

# COMPARATIVE STUDY BETWEEN SELECTIVE NECK DISSECTION AND RADIOTHERAPY IN THE MANAGEMENT OF CLINICALLY NODE NEGATIVE NECK IN CASES OF HEAD AND NECK CANCERS

By

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## ABSTRACT

**Background:** The management of clinically node negative neck (cN0) remains a matter of controversy. The used methods of treatment are observation and follow up and treating the neck when clinical metastasis developed, prophylactic radiotherapy, or elective neck dissection. Many surgeons prefer the elective surgical intervention because of the increasing incidence of clinically node negative neck having occult metastatic lymph nodes.

**Objective:** The aim of this study was to compare between the efficacy of both elective neck dissection and elective neck irradiation in the management of clinically node negative neck (cN0) of patients with squamous cell carcinoma of head and neck, and to determine which type of treatment improves the 2- year survival, disease-free survival and loco-regional control rates.

**Patients and Methods:** During the period from 2012-2015, this prospective study was done at Al- Azhar University hospitals (Otorhinolaryngology Department, and Surgical Oncology Unit) on 50 patients diagnosed to have clinically node negative neck (cN0) of squamous cell carcinoma of head and neck randomized into two groups, 25 of them managed by selective neck dissection (Group I) and 25 managed by elective radiotherapy (Group II). They were followed up for a period ranged from 6 months to 24 months with a mean period of 15months. All patients were subjected for full history taking, general and local examination, (assessment of the primary site and state of nodes of the neck), neck ultrasound, computed tomography (CT) and chest X-ray. Patients of Group (I) were evaluated postoperatively for surgical complications. Patients of Group II received 50 Gy using conventional fractionation (2 Gy per fraction with 2 days rest) to a total duration of 5 weeks. The incidences of local and regional recurrences were recorded. Survival times were calculated starting from the date of the surgery.

**Results:** Nineteen female (38%) and 31 male patients (62%) were included in this study. 38% of patients have their primary lesion in the tongue and 30% of patients with primary laryngeal lesion. The cheek, lower lip, hypopharynx, alveolar margin, and nasopharynx were affected by primary lesion in 14%, 6%, 4%, 2% and 4% respectively. Moderately differentiated tumors (G2) were the most prevalent grade among the study groups. 26% of patients were presented with T1 lesion. T2, T3 and T4 were diagnosed in 50%, 14% and 12% of the studied patients respectively. Pathologically, positive nodes were observed in 4 cases of the dissected specimens ranging from 1-2 LN with the mean positive LN 1.3 nodes. Extra capsular extension was present in 3 patients (12%); positive LN without extra capsular spread was present in one patient (4%). Nine patients (18%) had a recurrence. In group I, 4 patients had recurrence, (2 local recurrences and 2 regional

recurrences). In group II, 5 patients had a recurrence, (3 local recurrences, 1 regional recurrence and 1 loco-regional recurrence). The loco-regional control rate (LRC) for group I was 84% and for group II was 80%. Two years disease free survival rate in group (I) was 64% while that for group (II) was 56%. The overall survival rate (OSR) for group (I) was 80%, while that of group II was 76%. The differences between study groups as regard recurrence, loco-regional control rate, disease free survival rate, and survival time were statistically insignificant.

**Conclusion:** Patients with clinically node negative neck of cases of squamous cell carcinoma of head and neck, elective neck dissection and elective radiotherapy were both suitable in terms of survival and locoregional control rates. Patients receiving both modalities of therapy can get nearly the same outcome. They were nearly equally effective in controlling the cN0 neck. The choice of the type of treatment modality depended mainly on the surgical experience of the treating oncologist, how the primary site is managed, the surgeon and patient choices.

**Keywords:** Clinically Node Negative Neck, Squamous Cell Carcinoma of Head and Neck, Neck Dissection, Elective Neck Radiation.

## INTRODUCTION

Head and neck cancers represent the sixth most common cancer worldwide with approximately 630,000 new patients diagnosed annually, resulting in more than 350,000 deaths every year. More than 90% of head and neck cancers are squamous cell carcinomas (HNSCCs) that arise from the mucosal surfaces of the oral cavity, oropharynx hypopharynx and larynx (*Vigneswaran and Williams, 2014*).

The complex process of head and neck carcinogenesis involves dynamic interactions among many factors. Chief among HNSCC-related carcinogens are tobacco and alcohol. Other important etiologic factors are viruses, genetic predisposition, occupation, and radiation exposure (*Clayman et al., 2000*).

One of the most commonly used surgical interventions in treatment of clinically node negative neck is the selective neck dissection. This surgery is of increasing popularity because of its ability to accurate removal of occult metastatic nodal disease and better and accurate pathological staging.

Radiation therapy may be used in the treatment of cervical lymph node metastases. The regional lymph nodes are considered in the treatment planning of the primary lesion. With clinically negative neck nodes, treatment planning depends on the estimated risk of subclinical disease in the nodes (*Mendenhall 2008*).

Retrospective evidence suggests that external beam radiation of approximately 40–50Gy to the clinically N0 neck will control occult metastases in more than 90–95 % of cases (*Bar and Chalian, 2008*).

The present study aimed to investigate the efficacy of both elective neck dissection and elective neck irradiation in the management of clinically node negative neck (cN0) of patients with squamous cell carcinoma of head and neck.

## PATIENTS AND METHODS

This prospective study was done on 50 patients proved to have clinically node negative neck (cN0) of squamous cell carcinoma of head and neck randomized into two groups, 25 of them managed by

selective neck dissection and 25 managed by elective radiotherapy at Al-Azhar University hospitals (otorhinolaryngology department, and surgical oncology unit) during the period from 2012-2015, and followed up for a period ranged from 6 months to 24 months with a mean period of 15 months. All patients included in the study were with pathologically proved squamous cell carcinoma of head and neck and clinically node negative neck.

**Group (I):** Twenty five patients underwent selective neck dissection (removing levels I- V) as a part of their surgical management of the primary.

**Group (II):** Twenty five patients underwent elective radiotherapy as part of their postoperative management.

All patients were scheduled for full history taking, general and local examination (assessment of the primary site and state of nodes of the neck), neck ultrasound, computed tomography (CT) and chest X-ray. All patients were diagnosed by tissue biopsy from the primary (whether incisional or excisional biopsy). All patients were included in the study after informed written consent.

**Operative technique:** The patient received an intraoperative single dose of 2 g Cefotaxime. If the pharynx was planned to be opened, or in case of oral intervention, metronidazole IV 100 mg infusion, was administrated. Schobinger incision (Y-incision) was done for most patients, hockey stick or apron incision was also used. The skin incision was deepened through the subcutaneous tissue and the platysma muscle. Flap was then raised in the subplatysmal plane. Lymphadenectomy was done by removing levels I, II, III and IV according to site of

the primary tumor. Supraomohyoid neck dissection in oral squamous cell carcinoma (buccal, lower lip and alveolar margin) was done in 9 patients (36%) with removal of the contents of the submental and submandibular triangles (level I), (level II), and the lymph node-bearing tissues located anterior to the cutaneous branches of the cervical plexus and above the omohyoid muscle (levels III). Extended supraomohyoid neck dissection of levels I-IV was done in 10 patients with tongue carcinoma at the lateral aspect (40%), Bilateral supraomohyoid neck dissection was done in 3 cases with anterior tongue or floor of the mouth carcinomas (12%). Lateral neck dissection of levels II-IV was done in 3 patients with laryngeal carcinoma (12%).

**Radiotherapy technique:** All patients of group II received 50 Gy using conventional fractionation (2 Gy per fraction with weekend rest on Thursday and Friday) using (3D) conformal radiotherapy to a total duration of 5 weeks. In the 2 cases of nasopharyngeal carcinoma, the nasopharynx was irradiated as a primary target therapy.

All patients of group (I) were evaluated postoperatively for medical and surgical complications. Follow up clinical examinations were done every month for the 1<sup>st</sup> year, every 3 months thereafter. Each patient in group (II) was followed twice weekly for complications, and then the patients were followed every month for the first year, and every 3 months in the next 2<sup>nd</sup> year. The incidences of local and regional recurrence were recorded. Survival times were calculated starting from the date of the surgery.

The data collected including the age and gender of patients, the site of the lesion, tumor pathology, degree of

differentiation, type of performed neck dissection, the complications, the recurrences, the loco-regional control, survival rate and prognostic factors for loco-regional control and survival rate; all were recorded and the data obtained were subjected for statistical analysis by computer using SPSS data editor software, version 16.0.

## RESULTS

This study was conducted in Al-Azhar University hospitals (Otorhinolaryngology Department, and Surgical Oncology Unit) on 50 patients with cancer head and neck with negative neck lymph node. There were 19 female (38%) and 31 male patients (62%). Eighteen patients of them were cigarettes smokers. They were randomized blindly into two groups, i.e.

group I (25) patients underwent elective neck dissection with primary tumor control, and group II (25 patients) underwent primary tumor control and elective neck irradiation.

In 38% of patients, the primary lesion was in the tongue (19 patients: 13 in group I and 6 in group II). In 30% of patients, the primary lesion was laryngeal (15 patients: 3 in group I and 12 in group II). In 14% of the patients, the primary lesion was in the cheek (7 patients: 5 in group I and 2 in group II). Lower lip was affected in 6% of patients (3 patients in group I), hypopharynx in 4% (2 patients in group II), alveolar margin in 2% (1 patient in group I), and 4% of the case was presented with their primary in the nasopharynx in group II (Table 1).

**Table (1):** Sites of the primary lesion..

Site of the primary	Group I		Group II		Total	
	N	%	N	%	N	%
<b>Oral Cavity</b>						
Ant. Tongue and floor of mouth	13	52%	6	24%	19	38%
Buccal mucosa	5	20%	2	8%	7	14%
Lower lip	3	12%	0	0%	3	6%
Alveolar margin	1	4%	0	0%	1	2%
<b>Oropharynx (base of tongue)</b>	0	0%	1	4%	1	2%
<b>Nasopharynx</b>	0	0%	2	8%	2	4%
<b>Larynx</b>	3	12%	12	48%	15	30%
Glottic	2	8%	7	28%		
Supraglottic	1	4%	5	20%		
<b>Hypopharynx Postcricoid</b>	0	0%	2	8%	2	4%
<b>Total</b>	25	100%	25	100%	50	100%

Moderately differentiated tumors (G2) were the most prevalent grade among the study groups (Table 2).

**Table (2):** Pathological grading of tumors for both groups.

Grade of the tumor	Group I		Group II		Total		$\chi^2$	P-value
	N	%	N	%	N	%		
Well differentiated tumors G1	2	8%	4	16%	6	12.0	2.3	0.304
Moderately differentiated tumors G2	20	80%	15	60%	35	70.0		
Poorly differentiated tumours G3	3	12%	6	24%	9	18.0		

Post-operative complications occurred in group (I) in 12 patients (48 %). Wound infection was the most common complication occurring in 5 patients (20%). Infection was severe in one patient following excision of the primary tumor (check cancer) being associated with skin necrosis that required surgical debridement and secondary sutures and the defect was reconstructed later by radial forearm free flap (RFFF). The rest of wound infections responded to repeated

daily dressings. A seroma collected in one patient without wound infection and was managed conservatively. Partial spinal accessory nerve injury occurred in one patient and responded to physiotherapy slowly. One patient suffered from a chylous fistula that was managed by conservative method. Two other patients suffered from post-operative sepsis in the form of severe chest infection (Table 3).

**Table (3):** Complications to neck dissection group (I)

Complication	Group I	N	%
Infected wound		5	20.0
Seroma		1	4.0
Post-operative sepsis		2	8.0
Oral cavity infection (fungal infection)		2	8.0
Accessory spinal nerve injury		1	4.0
Thoracic duct injury with Chyle leak		1	4

In group (II), 40% of patients developed persistent xerostomia, and 44% of patients developed erythema of the skin. Loss of taste and mucosites occurred in 12 % and 36% of patients respectively.

There were 25 neck dissection specimens resulting in this study. 10-25

with a mean of 12.4 nodes were removed per neck dissection. There were positive nodes in 4 cases in the dissected specimens ranging from 1-2 LN with the mean positive LN 1.3 nodes. Extracapsular extension was present in 3 patients (12%), and positive LN without extraca-

psular spread was present in one patient (4%).

Nine patients (18%) had a recurrence in both groups. In group I local recurrence occurred in two patients and regional recurrence in two patients. Regarding the local recurrence, the 1<sup>st</sup> patient was male patient with right cheek T2 ulcerative sq.c.c partially infiltrating the mandible treated by excision of the ulcer with marginal mandibulectomy and extended supraomohyoid ND (level I-IV). Ipsilateral local recurrence in the cheek infiltrating the maxilla occurred after 12 months of follow up, the patient submitted to total maxillectomy with reconstruction by rectus abdominis free flap. The other case of local recurrence was a male patient with lower lip sq.c.c, treated by local excision and ipsilateral supraomohyoid ND. Local recurrence occurred 9 months later treated by surgical excision and supraomohyoid ND of the opposite side. Regional recurrence in group (I) occurred in two case. 1<sup>st</sup> case was T1 sq.c.c with ulcerative lesion at right lateral edge of tongue treated by excision and ipsilateral supraomohyoid ND. Regional recurrence occurred 6 months later presented by right neck abscess which drained surgically and the patient died in ICU secondary to sepsis

with multi organ failure. The other patient with regional recurrence was T2 supraglottic sq.c.c of the larynx treated by total laryngectomy with ipsilateral lateral ND from level II to level V. Regional recurrence in the form of single hard fixed contralateral L.N more than 3 cm after 12 months. The patient was submitted to Rt. modified radical ND and the patient died within the first 24 post-operative suddenly (either massive MI, or Massive pulmonary embolism).

In group II, five patients had a recurrence: three with local recurrences, one patient with regional recurrence and one patient had loco regional recurrence (Table 4). The ipsilateral side of the neck (controlled side) was affected in 50% of cases of regional recurrence in group I. in group II, the two cases of regional recurrence were in the ipsilateral side of the primary.

The most frequently involved lymph node levels were levels II and III in most cases (N1 = 3 patients, N2 = 1 patient). The time elapsed after primary treatment either by surgery or radiotherapy to diagnosis of cervical nodal recurrence ranged from 4 months to 18 months with a median period of 8 months.

**Table (4):** Incidence of recurrence among both groups.

Groups		Group I		Group II		Total	
		N	%	N	%	N	%
Recurrence							
Total		4	16%	5	20%	9	18%
Local		2	8%	3	12%	5	10%
Regional		2	8%	1	4%	3	6%
Locoregional		0	0%	1	4%	1	2%
Distant metastasis		0					
Chi-square	$\chi^2$	0.136					
	P-value	0.72 NS					

The loco-regional control rate (LRC), for group I was 84% (21/25), and for group II was 80% (20/25). Two years disease free survival rate for neck dissection group was 64% (16/25), while that for radiotherapy group was 56% (14/25). The differences between study groups as regard loco-regional control rate and disease free survival rate were statistically insignificant. In group (I) two patients died within 2 weeks postopera-

tively, two patients with recurrence, and one patient died disease free at 18 months. In group (II) 5 patients died with the recurrence and 1 patient died from other cause. The overall survival rate (OSR) for group (I) was 80% (20/25 patients), while that of group II was 76% (19/25). The difference between both groups regarding the survival time was not statistically insignificant (Table 5).

**Table (5):** Survival time among the 2 study groups

Time	Groups	Group (I)	Group (II)	p-value
		N=25	N=25	
Median		18	24	0.138
Lower		14	23	
Upper		20	25	

The loco-regional control and overall survival has no significant statistical relation to the type of treatment (either the

surgical or the radiotherapy), or even to the other variables as sex, age, smoking and tumor grades (Table 6).

**Table (6):** Univariate analysis of prognostic factors for LRC and OS.

Prognostic factors	NO Of Patients	2-years LRC (%)	Chi square	P value	2 -year OS (%)	Chi square	P value
<b>Sex</b>							
Male	31	80%	1.2	0.321 *	77%	0.97	0.43*
Female	19	95%			93%		
<b>Age</b>							
≥ 40	47	70%	0.21	0.762 *	78%	0.32	0.75*
<40	3	83%			89%		
<b>Smokers</b>							
yes	18	69%	0.12	0.34 *	73%	0.23	0.54 *
No	32	74.1%			82%		
<b>Grade</b>							
G1	2	95%	0.01	0.211 *	90%	0.421	0.876 *
G2	20	90%			87%		
G3	3	80%			82%		
<b>Treatment</b>							
ND	25	84%	0.136	0.712*	80%	0.124	0.671 *
Radiotherapy	25	80%			76%		

LRC=loco-regional control (% of controlled patients for 2 years). OS= overall survival. ND=neck Dissection \*= statistically non-significant G1= grade 1 (Well differentiated T) G2 = grade 2 (Moderately differentiated T.) G3= grade 3 (Poorly differentiated T)

## DISCUSSION

Head and neck squamous cell carcinomas refers to a group of biologically similar cancers that start in the lip, oral cavity, nasal cavity, paranasal sinuses, pharynx, and larynx (*Soliman and Shehata, 2015*).

Head and neck carcinoma often spread to the lymph nodes of the neck, and this is often the first (and sometimes only) sign of the disease at the time of diagnosis. They are strongly associated with certain environmental and lifestyle risk factors including tobacco smoking, alcohol consumption, ultraviolet light, particular chemicals used in certain workplaces, and certain strains of viruses such as human papillomavirus (*Hosal et al., 2000*).

The aim of this study was to compare the effectiveness of either elective neck dissection or elective neck irradiation in the management of clinically node negative neck (cN0), to evaluate the effectiveness of either modality in eradication of regional disease, to compare the regional recurrence rates of both, and to determine which type of treatment improves the two year survival and disease-free survival rates.

The current study, showed no statistically significant difference as regard age, smoker's percentage and co-morbidities percentage between the two study groups.

In the current study the higher percentage of cancer of head and neck was 34% among those who were over 60 years old. *Gawecki et al. (2007)* showed that head and neck squamous cell carcinoma (HNSCC) develops in the sixth to seventh decade of life and significantly less frequently in patients younger than 45 years.

The current study showed that 62% of patients were males and 38% of patients were females. *Siegel et al. (2013)* stated that males are affected significantly more than females with a ratio ranging from 2:1 to 4:1. Also, *Jemal et al. (2008)* found that HNSCC is more common in men with incidence of 66%-95%.

This variation in the incidence, anatomic and gender distribution of HNSCC worldwide is predominately attributed to demographic differences in the habits of tobacco use and alcohol consumption which contributes to the development of most of all HNSCC diagnosed universally (*Vigneswaran and Williams, 2014*).

In the current study, complications of neck dissection were as follow; 20% of patients were complicated by wound infection, 15 % by fungal oral cavity infection, 8% by neck abscess and 4% of patients by Chyle leak. Infection was severe in one patient following excision of the primary tumor (check cancer) being associated with skin necrosis that required surgical debridement and secondary sutures. The defect was reconstructed later by radial forearm free flap (RFFF), the rest of wound infections responded to repeated daily dressings.

These results were close to that obtained by *Pellini et al. (2013)*. In their study on 119 patients, 79.8% do not develop any complications, while 24 of them (20.2%) experience some type of wound complication. Major complications were in 14 cases (11.7%) and minor in 10 cases (8.3%).

However, the present result differs from that of *Davidson et al. (1999)* where the incidence of complications was higher.



This rate of increased complications could be explained by some causes as preoperative receive of radiotherapy, preoperative albumin level less than 38 g/L, and early neck drain removal.

Wound complications are obviously linked to the type of neck dissection. The risk of developing major wound complications is higher in the case of MRND than in the case of SND. This could be explained by the reduction of blood flow at the periphery of the skin due to the pattern of skin incision used in such type of ND. MRND and RND were performed via a tri-flapped incision which may explain the higher incidence of skin-flap necrosis or dehiscence. Also, wider surgical field resulting from the more extensive procedures carries a higher risk of morbidity.

In group (II), 40% of patients developed xerostomia, and 44% of patients developed erythema of the skin. Loss of taste and mucosites occurred in 12% and 36% of patients respectively.

Xerostomia is a permanent and devastating sequela of head and neck irradiation, and its consequences are numerous (*Khan and Johnstone, 2005*).

*Pellini et al. (2013)* explained the higher complication rate usually observed in irradiated patients by the different pattern of tissue response to radiation. Radiotherapy activates a wound-healing process different from that of normal wound healing, causing an excessive deposition of extracellular matrix and collagen that is characteristic of radiation fibrosis. Furthermore, radiation also induces vascular damage, which can lead to tissue hypoxia, perpetuating a fibrogenic response.

The loco-regional control rate (LRC) in this study for group I was 84% (21/25) and for group II was 80% (20/25). Disease free survival rate for 2 years for neck dissection group was 64% (16/25) while that for radiotherapy group was 56% (14/25). The differences between study groups as regard recurrence, loco-regional control rate and disease free survival rate were statistically insignificant.

These results were close to that obtained by *Jin (2012)*. His results showed that not only the 5-year LRC rate but also the 5-year OS rate were not significantly different between the surgery group and radiotherapy group. Similar results were obtained by *Or?s et al. (2000)*, and *Sessions et al. (2005)*.

In the current study, the overall survival rate (OSR) for two years was for neck dissection group 80% while in radiotherapy group was 78%, and the difference between both groups was statistically insignificant. *Or?s et al. (2000)* stated that the difference between the neck dissection group and the radiotherapy treatment group regarding the overall survival was insignificant.

Also, in this work, the loco-regional control, and overall survival were have no significant statistical relation to the type of treatment (either the surgical or the radiotherapy) or even to the other variables as sex, age, smoking and tumor grades. However, the locoregional control is improved in a retrospective study by *Paleri and Watkinson (2012)*.

The main limitation of the study arose from relatively small sample size and the relatively short time of follow up (24 month). For this reason, it is recommen-

ded to perform the study on a wider scale of randomized population and over a longer time of follow up in order to assign the statistical significance.

## CONCLUSION

This study concluded that, among patients with clinically node negative neck in cases of squamous cell carcinoma of head and neck, elective neck dissection and elective radiotherapy were both suitable in terms of survival and locoregional control rates. Patients receiving both modalities of therapy can get nearly the same outcome. They were nearly equally effective in controlling the cN0 neck. If the primary site was to be controlled surgically it was advised to do elective neck dissection. The choice of the type of treatment modality depended mainly on the surgical experience of the treating oncologist, how the primary site was managed, the surgeon and patient choices and the quality of life point of view.

Neck dissection does not seem to be superior to in terms of survival and regional control of neck disease. However, it seems to be better in minimizing the complications of bilateral neck irradiation and save the neck from a heavier dose and larger field of irradiation exposure.

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# دراسة مقارنة بين العلاج الجراحي والعلاج الإشعاعي في معالجة الغدد الليمفاوية السلبية بالرقبة لمرضى سرطان الرأس والعنق

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**خلفية البحث:** يعد ترتيب سرطان الرأس والعنق هو السادس عالميا من حيث الانتشار، إذ يضاف سنويا ما يقرب من نصف مليون حالة للأعداد المصابة وينشأ معظم هذه الحالات في الدول الصناعية، وهو منتشر بين الذكور عن الإناث خاصة في العقد السادس والسابع من العمر، وغالبا ما ينتشر سرطان الرأس والعنق إلى الغدد الليمفاوية بالرقبة، وقد يكون هذا الانتشار هو العرض الوحيد للمرض وقت التشخيص. ولا تزال الطريقة المثلى لعلاج الغدد الليمفاوية السلبية بالرقبة لمرضى سرطان الرأس والعنق محل خلاف ما بين المتابعة المستمرة للمريض مع عمل الفحوصات والأشعة اللازمة، أو العلاج الجراحي بواسطة التشريح التحفظي للغدد الليمفاوية، أو العلاج الإشعاعي الإختياري.

**الهدف من البحث :** دراسة مقارنة بين العلاج الجراحي بإستخدام التشريح التحفظي للغدد الليمفاوية بالرقبة والعلاج الإشعاعي الإختياري لبيان مدى فاعلية ايا من الطريقتين في علاج الغدد الليمفاوية السلبية لمرضى سرطان الرأس والعنق مع توضيح ايا من طريقتي العلاج أفضل في التحكم الموضعي لعدم انتشار أو إرتجاع الورم.

**المرضى و أدوات البحث :** أجريت هذه الدراسة على خمسين مريضا ممن يعانون من سرطان الرأس والعنق مع عدم وجود غدد ليمفاوية مصابة بالرقبة. تم توزيع المرضى على مجموعتين : مجموعة (١) تشمل ٢٥ مريضا تم عمل علاج تشريح تحفظي للغدد الليمفاوية السلبية بالرقبة بعد علاج الورم الأولي ، مجموعة (٢) تشمل ٢٥ مريضا تم تعريضهم للعلاج الإشعاعي الإختياري بعد علاج الورم الأولي. وقد تم متابعة حالات كلا المجموعتين على مدار سنتين لوجود إرتجاع بالرقبة .

**النتائج:** بعد عامين من المتابعة لم يكن هناك إختلافا بين المجموعتين، كما تم تقييم النتائج من حيث إرتجاع الورم بالغدد الليمفاوية العنقية، وكانت المضاعفات ونسبة الوفيات أعلى بالمجموعة رقم (٢).

وقد تبين أن المضاعفات الناتجة عن إستخدام العلاج الجراحي بإستخدام التشريح التحفظي تختلف عن تلك الناتجة عن إستخدام العلاج الإشعاعي حيث يتم تعريض كلا الجهتين من الرقبة للعلاج الإشعاعي الإختياري بينما يراعى في العلاج الجراحي بإستخدام التشريح التحفظي أن يتم الحفاظ علي الأجزاء الحيوية المهمة بالرقبة كالضفيرة العصبية العنقية والقناة الليمفاوية الصدرية والعصب المخى رقم ١١ حتي في حالات تشريح المستوى الخامس من الغدد الليمفاوية.

**الخلاصة:** إستخدام العلاج الجراحي أو الإشعاعي يحكمه في الأساس طريقة العلاج للورم الأولي بالرقبة، فهؤلاء المرضى الذين تم عمل جراحة للورم الأولي لهم بالرقبة يستكمل علاج الغدد الليمفاوية بإستخدام نفس طريقة العلاج وهي الجراحة، وهكذا الحال بالنسبة للمرضى الذين تم معاملة الورم الأولي بإستخدام العلاج الإشعاعي حيث يستكمل علاج الغدد الليمفاوية بإستخدام الإشعاع.