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Oncologic and Functional Outcome of Frontolateral Hemilaryngectomy in Trang Hospital

Tulakan Mukkun

Abstract Objective: To demonstrate the oncologic and functional outcome of laryngeal cancer patients who underwent front lateral hemilaryngectomy in Trang Hospital. Material and Method: A retrospective study of fourteen patients with squamous cell carcinoma of glottis who underwent front lateral hemilaryngectomy in Trang Hospital between 2010 and 2020. Results: Fourteen patients underwent frontolateral hemilaryngectomy with a mean age of 61.28 years old, and all were male. After surgery, thirteen patients (92.85%) could be decannulated the tracheotomy tube within ten days. Only one could not be decannulated because of post-radiation laryngeal fibrosis. All patients could swallow orally for ten days without aspiration. Thirteen patients had good speaking without a tracheostomy tube after discharge. The five years overall survival rate in our study was 100%. Conclusion: Frontolateral hemilaryngectomy is still a practical option for treating T1b and T2 glottic cancer. The laryngeal functions could mostly be preserved with a reasonable survival rate. *(Thai Cancer J 2021;41:57-64)*

Keywords: Frontolateral hemilaryngectomy, Glottic cancer, Functional outcome

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ผลลัพธ์การผ่าตัดรักษาผู้ป่วยมะเร็งกล่องเสียงด้วยวิธี Frontolateral Hemilaryngectomy ในโรงพยาบาลตรัง

โดย **ตุลกานต์ มักคุ้น**

โรงพยาบาลตรัง

บทคัดย่อ การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลลัพธ์ของการผ่าตัดรักษาผู้ป่วยมะเร็งกล่องเสียงด้วยวิธี Frontolateral Hemilaryngectomy โดยทำการศึกษาวิจัยในผู้ป่วยจำนวน 14 ราย ที่เข้ารับการรักษาที่โรงพยาบาลตรัง ในระหว่างปี พ.ศ. 2553-2563 ทั้งหมดเป็นเพศชาย ซึ่งมีอายุเฉลี่ย 61.28 ปี และเป็นมะเร็งกล่องเสียงชนิด squamous cell carcinoma ระยะ T1bN0M0, T2N0M0 รวมทั้งได้รับการผ่าตัดด้วยวิธี Frontolateral Hemilaryngectomy พบว่าผู้ป่วยจำนวน 13 ราย คิดเป็นร้อยละ 92.85 สามารถถอดท่อเจาะคอและหายใจได้เป็นปรกติ รวมทั้งสามารถพูดได้โดยไม่ใช้ท่อเจาะคอภายใน 10 วัน มีเพียงผู้ป่วยรายเดียวที่ไม่สามารถถอดท่อเจาะคอได้เนื่องจากเกิดพังผืดที่สายเสียงภายหลังการฉายรังสี ผู้ป่วยทั้งหมด สามารถกินอาหารทางปากได้โดยที่ไม่เกิดการสำลัก ภายใน 10 วัน อัตราการรอดชีพที่ 5 ปี คิดเป็น 100% จึงสรุปได้ว่า การผ่าตัดผู้ป่วยมะเร็งกล่องเสียงในระยะที่ I และระยะที่ II ด้วยวิธี Frontolateral hemilaryngectomy นั้น ยังคงมีประสิทธิผล โดยมีอัตราการรอดชีพใน 5 ปีที่ดีและยังสามารถรักษาการทำงานของกล่องเสียงไว้ได้อีกด้วย *(วารสารโรคมะเร็ง 2564;41:57-64)*

คำสำคัญ : มะเร็งกล่องเสียง , Frontolateral hemilaryngectomy , Glottic cancer , Functional outcome

Introduction

In Thailand, laryngeal cancer is the third common head and neck malignancy in men[1]. The incidence of laryngeal cancer is estimated at 2.76 cases/year per 100,000 population[2]. The prevalence of laryngeal cancer 14.33 cases/year per 100,000 populations[2]. The overall mortality rate of laryngeal cancer is 1.66 deaths/year per 100,000 populations[2]. The laryngeal cancer is classified according to American Joint Committee for Cancer into 3 subsites, supraglottis, glottis and subglottis[3]. The T1a glottic cancer is confined to true vocal fold without anterior commissure involvement, which is well-responsed to radiotherapy[4].The T1b (tumour that involved both vocal cords[3]) and T2 glottic cancer (tumour that extends to supraglottis or subglottis, or with impaired vocal cord mobility[3]) are high-risk for recurrence after radiotherapy[5-7], However the oncologic and functional outcomes of surgery and radiation are comparable[8-9]. Frontolateral hemilaryngectomy was first described by Leroux-Robert in 1948[10]. It is an effective treatment modalities for glottic cancer which involved anterior commissure (T1b) or impaired vocal fold mobility (T2) [11-12]. This study aims to demonstrate

the oncologic and functional outcome of laryngeal cancer patients who underwent frontolateral hemilaryngectomy in Trang Hospital.

Materials and Methods

This is a retrospective study of patients with glottic cancer who underwent frontolateral hemilaryngectomy in Trang Hospital during October 2010 - September 2020. All the patients were operated by the author. The patients were scheduled for surveillance follow-up according to the AAO-HNS guideline. The demographic data, staging, tissue pathology, postoperative laryngeal function (decannulation of tracheotomy tube, deglutition and phonation), resection margin, second primary, tumour recurrence, distant metastasis and survival after surgery were reviewed and analysed.

Results

Fourteen patients underwent frontolateral hemilaryngectomy with mean age of 61.28 years-old. All were male. Ten patients (71.42%) were T2 glottic cancer and 4 patients (28.57%) were T1b glottis cancer. All the patients were re-examined the extension of tumour before the operation. The tumour was widely excised with margin 3-5 mm. After frontolateral hemilaryngectomy was performed, the larynx was reconstructed with sterno-hyoid bi-pedicle muscle flap. The histopathological reports were free resected margin in 13 patients (92.85%). Only one patient had margin closed to tumour 1 mm. and was sent for postoperative radiation. Eight patients (57.14%) had well-differentiated squamous cell carcinoma, 6 patients (42.85%) had moderately-differentiated squamous cell carcinoma. There were 2 patients who had positive node and underwent modified radical neck dissection together with postoperative radiation. (Table 1)

Oncologic outcome

All the patients were followed-up for surveillance of second primary tumour, locoregional recurrence and distant metastasis. The frequencies of follow-up were scheduled according to AAO-HNS guideline. There is no demonstrated second primary, locoregional recurrence or distant metastasis during the surveillance period. The five years overall survival rate in our study were 100%.

Functional outcome

After surgery, 13 patients (92.85%) could be decannulated from tracheotomy tube within 10 days after direct visualization of larynx for airway adequacy. The mean duration of time to decannulation was 7.5 days (7-10 days). Only one patient (7.14%) who underwent postoperative radiotherapy could not be decannulated because of post radiation laryngeal fibrosis.

All patients (100%) could swallow orally by 10 days without aspiration. The mean duration of time to decannulation was 7.5 days (7-10 days).

Table 1: Demographic data and outcomes of frontolateral hemilaryngectomy

Sex	Age at operation	Histopathology	Staging	Operation date	Margin status	Postoperative date of Decannulation	Postoperative date of Oral feeding	Postoperative date of Speaking	Tumour recurrence	Second primary tumour	Distant metastasis	5 year survival	Notice
Male	68	Moderately-differentiated SCCA	T2N0M0	18-10-2010	Free	8	8	8	No	No	No	Yes	-
Male	54	Moderately-differentiated SCCA	T2N0M0	07-06-2011	Free	7	7	7	No	No	No	Yes	-
Male	52	Moderately-differentiated SCCA	T1bN0M0	12-06-2012	Free	7	7	7	No	No	No	Yes	-
Male	61	Well-differentiated SCCA	T2N0M0	25-12-2012	Free	7	7	7	No	No	No	Yes	-
Male	57	Well-differentiated SCCA	T2N0M0	13-08-2013	Free	8	8	8	No	No	No	Yes	-
Male	66	Well-differentiated SCCA	T2N0M0	19-11-2013	Free	7	7	7	No	No	No	Yes	-
Male	67	Well-differentiated SCCA	T1bN0M0	04-03-2014	Free	7	7	7	No	No	No	Yes	-
Male	59	Well-differentiated SCCA	T2N0M0	16-05-2014	Free	7	7	7	No	No	No	Yes	-
Male	58	Moderately-differentiated SCCA	T2N0M0	26-08-2014	Free	7	7	7	No	No	No	Yes	-

Table 1: Demographic data and outcomes of frontolateral hemilaryngectomy

Sex	Age at operation	Histopathology	Staging	Operation date	Margin status	Postoperative date of Decannulation	Postoperative date of Oral feeding	Postoperative date of Speaking	Tumour recurrence	Second primary tumour	Distant metastasis	5 year survival	Notice
Male	63	Well-differentiated SCCA	T2N0M0	10-02-2015	Close 1 mm	No	7	7	No	No	No	Yes	RT
Male	56	Moderately-differentiated SCCA	T2N1Mo	01-09-2015	Free	10	10	10	No	No	No	Yes	ND+RT
Male	63	Well-differentiated SCCA	T1bN0M0	09-02-2016	Free	9	9	9	No	No	No	Yes	-
Male	69	Moderately-differentiated SCCA	T2N1M0	02-08-2016	Free	7	7	7	No	No	No	Yes	ND+RT

Table 2 Types of Conservation Surgery of Larynx

External Approach	Endoscopic Approach
Vertical Partial Laryngectomy [15]	**Laser Surgery**
-Standard vertical laryngectomy	-Endoscopic laser microsurgery[18]
-Anterior frontal laryngectomy	-Endoscopic vertical partial laryngectomy[19]
-Frontolateral laryngectomy	-Endoscopic supraglottic laryngectomy[20]
-Extended frontal laryngectomy	
Horizontal laryngectomy	**Non-Laser Surgery**
-Supraglottic laryngectomy[16]	-Endoscopic radiofrequency ablation[21]
-Supracricoid laryngectomy[17]	

Thirteen patients (92.85%) had satisfactory speaking without tracheotomy tube after discharge. Only one patient (7.14%) could speak with tracheotomy tube.

Discussion

The frontolateral hemilaryngectomy was aimed to resect one side of larynx involved by tumour together with anterior commissure. The defect was simultaneously reconstructed by sternohyoid bi-pedicle muscle flap. According to the literatures[10-12], this treatment modality has good oncologic and functional outcomes. While the rates of local control after radiation in stage I and II laryngeal cancer were 75.3% and 69.4%[13]. The rate of functional preservation of larynx after radiation were 88.9% in stage I and 75%in stage II[14]. More than ninety percent of patients in this study could be decannulated within 10 days after surgery and could speak satisfactorily after decannulation. Only one patient (7.14%) has failed to be decannulated because of post-radiation laryngeal fibrosis but could speak with tracheotomy. All the patients (100%) could eat orally within 10 days. According to Sureepong P and Metheetrairut C, 87.8% had been success fully decannulated within 14 days, 96% of the patients resumed oral feeding within 22 days and 96% had grade 1 subjective functional speech during hospitalization[12].

In the liturature, the 5-year survival rate after frontolateral hemilaryngectomy for T1 was 91% and 86% for T2 tumour[22]. In this study, the 5-year survival rate after frontolateral hemilaryngectomy was 100% for T1b and T2 glottic cancer. Despite the small number of cases in this study, the factors which might contributed for 5-year survival were the early detection of early staged cancer and the short waiting time for surgery. This make the 5-year survival higher than the literatures. According to Sureepong P and Metheetrairut, the 5-years overall survival rates was 100% in T1 patients, and 75% for T2[12].

Conclusion

Frontolateral hemilaryngectomy is still the effective options for the treatment of T1b and T2 glottic cancer. The laryngeal functions could mostly preserved with good survival rate.

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