had a Karnofsky Performance Status (KPS) score $\geq$ 80 (Table 1).

Table 2. Tumor Characteristics According to AJCC 8th Edition (N=30)

Characteristics	Patients (N=30)
Tumor stage, %	
T3	4 (13.3)
T4	26 (86.7)
Nodal stage, %	
N0	4 (13.3)
N1	2 (6.7)
N2	13 (43.3)
N3	11 (36.7)
Overall stage, %	
Stage III	1 (3.3)
Stage IVA	18 (60.0)
Stage IVB	11 (36.7)

Most patients presented with advanced primary tumors, with T4 lesions in 86.7% and T3 in 13.3%. Nodal disease was identified in 86.7% of cases, distributed as N1 (6.7%), N2 (43.3%), and N3 (36.7%). Only 13.3% were node negative. Overall stage distribution included stage III in 3.3%, stage IVA in 60.0%, and stage IVB in 36.7% (Table 2).

Table 3. Surgical Procedures Performed

Surgical procedure	T3 (n)	T4 (n)	Total (%)
Total laryngectomy + partial hypopharyngectomy	2	23	25 (83.3)
Total laryngectomy + total hypopharyngectomy	0	5	5 (16.7)
Additional resections			
Oropharyngectomy	–	4	4 (13.3)

Esophagectomy	2	7	9 (30.0)
Margin status	All negative (100%)		

Total laryngectomy with partial hypopharyngectomy was performed in 83.3% of patients, whereas total laryngectomy with total hypopharyngectomy was required in 16.7%. Additional resections included oropharyngectomy in 13.3% and esophagectomy in 30.0%. All surgical margins were confirmed negative on histopathological examination (Table 3).

Table 4. Neck Dissection Characteristics (N=30)

Neck dissection, %	Patients (N=30)
None	4 (13.3)
Unilateral left	7 (23.3)
Unilateral right	6 (20.0)
Bilateral	13 (43.3)

Neck dissection was carried out in 26 patients (86.7%). Bilateral neck dissections were most frequent (43.3%), followed by unilateral left (23.3%) and unilateral right (20.0%). Four patients (13.3%) did not undergo neck dissection due to prior definitive radiotherapy (Table 4).

Table 5. Flap Dimensions and Reconstruction Details

Variable	Patients (N=30)
Flap length, cm	
Mean $\pm$ SD	20.6 $\pm$ 2.7
Range	15–25
Flap width, cm	
Mean $\pm$ SD	7.0 $\pm$ 0.9
Range	5–9
Skin paddle length, cm	
Mean $\pm$ SD	9.3 $\pm$ 2.3
Range	5–15
Defect size, cm ²	
Mean $\pm$ SD	63.0
Range	30–105
Reconstruction type, %	
Partial pharyngeal	25 (83.3)
Circumferential tubular	5 (16.7)
Donor site closure (primary), %	30 (100)
Flap viability (complete survival), %	30 (100)

The mean flap length was 20.6 $\pm$ 2.7 cm (range, 15–25), and the mean width was 7.0 $\pm$ 0.9 cm (range, 5–9). The mean skin paddle length was 9.3 $\pm$ 2.3 cm (range, 5–15), and the mean defect size was 63.0 cm² (range, 30–105). Partial pharyngeal reconstruction was performed in 83.3% of cases and circumferential tubular reconstruction in 16.7%. All donor sites were closed primarily, and flap survival was complete in every patient (Table 5).

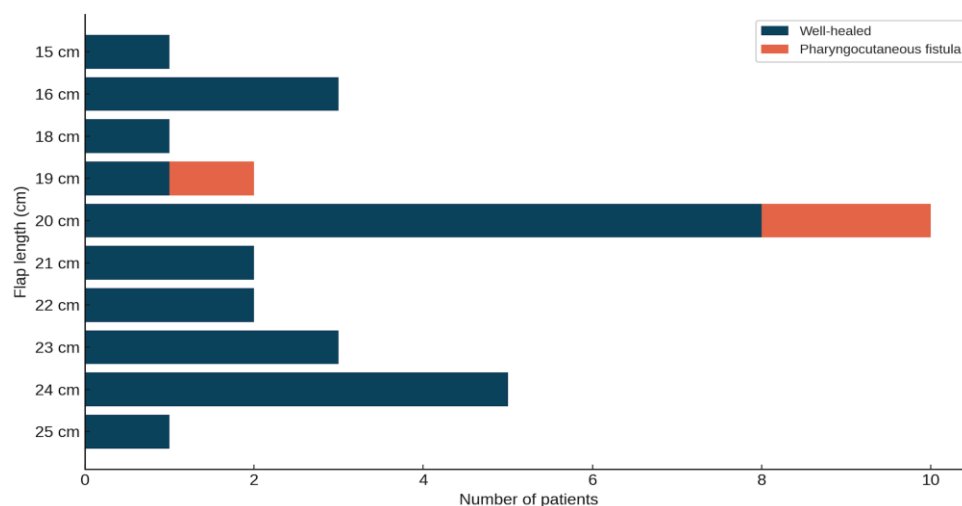


Figure 1. Pharyngocutaneous fistula occurrence by flap length

Analysis of flap length demonstrated that pharyngocutaneous fistula occurred more frequently in patients reconstructed with longer flaps. Specifically, fistulas were observed at flap lengths of 19 cm and 20 cm, whereas shorter flaps healed without this complication (Figure 1).

Table 6. Postoperative Complications (N=30)

Postoperative Complications	Patients (N=30)
Surgical site infection, %	2 (6.7)
Seroma, %	8 (26.7)
Associated with chyle fistula, %	4 (13.3)
Pharyngocutaneous fistula, %	3 (10.0)
Donor site superficial necrosis, %	6 (20.0)
Flap necrosis, %	0 (0.0)
Perioperative mortality, %	0 (0.0)

The most frequent postoperative complication was seroma, occurring in 26.7% of patients, half of which were associated with chyle fistula. Surgical site infection was documented in 6.7%. Pharyngocutaneous fistula developed in 10.0%, and superficial necrosis at the donor site occurred in 20.0%. No cases of flap necrosis or perioperative mortality were recorded (Table 6). Representative donor site outcomes are shown in Image 4.

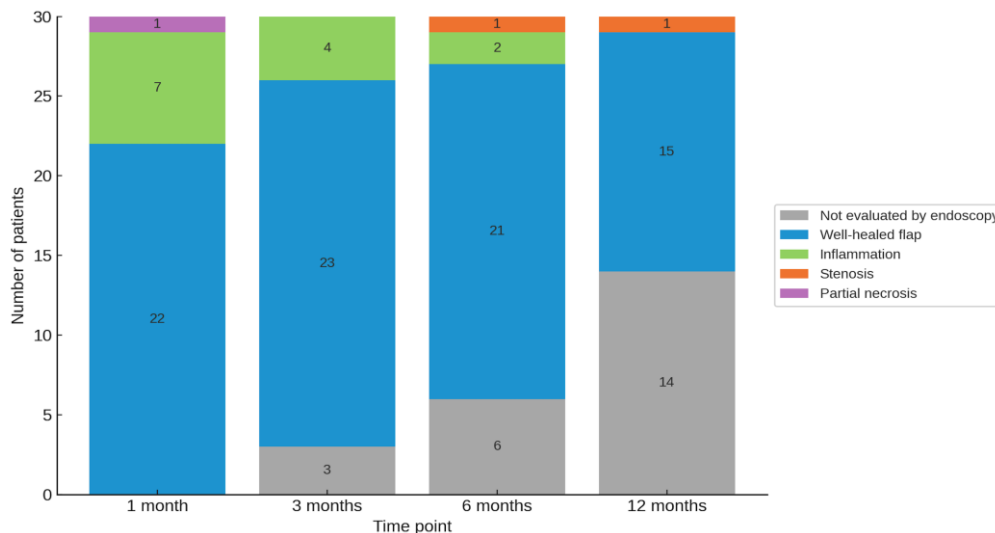


Figure 2. Endoscopic assessment of flap status at postoperative follow-up

Endoscopic evaluations at 1, 3, 6, and 12 months demonstrated progressive improvement in flap healing, with decreasing rates of inflammation and partial necrosis over time. At 12 months, the majority of assessed patients had well-healed flaps (Figure 2).

Table 7. Swallowing Function, Feeding Outcomes, and Survival

A. Swallowing function (MDADI scores) Patients (N=27*)

Subscale	
Emotional (6 items)	
Mean ± SD	29
Range	25–30
Functional (5 items)	
Mean ± SD	24
Range	20–25
Physical (8 items)	
Mean ± SD	36
Range	31–40
Total	
Mean ± SD	92
Range	80–99
B. Feeding outcomes	
Patients (N=27*)	

Removal of nasogastric tube, weeks	
Mean $\pm$ SD	5.7
Range	3–20
Oral feeding resumed, %	27 (90.0)
Solid/regular diet, %	22 (81.5)
Soft/liquid diet, %	5 (18.5)
Tube-dependent feeding, %	3 (10.0)

*Three patients excluded due to persistent fistula

Swallowing function was assessed in 27 patients using the MDADI. The mean emotional, functional, and physical subscale scores were 29, 24, and 36, respectively, yielding a mean total score of 92 (range, 80–99). The mean time to removal of the nasogastric tube was 5.7 weeks (range, 3–20). Overall, 90.0% resumed oral feeding, with 81.5% tolerating a solid or regular diet and 18.5% requiring a soft or liquid diet. Three patients (10.0%) remained tube dependent (Table 7).

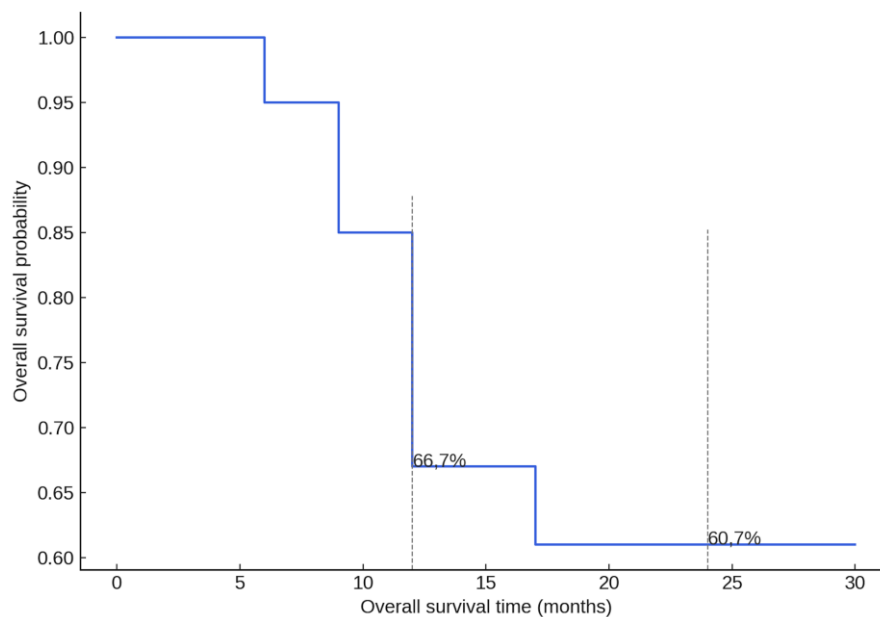


Figure 3. Kaplan–Meier curve of overall survival in the study cohort

The mean overall survival was 19.6 months (95% CI, 16.4–27.7). The 1-year and 2-year overall survival probabilities were 66.5% and 60.7%, respectively (Figure 3).

Table 8. Prognostic factors related to overall survival (N=30)

Variable	Univariate analysis HR (95% CI)	<i>p</i> -value	Multivariate analysis HR (95% CI)	<i>p</i> -value
Tumor stage (T3 vs T4)	1.29 (0.16–10.27)	0.80	0.92 (0.10–7.83)	0.94
Nodal metastasis (absent vs present)	1.17 (0.14–9.33)	0.87	0.85 (0.10–7.27)	0.88
Pharyngocutaneous fistula (absent vs present)	5.80 (1.41–23.84)	0.01*	5.98 (1.35–26.46)	0.01*

On univariate analysis, neither tumor stage nor nodal status was significantly associated with overall survival. In contrast, the presence of pharyngocutaneous fistula was significantly correlated with reduced survival (HR 5.80,

95% CI 1.41–23.84, $p = 0.01$). Multivariate analysis confirmed pharyngocutaneous fistula as an independent adverse prognostic factor (HR 5.98, 95% CI 1.35–26.46, $p = 0.01$) (Table 8).



Image 1. Intraoperative view of a partial pharyngeal defect reconstructed using a tubular supraclavicular artery island flap. The defect size was assessed and tailored to allow adequate circumferential closure.

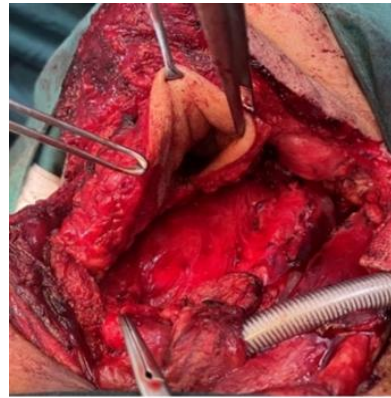


Image 3. Circumferential hypopharyngeal and cervical esophageal defect following total laryngopharyngectomy, reconstructed with a tubular supraclavicular artery island flap.



Image 2. Circumferential cervical pharyngo-esophageal defect following total laryngopharyngectomy, demonstrating the extent of resection prior to tubular reconstruction with a supraclavicular artery island flap.



Image 4. Donor site scar outcomes following supraclavicular artery island flap harvest

DISCUSSION

The present series included only male patients, with a mean age of 57.6 years, which is in line with previously reported demographic patterns of hypopharyngeal and laryngeal carcinoma.[3–6] Tobacco and alcohol exposure were highly prevalent, with 83.3% and 73.2% of patients affected, respectively, and 70% reporting combined use. The synergistic effect of these two risk factors is well established, with combined exposure raising the risk of malignancy by 10–20 times compared with either factor alone. Beyond carcinogenesis, smoking has additional implications for surgical recovery, particularly impaired wound healing through vasoconstriction, which justifies the requirement for smoking cessation prior to surgery. Nutritional status was another critical aspect: over one third of patients were malnourished, and two had severe malnutrition. Implementation of ERAS protocols allowed preoperative correction of nutritional deficits, reflecting evidence that malnutrition is highly prevalent in head and neck oncology and significantly influences perioperative outcomes.[7–9]

All resections achieved negative margins with a macroscopic clearance of 1–1.5 cm. Adjacent organ

involvement was frequent, necessitating additional resections such as partial esophagectomy or resection of the tongue base in several cases, consistent with the advanced stage at presentation. Neck dissection was performed according to oncological principles, with attention to preserving venous return and the thoracic duct on the left to reduce the risk of chyle leak. In patients requiring bilateral clearance, flaps were preferentially harvested from the contralateral side, though ipsilateral harvest was also feasible. In 14 cases, flap harvest was performed from the same side as neck dissection without compromising flap viability, which supports prior observations that neck dissection and radiotherapy do not preclude the use of the supraclavicular artery island flap.[10]

Reconstruction requirements varied depending on the extent of resection, with five circumferential and 25 partial hypopharyngeal defects in this series. The mean defect size was 63 cm², and flap length extended up to 25 cm in selected cases. Anatomical studies of the supraclavicular and upper arm region have described a robust collateral network linking the supraclavicular artery with branches of the posterior circumflex humeral,

thoracoacromial, and internal thoracic arteries.[11,12] These findings justify extended flap elevation, which was safely applied in our patients. Perfusion was adequate in all cases, and no conversion to alternative reconstructive techniques was required. This confirms that the supraclavicular flap is technically reliable for both partial and circumferential pharyngoesophageal defects, even when harvested at considerable length.

Flap survival was achieved in every patient, with no cases of total or partial necrosis. The rate of pharyngocutaneous fistula was 10%, lower than the 28% reported by Eirini and within the range described in other series.[13–15] Donor site morbidity was limited to superficial necrosis in 20% and seroma in 26.7%, which were manageable with conservative measures. Functionally, outcomes were encouraging: 90% of patients resumed oral intake, and over 80% tolerated a soft or solid diet. The mean MDADI score of 92 reflects good patient-reported swallowing function. These results are comparable to those obtained with jejunal free flaps, which achieved oral intake in 93% of patients in Kurita's series, and exceed the average rates of 65–83% across published reports.[16] The supraclavicular flap thus provides functional results equivalent to free tissue transfer while avoiding the operative complexity and resource demands of microvascular reconstruction.

Voice rehabilitation was limited in this cohort, with only two patients adopting an electrolarynx, largely due to financial and logistical constraints rather than reconstructive limitations. Earlier studies have suggested that fasciocutaneous flaps, including the supraclavicular flap, may offer better rehabilitation potential than jejunal grafts.[16,17] Another interesting observation was the perception of temperature in the donor site region during oral intake, which can be attributed to preservation of the supraclavicular sensory nerve and may indicate some degree of sensory reinnervation.

With a median follow-up of 17.8 months, the one- and two-year overall survival rates were 66.5% and 60.7%, respectively, consistent with outcomes reported for advanced hypopharyngeal carcinoma treated with combined modality therapy. Multivariate analysis identified pharyngocutaneous fistula as an independent predictor of poor overall survival (HR 5.98, $p=0.01$). While some studies, including those by Kim, have described a similar association,[18] others such as Davies and Timmermans did not confirm fistula as a determinant of survival.[19,20] These divergent findings suggest that the prognostic impact of fistula may be context-dependent, influenced by the severity of the complication and its downstream effect on nutritional recovery, timing of adjuvant therapy, and the development of secondary morbidities.

From a clinical perspective, the key finding of this study is that the supraclavicular artery island flap represents a reliable and practical reconstructive option for patients with advanced hypopharyngeal cancer, particularly in centers where free flap surgery is not feasible. The combination of complete flap survival, rapid restoration of swallowing, and a low incidence of major complications supports its consideration as a first-line reconstructive strategy. The observation that pharyngocutaneous fistula independently predicted

poorer overall survival highlights the importance of meticulous surgical technique and vigilant postoperative management, as timely recognition and intervention may directly influence long-term outcomes.

Nevertheless, several limitations should be acknowledged. The study was conducted in a single institution with a relatively small cohort of 30 patients, which limits the generalizability of the findings. The follow-up period, although sufficient to capture early and mid-term outcomes, remains relatively short for definitive survival assessment. In addition, functional outcomes such as swallowing and voice rehabilitation were evaluated with available tools but without formal instrumental assessment in all cases, which may introduce some degree of subjectivity. Finally, the absence of a control group reconstructed with free flaps or alternative techniques restricts the ability to directly compare efficacy across reconstructive options.

CONCLUSION

The supraclavicular artery island flap proved to be a safe and effective option for pharyngoesophageal reconstruction, achieving complete flap survival, good swallowing recovery, and a low complication rate. Pharyngocutaneous fistula remained the main adverse event and was associated with poorer survival, emphasizing the need for careful prevention and management.

ETHICS STATEMENT

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Biomedical Research Ethics Committee of Ho Chi Minh City Oncology Hospital. Written informed consent was obtained from all patients prior to enrollment.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest related to this work.

FUNDING

No external funding was received for this study.

DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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