

ORIGINAL ARTICLE

Frequency of post operative complications after functional and selective neck dissection in patients with squamous cell carcinoma oral cavity

TANNAZA QAYYUM¹, ASHFAQ-UR-RAHIM², SADIQ ALI³, MUHAMMAD NAUMAN⁴, ALI ABU BAKAR⁵, UROOJ KIRMANI⁶, NAVAIRA TARIQ⁷

¹Post graduate Resident, ⁴Assistant Professor, Department of Oral and Maxillofacial Surgery, Faryal Dental College, Sheikhupura, Lahore

²Professor & HOD, Department of Oral and Maxillofacial Surgery, Rahbar College of Dentistry/Punjab Rangers Teaching hospital, Lahore

³Associate Professor, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, The University of Lahore

⁵Consultant Oral and Maxillofacial Surgeon, Doctors Hospital Lahore

⁶Postgraduate Resident, Department of Orthodontics Akhter Saeed Medical College, Lahore

⁷Dentist, Derma & Dental Clinic, Lahore

Correspondence to: Dr. Sadiq Ali, E-mail: sadiqali.glt79@gmail.com, Cell: 0314-4264682

ABSTRACT

Background: Regarding those afflicted with cancer of the head and neck who have cervical neck metastases, neck dissection is a surgical treatment. In order to maximize the cancer's cure rate, neck dissection aims to establish loco-regional control. This procedure may result in a number of problems.

Objective: To find the frequency of post-operative complications after neck dissection in patients with confirmed diagnosis of squamous cell carcinoma of oral cavity.

Study Design: Prospective interventional study.

Place and duration of study: Faryal Dental College's Department of Oral and Maxillofacial Surgery, Lahore from 8th March 2022 to 8th September 2022.

Methodology: One hundred and twenty three patients who were eligible to participate were enrolled. Functional and selective neck dissection was carried. Complications were noted at 30th post-operative day.

Results: The mean age of the 123 patients was 42.40±10.95 years, with 28.5% (n=35) being between the ages of 18 and 35 and 71.5% (n=88) being between the ages of 36 and 65. There were 47.2% (n=58) females and 52.8% (n=65) men. Frequency of wound dehiscence, marginal mandibular nerve weakness and accessory nerve weakness was 11.14%, 8.9% and 9.8% respectively.

Conclusion: After neck dissection, a number of problems might arise. The likelihood of problems after this operation might be reduced by being aware of these potential issues.

Keywords: Neck dissection, Squamous cell carcinoma, Wound dehiscence.

INTRODUCTION

Neck dissection (ND) and concurrent excision of the main tumor are routinely used to treat oral squamous cell carcinoma (OSCC) with cervical lymph node metastases.¹ An essential part of treating head and neck cancer is performing a neck dissection, which has developed into a therapeutic and diagnostic surgery.² It involves removing lymph nodes from certain areas of the neck, either with or without the sternocleidomastoid muscle, internal jugular vein, and accessory nerve removed. This treatment has inherent risks and difficulties due to the near proximity to critical anatomical structures.³

Neck dissection has changed significantly since the 19th century, when basic neck mass excisions were performed. George Washington Crile is recognized for treating head and neck cancer in 1906 by removing cervical lymphatic tissue en bloc.⁴ The sternocleidomastoid muscle, internal jugular vein, spinal accessory nerve, and lymphatic tissue must all be removed during neck dissection, according to Martin et al.'s 1951 demand. This was unsurprisingly linked to increased morbidity, especially when it came to a detrimental effect on shoulder function.⁵ Over the following decades, the neck dissection technique evolved with the development of modified radical neck dissection, selective neck dissection, and now super-selective neck dissection in an effort to improve functional outcomes while maintaining excellent oncologic control.⁶

In otorhinolaryngology, selective neck dissection is a common treatment used to target the oncological radicalization of tumor metastases. Since selective dissection was first used in the latter part of the 19th century, there have been many phases in the shift from radical dissection to more contemporary selective dissection. With the goal of becoming less intrusive, technical advancements and the growth of anatomical understanding have encouraged advancements in the surgical sector.⁽⁴⁾Wound

dehiscence, infection, hematoma, salivary fistula, and nerve damage were among the post-operative problems seen. Dissecting the neck is a difficult and healing process.⁷

Neck dissection consequences fall into three main categories: vascular, nerve, and wound issues. Infection, nerve problems, peripheral mandibular branches of the facial nerve, spinal sensory nerve, vagus nerve, and vascular difficulties are among the neck dissection consequences that have been documented in a research.⁸ This research aims to determine the incidence of post-operative problems after neck dissection in individuals with an oral cavity squamous cell carcinoma diagnosis.

MATERIALS AND METHODS

This was a descriptive case series conducted at Department of Oral & Maxillofacial Department, Faryal Dental College Lahore from 8th March 2022 to 8th September 2022. A sample size of 123 is calculated at 95% confidence level and 3.5% margin of error and taking expected frequency of wound dehiscence as 4.08%. The sample selection was done with non-probability consecutive sampling. The research included both male and female patients with squamous cell carcinoma of the oral cavity who were between the ages of 18 and 65, patients who have had oral surgery in the past. Research did not include patients receiving chemotherapy. Following clearance by the hospital's ethics committee, 123 patients who met the study's inclusion requirements were recruited after providing their informed permission. The same investigator performed both functional and selective neck dissection. On the thirty-first post-operative day, complications were observed. The data was entered and analyzed through SPSS-21.

RESULTS

There were 35 (28.5%) patients between the ages of 18-35 years while 88 (71.5%) between the ages of 36-65 years with mean age was 42.40±10.95 years. Fifty eight (47.2%) were females and 65 (52.8%) were males. Wound dehiscence, accessory nerve

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weakness, and marginal mandibular nerve weakness occurred at rates of 11.14%, 8.9% and 9.8% respectively (Table 1).

Age, gender, smoking status and neck dissection showed no significant association with wound dehiscence, marginal mandibular nerve weakness and accessory nerve weakness. It was observed that accessory nerve weakness was significantly higher among smokers (26.3%, $p=0.008$), marginal mandibular nerve weakness was significantly higher among smokers (21.1%, $p=0.044$) and wound dehiscence was significantly higher among patients who underwent selective neck dissection (21.2%, $p=0.003$) [Table 2].

Table 1: Descriptive information of the participants (n=123)

Variable	No.	%
Age (years)		
18-35	35	28.5
36-65	88	71.5
Gender		
Male	65	52.8
Female	58	47.2
Smoking		
Yes	19	15.4
No	104	84.6
Type of Neck Dissection		
Functional	71	57.7%
Selective	52	42.3%
Wound dehiscence	14	11.4%
Marginal mandibular nerve weakness	11	8.9%
Accessory nerve weakness	12	9.8%

Table 2: Association of postoperative complications with patient's characteristics

Variable	Wound Dehiscence		Marginal mandibular nerve weakness		Accessory nerve weakness	
	Yes (n=14)	No (n=109)	Yes (n=12)	No (n=111)	Yes (n=11)	No (n=112)
Age (years)						
18-35	17.1%	82.9%	11.4%	88.6%	11.4%	88.6%
36-65	9.1%	90.9%	8.0%	92.0%	9.1%	90.9%
P value	0.205		0.542		0.693	
Gender						
Male	9.2%	90.8%	9.2%	90.8%	12.3%	87.7%
Female	13.8%	86.2%	8.6%	91.4%	6.9%	93.1%
P value	0.426		0.906		0.313	
Smoking Status						
Smoker	15.8%	84.2%	21.1%	78.9%	26.3%	73.7%
Non-Smokers	10.6%	89.4%	6.7%	93.3%	6.7%	93.3%
P value	0.511		0.044		0.008	
Neck Dissection						
Functional	4.2%	95.8%	9.9%	90.1%	9.9%	90.1%
Selective	21.2%	78.8%	7.7%	92.3%	9.6%	90.4%
P value	0.003		0.677		0.964	

DISCUSSION

The sixth most prevalent cancer in the world is head and neck cancer.⁹ The most critical component impacting the prognosis for squamous cell carcinoma is the cervical lymph node status as compared to patients with early-stage cancer, the 5-year survival rate drops by 50% when the disease progresses to the regional lymph nodes. According to the American Cancer Society, forty percent of people with pharyngeal and oral cavity squamous carcinoma had localized metastases to the cervical lymph nodes.¹⁰

Therefore, for patients with squamous cell carcinoma of the head and neck, the management of cervical lymph nodes is an essential part of the entire therapy strategy. Cancer surgery on the head and neck is a serious procedure with possibly high morbidity. In addition to their cancer stage, it is crucial to properly identify patients via a preoperative cardiac and pulmonary workup since not all patients are candidates for surgery. Surgery has shown better local control rates, but overall survival for many head and neck cancers is comparable with surgical versus non-surgical therapy. The wise clinician must therefore customize treatment for each patient to optimize quality of life and functionality after treatment. For oncologic reasons, the removal of cervical lymph nodes is known as "neck dissection," and the lymph node basins are specifically targeted throughout the treatment, that are susceptible to metastatic dissemination depending on where the first tumor was located.¹⁰

In the present study, the mean age of 42.40 ± 10.95 years and 47.2% (n=58) were females and 52.8% (n=65) were males. It was discovered that wound dehiscence, accessory nerve weakness, and marginal mandibular nerve weakness occurred often at rates of 11.14%, 8.9%, and 9.8%, respectively (Table 1). Individuals with oral cavity squamous cell carcinoma suffered 4.08% wound dehiscence, 5.5% marginal mandibular nerve damage, and 5.1% accessory nerve injury, according to one study.⁷ Mouth cancers account for between 2% and 4% of all cancer cases globally. Other countries have higher rates of oral cancer; in Pakistan, it makes up 10% of all cancers, while in India, it makes up over 45%. Worldwide, over 300,000 new instances of oropharyngeal and cancer of the mouth were identified between 2004 and 2009. More than 7,000 people with these cancers passed away during that time.¹¹

Any area of the mouth, throat, or salivary glands may be affected by oral cancer, which is a category of neoplasms. Though OSCC is the most common of all oral neoplasms, this name is often used interchangeably with it. It is believed that OSCC accounts for about 90% of all oral neoplasms.¹² Despite advancements in treatment methods, the rates of OSCC morbidity and death have remained relatively constant over the past three decades.¹³ The death rate is 3.1 while the morbidity rate is 6.6 per 100,000 for men and 2.9 and 1.4 per 100,000 for females, respectively.¹⁴ Additionally, OSCC is growing increasingly prevalent among white women in particular and young white people generally those aged 18–44 years.¹⁵ Between 40 and 50 percent of people with OSCC survive for five years. It is common for OSCC to be detected at a later stage, even when the mouth is easily examinable. Ignorance on the part of the patient or attending physician and an incorrect first diagnosis are the most common reasons.¹⁶

In the western world, tobacco and alcohol consumption are the leading causes of mouth cancer. Despite their independence, the risk variables seem to work together. The majority of incidences of mouth cancer (75%) are caused by tobacco use. Tobacco users are six times more likely than non-smokers to get mouth cancer. Additionally, compared to non-users, people who drink alcohol have a six-fold increased risk of developing mouth cancer. In contrast to non-users, alcohol and tobacco users have a fifteen-fold increased chance of developing mouth cancer.¹⁷ While alcoholic beverages and cigarette usage are certainly contributors, other recognized risk factors, such as betel quid chewing among some ethnic groups, should not be overlooked. Betel quid chewing is common in Taiwanese and Indian communities; however it greatly increases the likelihood of developing mouth cancer.¹⁸⁻²⁰ There is also evidence of an elevated risk of mouth cancer, connected to the use of cannabis, opioids and areca nuts.²¹ It was suggested in a recent WHO workshop that the phrase "potentially malignant disorders" be used instead of the difference among "potentially malignant lesions" and "possibly cancerous conditions."

CONCLUSION

After neck dissection, a number of problems might arise. The likelihood of problems after this operation might be reduced by being aware of these potential issues.

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