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Original Article

Shoulder and Upper Extremities Function in Patients with Head and Neck Cancer after Selective Neck Dissection

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Background: Shoulder dysfunction is common after nerve-sparing selective neck dissection (SND). We aimed to assess the upper extremity function and shoulder pain in patients with head and neck cancer (HNC) after SND.

Methods: In this cross-sectional study, we enrolled 38 patients with HNCs after SND and evaluated shoulder active range of motion (ROM), muscle strength, pain, and the Disabilities of the Arm, Shoulder and Hand Score (DASH) questionnaire for upper extremity function on operative and non-operative sides.

Results: Significant reductions in shoulder motions, muscle strength, and higher level of shoulder pain were observed on the operative side after SND. Worse upper extremity function was significantly associated with shoulder pain, and restricted shoulder ROM. DASH score is associated with shoulder flexion, extension and pain.

Conclusion: Despite SND, there is still negative impact on upper extremity function, which is associated with decreased shoulder motions and shoulder pain. For setting practical rehabilitation in HNC patients with SND, the focus should be on regaining shoulder motions, especially shoulder flexion and extension, reducing shoulder pain, and getting better upper extremity performances. (Tw J Phys Med Rehabil 2019; 47(2): 99 - 107)

Key Words: head and neck cancer; upper extremity; selective neck dissection; shoulder pain

INTRODUCTION

Shoulder complaints including pain, restricted range of motion (ROM), and scapular winging. Shoulder dysfunction after neck dissection have long been described.[1] Seventy percent of patients with head and neck cancer develop shoulder pain at discharge following neck dissection, and the pain might persist for 6 months after surgery.[2] Some studies report that impaired shoulder function such as decreased shoulder ROM is associated with long term reduced quality of life in head and neck cancer patients.[3-5]

There are several types of neck dissection surgeries

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for head and neck cancer, including radical neck dissection (RND), modified radical neck dissection (mRND), and nerve-sparing selective neck dissection (SND). RND, which has been accepted as the standard procedure for the treatment of head and neck cancer with cervical lymph node metastasis since 1906, requires surgical removal of the sternocleidomastoid muscle, internal jugular vein, cervical lymph nodes, and spinal accessory nerve (SAN). This causes ipsilateral shoulder and neck dysfunction, which affects the patient's quality of life.[6-9] Previous studies have indicated that most of the shoulder problems are caused by removal of SAN during surgery, resulting in weakness of the trapezius muscle (TM), which is the dominant muscle for maintaining the stability of shoulder joints. The induced shoulder dropping and limitation of flexion of the upper arm due to weakness of the TM cause further weakening of the scapular muscles, winging of the scapula, stiffness, and pain.[6-8, 10-12]

To reduce these complications, nerve-sparing SND was developed to preserve SAN in HNC patients without lymph node metastasis (N0) or with limited metastasis (N1). SND retains one or more lymph nodes but removes different lymph node levels according to the surgical site and can be divided into four categories. However, in lateral neck dissection (level II-IV) and posterior lateral neck dissection (level II-V), there prevails a risk of SAN being affected during surgery, and the shoulder syndrome cannot be totally avoided. [13, 14] Kuntz et al reported 31%-40% of shoulder complications after SND.[15]

Previously, clinical evaluation of postoperative shoulder joint dysfunction was often focused on measuring the shoulder ROM, shoulder function, pain or quality of life.[5,16-20] However, no study has completely investigated the physical findings including muscle strength, ROM, and pain on shoulder and scapular position in patients with HNCs and the associations between physical findings and the function of the upper extremity. Thus, the impact of SND on the shoulder girdle and functions of upper extremity needs to be determined for providing proper rehabilitation, and to reduce shoulder dysfunction and pain after surgery. This study aimed to explore shoulder dysfunction and pain at the operative site and to identify the associated factors of upper extremity function required for activities of daily living in patients with HNCs after SND.

MATERIALS AND METHODS

Participants

HNC patients with shoulder and neck dysfunction, who underwent SND before six weeks but within five years, were enrolled in the study. The cases were referred between April 2015 and December 2017 by the HNC team to the department of physical medicine and rehabilitation, for further evaluation or treatment. Diagnosis, localization, and staging of HNC were based on the case-specific medical history, results of physical examination, computed tomographic or magnetic resonance imaging, and postoperative pathology reports. The study included 38 HNC patients who had undergone SND; had stable skin condition; and had no non-healing wound, infection, or metastasis in the neck and shoulder. The exclusion criteria were (1) history of shoulder movement disorder or pain caused by lesions of other nerves, bones, muscles, and tendons before SND; (2) severe cognitive impairment precluding to participation in study; and (3) age <20 years or >65 years.

These patients' shoulders were further divided into two groups: the non-operative (NOP) group and the operative (OP) group. Among the 38 participants, 28 underwent unilateral neck dissection and 10 underwent bilateral neck dissection; however, only shoulders that were subjected to the main SND on the same side of the cancer were included in the statistical analysis. Therefore, there were 38 OP shoulders and 28 NOP shoulders.

Patient's basic demographic and clinical data, including age, sex, cancer diagnosis and stage, cancer site, time since operation, and any adjuvant therapy were obtained from the medical records. This study was approved by the institutional review board (IRB: 103-5312B) in our hospital. Written informed consent was obtained from all participants.

Physical evaluations on Shoulder

The movement of the shoulders including shoulder flexion (FLEX), extension (EXT), internal rotation (IR), external rotation (ER), abduction (ABD), and adduction (ADD) and the major muscles including the biceps brachii (BIC), deltoid (DEL), TPZ, supraspinatus (SS), infraspinatus (IS), and subscapularis (SUB), were assessed. A therapist assessed the shoulder ROM by goniometer and muscle strength by manual muscle testing. The muscle strength ranged from 0 to 5, where 0 stood for no muscle contraction, whereas 5 indicated that full ROM was achieved against gravity and the muscle was able to demonstrate maximal resistance. We used the visual analogue scale (VAS) to quantify pain.[15] 0 points meant no pain at all, and 10 points meant the worst pain ever.

Shoulder and upper extremity function

For shoulder and upper extremity functional evaluation, we used the Disability of Arm, Shoulder, and Hand (DASH) questionnaire.[17, 21] DASH is a 31-item questionnaire assessing the daily functions of the upper limb with each item scoring 1 to 5. A score of 1 meant the patient could perform a task without difficulty, whereas a score of 5 meant the patient was not able to perform that task. The total score ranged from 0 to 100, with the higher scores meaning worse function.

Statistical analysis

Statistical analysis was performed using SPSS 20.0 software (Statistics Standard 20.0). Age, duration since operation, and DASH score were analyzed using medians and quartile 1 (Q1) and quartile 3 (Q3) values. Other demographic data including gender, tumor location, tumor staging or those who received adjuvant therapy are also demonstrated. Nonparametric Mann-Whitney test was used to compare the NOP side and OP side with respect to the muscle strength, shoulder joint AROM and pain. Spearman correlation test was used for the statistical analysis of shoulder AROM, muscle strength of individual muscles, pain, and DASH score. Univariate linear regression was used to analyze the correlation between each variable and DASH score. Variables that reached statistical significance value were selected to be further analyzed by multivariate linear regression. Statistical significance was considered as $p < 0.05$.

Table 1. Clinical and demographic data of the participants (N=38)

Sex, N (%)	
Male	35 (92.1%)
Female	3 (7.9%)
Age, years (median [Q1, Q3])	51.0 (45.8,55)
Cancer site, N (%)	
Larynx	1 (2.6%)
Oral cavity (tongue, gum, buccal, and lip)	37(97.4%)
Side of surgery, N (%)	
Left neck dissection	13 (34.2%)
Right neck dissection	15 (39.5%)
Bilateral neck dissection	10 (26.3%)
Adjuvant therapy	
RT	7 (18.4%)
CCRT	15 (39.5%)
None	16 (42.1%)
Dominant hand, N (%)	
Right-handed	38(100%)
Left-handed	0(0%)
Duration since operation, months (median [Q1, Q3])	7.0 (2.6,27.1)
DASH score (median [Q1, Q3])	13.4 (6.4,26.8)
Pain, N (%)	31 (81.6%)

Abbreviation: IQR, interquartile range; RT, radiation therapy; CCRT: concurrent chemoradiotherapy

Table 2. Physical findings and pain between operative side and non-operative side.

	Operative side (n=38) Median (Q1, Q3)	Non-operative side (n=28) Median (Q1, Q3)	Z	p value
Muscle strength				
TPZ	5 (4,5)	5 (5,5)	-2.248	0.03*
DEL	4 (2,4)	5 (4.5,5)	-5.227	<0.01*
BIC	5 (4,5)	5 (5,5)	-3.536	<0.01*
SS	4 (2,4)	5 (4,5)	-4.586	<0.01*
IS	4 (2,4)	5 (4,5)	-4.999	<0.01*
SUB	2 (2,4)	5 (4,5)	-5.000	<0.01*
Range of motion				
FLEX	140 (125,165)	180 (180,180)	-5.624	<0.01*
EXT	50 (45,60)	60 (50,60)	-3.164	<0.01*
ABD	132.5 (70,156.25)	180 (176.25,180)	-5.642	<0.01*
ADD	45 (40,55)	50 (45,60)	-2.096	0.04*
IR	62.5 (50,70)	70 (60,73.75)	-2.422	0.02*
ER	80 (65,90)	90 (80,90)	-2.663	<0.01*
Pain	3 (1,5)	0 (0,0)	-6.119	<0.01*

Mann-Whitney test

* p < 0.05

Abbreviations: TPZ, Trapezius; DEL, Deltoid; BIC, Biceps brachii; SS, Supraspinatus; IS, Infraspinatus; SUB, Subscapularis; FLEX, flexion; EXT, extension; ABD, abduction; ADD, adduction; IR, internal rotation; ER, external rotation

Table 3. Correlation between shoulder range of motion, muscle strength, and upper extremities performance for daily activities.

	TPZ	DEL	BIC	SS	IS	SUB	Pain	DASH
FLEX	-0.057	0.511**	0.135	0.385*	0.386*	0.449**	0.063	-0.343*
EXT	0.178	0.311	0.404*	0.310	0.162	0.166	-0.278	-0.569**
ABD	0.286	0.603**	0.310	0.436**	0.355*	0.399*	-0.099	-0.387*
ADD	0.146	0.396*	0.381*	0.469**	0.535**	0.561**	-0.068	-0.267
IR	0.086	0.570**	0.120	0.533**	0.423**	0.423**	-0.113	-0.470**
ER	0.127	0.478**	0.490**	0.333*	0.361*	0.363*	-0.169	-0.373*
Pain	-0.231	-0.197	-0.178	-0.072	-0.099	-0.098	1	0.600**
DASH	-0.032	-0.421**	-0.347*	-0.329*	-0.120	-0.157	0.600**	1

Spearman correlation

* p <0.05, ** p <0.01

Abbreviations: TPZ, Trapezius; DEL, Deltoid; BIC, Biceps brachii; SS, Supraspinatus; IS, Infraspinatus; SUB, Subscapularis, FLEX, flexion; EXT, extension; ABD, abduction; ADD, adduction; IR, internal rotation; ER, external rotation; DASH, Disabilities of the Arm, Shoulder and Hand Score

Table 4. Univariate and multivariate linear regression analysis for DASH score in patients with head and neck cancer after selective neck dissection

	Univariate		Multivariate	
	β (95% C.I.)	p value	β (95% C.I.)	p value
Range of motion				
FLEX	-0.194(-0.358, -0.031)	0.021*	-0.223(-0.418, -0.029)	0.026*
EXT	-0.822(-1.212, -0.433)	0.001*	-0.592(-1.009, -0.176)	0.007*
ABD	-0.011(-0.206, -0.014)	0.026*	0.051(-0.063, 0.166)	0.369
ADD	-0.534(-1.069, 0.002)	0.051	-	-
IR	-0.304(-0.584, -0.024)	0.034*	-0.001(-0.259, 0.257)	0.993
ER	-0.285(-0.545, -0.024)	0.033*	0.065(-0.187, 0.316)	0.602
Muscle strength				
TPZ	1.056(-3.584, 5.695)	0.647	-	-
DEL	-2.943(-6.754, 0.869)	0.126	-	-
BIC	-3.153(-7.249, -0.943	0.127	-	-
SS	-2.860(-6.668, 0.948)	0.136	-	-
IS	-1.158(-4.498, 2.182)	0.487	-	-
SUB	-1.409(-4.678, 1.859)	0.388	-	-
Pain	3.658(1.944, 5.372)	0.001*	3.288(1.795-4.782)	0.001*

Univariate linear regression was used to analyze the correlation between each variable and the score of DASH. Any variables that had p <0.05 were selected to be further analyzed by using multivariate linear regression.

*p <0.05

Abbreviations: FLEX, flexion; EXT, extension; ABD, abduction; ADD, adduction; IR, internal rotation; ER, external rotation; TPZ, Trapezius; DEL, Deltoid; BIC, Biceps brachii; SS, Supraspinatus; IS, Infraspinatus; SUB, Subscapularis; DASH, Disabilities of the Arm, Shoulder and Hand Score

RESULTS

The clinical and demographic data are illustrated in Table 1. A total of 38 patients were examined; majority (92.1%) was male. The median age of the patients was 51 years. Primary cancer in oral cavity was observed in 37 (97.4%) patients. Among the 38 patients, 13 (34.2%) underwent left neck dissection, 15 (39.5%) underwent right neck dissection, and 10 (26.3%) underwent bilateral neck dissection. All participants were right-handed. Sixteen (18.4%) patients in this study underwent surgical treatment only, and 15 (39.5%) patients underwent concurrent chemoradiation therapy (CCRT) as an adjuvant therapy after the surgery. The median duration since SND was 7 months. The median DASH score was 13.4 and 31 patients (81.6%) reported shoulder pain at OP side.

In between-group comparisons (Table 2), significant differences were observed in shoulder ROMs in FLEX, EXT ABD, ADD, IR and ER ($p < 0.01$, $p <0.01$, $p <0.01$, $p = 0.04$, $p = 0.02$, and $p <0.01$, respectively). We observed significant reductions in the muscle strength of all the major muscles including TPZ, DEL, BIC, SS, IS, and SUB, in the OP side ($p < 0.05$). The median VAS score of shoulder pain was 3.

The relationships between shoulder ROM, strength of the 6 major muscles, shoulder pain, and DASH score were analyzed and illustrated in Table 3. Worse upper extremity function (greater DASH score) was positively associated with shoulder pain severity ($r = 0.6$; $p < 0.01$), but negatively associated with shoulder ROM in flexion (r = -0.343, p = 0.035), extension (r = -0.569, p < 0.01), abduction (r = -0.387, p = 0.016), internal rotation (r = -0.470, p = 0.003), and external rotation (r = -0.373, p = 0.021) and muscle strength of deltoid (r = -0.421, p < 0.01), biceps brachii (r = -0.347, p = 0.033) and supraspinatus muscles (r = -0.329, p = 0.044).

We evaluated the correlation between DASH scores and physical evaluation results by univariate linear regression. Flexion, extension, abduction and internal and external rotation along with pain significantly correlated with DASH score. DASH score was significantly associated with shoulder pain, shoulder flexion and extension by multivariate linear regression (Table 4).

DISCUSSION

This is a cross-sectional study that aimed to evaluate the shoulder ROM and shoulder muscle strength, shoulder pain, and DASH score in patients with HNCs who had undergone nerve-sparing SND. We observed significant restricted ROM, deteriorated muscle power, and shoulder pain after nerve-sparing SND. There were significant correlations between strength of shoulder girdle muscles and shoulder motions, between shoulder motions/muscle strength and upper extremity function (DASH score), and between shoulder pain and upper extremity function. In our findings, the major factors associated with upper extremity function required for activities of daily living in HNC patients after SND were shoulder pain, shoulder flexion and extension.

Although SND could spare some shoulder symptoms and function, complete or partial denervation of SAN was still inevitable due to the traction of SAN during neck dissection. [22] Tsuji et al. compared the electromyographic findings of different types of SND and discovered no significant difference in electromyographic scores among these types.[22] In addition, the group of patients with intact cervical nerves demonstrated better electromyographic scores than the group of patients who had their cervical nerves removed. This suggested that the cervical plexus played an important role for some degree of motor innervation. This motor innervation of SAN could lead to varying degrees of shoulder symptoms and function. In our study, we observed that shoulder ROM, muscle strength, and pain were worse in the OP side compared with the NOP side. Therefore, macroscopically maintaining SAN during SND could not guarantee unharmed SAN after the surgery. Nevertheless, Cheng et al. stated that the patients who underwent SND developed the least shoulder disability and the least dysfunction of SAN when compared with the patients who underwent mRND and RND.[23] Another study also supported the argument that maintaining SAN was associated with a positive influence on shoulder function and complaints.[24]

In addition to shoulder pain and dysfunction after nerve-sparing SND, upper extremity dysfunction affecting activities of daily living was also a major finding in patients with HNCs after surgery in this study. Furthermore, we analyzed and determined some relationships between shoulder motions/pain and upper extremity function in performing activities of daily living. After reviewing literatures, most studies reported shoulder dysfunction in patients with HNCs after SND, but a few focused on the relationship between physical impairments and motor performances.[17,18,25] Seventy-seven percent of patients after SND developed mild to severe upper extremity dysfunction, and only 23% of them did not have any dysfunction.[25] Gane et al. considered that worse upper extremity function was related to longer time since surgery, post-operative radiation therapy, and shoulder pain after SND.[26] However, there is no study investigating the correlation between degrees of all the shoulder motions and the shoulder function associated with activities of daily living in patients with HNCs. In this study, most of the cases enrolled had some difficulties in performing activities of daily living using the upper extremity, according to the findings of DASH scores, which is consistent with the above studies. The major incapacitating factors of the upper extremity function affecting the activities of daily living were shoulder pain and limited shoulder flexion and extension. Therefore, this study suggests that postoperative pain control and joint mobilization, and shoulder girdle muscles strengthening should be considered when prescribing a rehabilitation program to improve upper extremity function required for the activities of daily living in patients with HNCs after SND.

Limitation

This study has several limitations. It was a cross-sectional study; therefore, there were no long-term follow-up data. Prospective longitudinal studies may provide better insight on the effects of the surgery in patients. This study focused only on the functional assessment of the shoulder and upper limb; it lacked an objective assessment of the condition of neck dysfunction to explore the relationship between neck dysfunction and shoulder performance. Besides, evaluating the soft tissue and surrounding tendons of the shoulder girdle and performing more imaging studies may provide better information related to the musculoskeletal disability.

CONCLUSION

In this study, a significant reduction in shoulder ROM and muscle strength was noted in patients with HNCs who had undergone SND. Upper limb function required for the activities of daily living was significantly affected by pain and shoulder ROM, especially extension and flexion. Therefore, establishing rehabilitation plans for these patients should focus on regaining shoulder joint motion and proper interventions should be provided for managing shoulder pain. These strategies could improve upper extremity function for the HNC patients after SND.

CONFLICT OF INTEREST

There are no conflicts of interest to declare.

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REFERENCE

1. Ewing MR, H Martin. Disability following radical neck dissection; an assessment based on the postoperative evaluation of 100 patients. Cancer 1952; 5: 873-83.
2. Dijkstra PU, PC van Wilgen, RP Buijs, et al. Incidence of shoulder pain after neck dissection: a clinical explorative study for risk factors. Head Neck 2001; 23: 947-53.
3. Watkins JP, GB Williams, AA Mascioli, et al. Shoulder function in patients undergoing selective neck dissection with or without radiation and chemotherapy. Head Neck 2011; 33: 615-9.
4. Giordano L, D Sarandria, BFabiano, et al. Shoulder function after selective and superselective neck dissections: clinical and functional outcomes. Acta Otorhinolaryngol Ital 2012;32:376-9.
5. Eickmeyer SM, CK Walczak, KB Myers, et al. Quality of life, shoulder range of motion, and spinal accessory nerve status in 5-year survivors of head and neck cancer. PM R 2014;6: 1073-80.
6. Carenfelt C, K Eliasson. Occurrence, duration and prognosis of unexpected accessory nerve paresis in radical neck dissection. Acta Otolaryngol 1980; 90 : 470-3.
7. Hillel AD, H Kroll, J Dorman, et al. Radical neck dissection: a subjective and objective evaluation of postoperative disability. J Otolaryngol 1989;18: 53-61.
8. Terrell JE, DE Welsh, CR Bradford, et al. Pain, quality of life, and spinal accessory nerve status after neck dissection. Laryngoscope 2000;110: 620-6.
9. Inoue H, K Nibu, M Saito, et al. Quality of life after neck dissection. Arch Otolaryngol Head Neck Surg 2006;132: 662-6.
10. Sobol S, C Jensen, W Sawyer 2nd, et al. Objective comparison of physical dysfunction after neck dissection. Am J Surg 1985; 150: 503-9.
11. Leipzig B, JY Suen, JL English, et al. Functional evaluation of the spinal accessory nerve after neck dissection. Am J Surg 1983;146: 526-30.
12. Gordon SL, WP Graham 3rd, JT Black, et al. Acessory nerve function after surgical procedures in the posterior triangle. Arch Surg 1977;112: 264-8.
13. Ferlito A, JT Johnson, A Rinaldo, et al. European surgeons were the first to perform neck dissection. Laryngoscope 2007;117:797-802.
14. Robbins KT, JE Medina, GT Wolfe, et al. Standardizing neck dissection terminology. Official report of the Academy's Committee for Head and Neck Surgery and Oncology. Arch Otolaryngol Head Neck Surg 1991;117: 601-5.
15. Kuntz AL, EA Weymuller Jr. Impact of neck dissec-

tion on quality of life. Laryngoscope 1999;109: 1334-8.

16. Guldiken Y, KS Orhan, T Demirel, et al. Assessment of shoulder impairment after functional neck dissection: long term results. Auris Nasus Larynx 2005;32: 387-91.

17. Goldstein DP, J Ringash, JC Irish, et al. Assessment of the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire for use in patients after neck dissection for head and neck cancer. Head Neck 2015;37: 234-42.

18. Goldstein DP, J Ringash, E Bissada, et al. Evaluation of shoulder disability questionnaires used for the assessment of shoulder disability after neck dissection for head and neck cancer. Head Neck 2014;36: 1453-8.

19. van Wilgen CP, PU Dijkstra, BF van der Laan, et al. Shoulder and neck morbidity in quality of life after surgery for head and neck cancer. Head Neck 2004;26:839-44.

20. van Wouwe M, R de Bree, DJ Kuik, et al. Shoulder morbidity after non-surgical treatment of the neck. Radiother Oncol 2009;90:196-201.

21. Angst F, HK Schwyzer, A Aeschlimann, et al. Measures of adult shoulder function: Disabilities of the Arm, Shoulder, and Hand Questionnaire (DASH) and its short version (QuickDASH), Shoulder Pain and Disability Index (SPADI), American Shoulder and Elbow Surgeons (ASES) Society standardized shoulder assessment form, Constant (Murley) Score (CS), Simple Shoulder Test (SST), Oxford Shoulder Score (OSS), Shoulder Disability Questionnaire (SDQ), and Western Ontario Shoulder Instability Index (WOSI). Arthritis Care Res (Hoboken) 2011; 63: S174-S88.

22. Tsuji T, A Tanuma, T Onitsuka, et al. Electromyographic findings after different selective neck dissections. Laryngoscope 2007;117: 319-22.

23. Cheng PT, SP Hao, YH Lin, et al. Objective comparison of shoulder dysfunction after three neck dissection techniques. Ann Otol Rhinol Laryngol 2000;109: 761-6.

24. El Ghani F, MW Van Den Brekel, CJ De Goede, et al. Shoulder function and patient well-being after various types of neck dissections. Clin Otolaryngol Allied Sci 2002; 27: 403-8.

25. Carr SD, D Bowyer, G Cox. Upper limb dysfunction following selective neck dissection: a retrospective questionnaire study. Head Neck 2009;31:789-92.

26. Gane EM, SP O'Leary, AL Hatton, et al. Neck and Upper Limb Dysfunction in Patients following Neck Dissection: Looking beyond the Shoulder. Otolaryngol Head Neck Surg 2017;157: 631-40.

頭頸癌患者於選擇性頸部廓清術後肩部及上肢的功能表現

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目的：由於頸部廓清術後的患者常有肩部失能的狀況，本研究旨在評估頭頸癌患者於選擇性頸部廓清術後的上肢功能與肩部疼痛狀況。

方法：本研究是一篇橫斷式研究，研究個案皆來自一間醫學中心接受選擇性頸部廓清術後的頭頸癌患者，研究中我們評估個案的肩關節主動關節活動度、肌肉力量、肩膀疼痛，並利用上肢功能問卷衡量患者的上肢功能，最後比較患者好側肩膀與患側肩膀的於上述功能之差異。

結果：38 位選擇性頸部廓清術後的頭頸癌患者的患側肩關節皆有明顯較差的關節活動度、肌肉力量、以及較高程度的肩部疼痛，相關性分析發現肩部疼痛與較差的上肢功能問卷分數有關，回歸分析顯示肩膀疼痛越劇烈、肩膀活動度越受限，上肢功能問卷分數越差，而肩關節屈曲、肩關節伸展與肩部疼痛爲上肢功能問卷分數的預測因子。

結論：儘管採取了選擇性頸部廓清術，頭頸癌患者的上肢功能仍在術後有負面影響，而且此影響與受限的關節活動度及肩膀疼痛有相關性；對於這類患者在制定復健計畫時，應特別注意對於肩部疼痛的積極介入，及恢復肩關節活動度，尤其是肩關節屈曲與肩關節伸展，如此才能使患者上肢功能達最佳表現。（台灣復健醫誌 2019；47(2)：99 - 107）

關鍵詞：頭頸癌(Head and neck cancer)、上肢(upper extremity)、選擇性頸部廓清術(selective neck dissection)、肩膀痛(shoulder pain)

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