

Comparison of Cervical Lymph Nodes Dissection for Excisional Biopsy “Simple Dissection Technique vs. Improvised Loop Traction Technique”

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ABSTRACT

Aim: To compare improvised loop traction dissection with simple dissection technique for lymph node excisional biopsy of cervical region

Study design: Cohort study.

Place: Combined Military Hospital Rawalpindi, Abbottabad, Multan & Peshawar.

Duration: September 2013 – January 2022.

Methodology: cervical region Lymph nodes with intact architecture more than 1 centimeter were considered for this study while lymph nodes of the cervical region with distorted architecture and size <1cm were not included in this study. Among 530 patients, two dissection techniques (simple and improvised loop) were adopted. The lymph nodes to be removed were detected with palpation or through ultrasound and imaging such as computed tomography (CT). An open biopsy surgical procedure with or without modification was adopted. In the first group-I (n=206), Lymph node dissection was continued with the conventional technique, and in the group (n=324) lymph node was inserted with a silk suture for traction as the loop is adopted. The post-procedural assessment was for the difficulty level of dissection was done.

Results: Among 530 Patients (Male=76.03%: Female=23.96%), the mean age in years of the patient was simple dissection technique n=206(range=20-69 mean 39) and loop techniques n=324(mean 41 and range 21-66). On average, 19.30 minutes for loop improvised and structural preservation was 69.75% (226), while rupture with the simple technique was observed in about 18(8.7%). The dissection time was less among patients with improvised loop technique and architectural preservation.

Conclusions: Inserting silk suture as a double loop reduces duration and facilitates dissection in preserving architecture of lymph node sample

Keywords: improvised loop technique, gripping& holding, preserved architecture

INTRODUCTION

The encapsulated structures along the path of collector lymphatic vessels that filter incoming lymph are called lymph nodes. Lymph nodes are commonly found throughout the entire body and the head and neck region. Patients usually present with lymphadenopathy due to benign or malignant conditions. These conditions may be challenging to differentiate clinically. Ultrasound scanning along with Fine Needle Aspiration Cytology (FNAC) is done on a first-line basis, but those pathologies not diagnosed with FNAC/Core expertise generally require open neck biopsy¹. It is detrimental to perform an open-neck biopsy on a patient with cancer originating from the head and neck region before moving on to definitive treatment. Lymph node biopsy remained the gold standard for the diagnostic evaluation of several malignant conditions³. Traditionally, excisional biopsy of a lymph node has been the standard method of tissue sampling, providing ample tissue for assessment^{3,4,6}.

A simple dissection technique of open biopsy was adopted for quite a long time for the delivery of the lymph node specimen to be investigated further from the cervical region. The purpose was to give a rather comparative narrative regarding the two techniques, of which simple dissection is the use of a conventional way to remove the lymph node; this dissection technique, compared to the improvised loop traction technique, was not providing a very firm hold, it was as if one is trying to pick up a grape with the help of a plier tool, putting undetermined pressure through it which would end up rupturing and crushing⁹.

The procedure in study may have its drawbacks but actually we find that it results in quite stable hold on the lymph node and the possibility of instability in architecture.

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METHODS

The study was conducted from 2013-2022 at the Combined Military Hospital (CMH) surgical departments Rawalpindi, Abbottabad, Multan, and Peshawar. The study does not carry any conflict, geopolitical or ethnic background. The lymph nodes to be removed were detected with palpation or through ultrasound and imaging such as computed tomography (CT). The cervical lymph nodes levels were ascertained before surgery (I- submental & submandibular chain, II-upper jugular chain, III-middle jugular chain, IV-lower jugular chain, V- posterior triangle chain, and VI, anterior compartment chain)¹. An open biopsy surgical procedure with or without modification was adopted. All patient safety precautions were taken. Written consent and counseling were done. After aseptic measures and draping, a bending syringe needle was used to infiltrate the local area with local anesthesia (2% Injection of Xylocaine with Adrenaline)²/general anesthesia (General anesthesia was applied when the lymph nodes were deep/patient compliance). Both techniques gave a crease incision; superficial structures were incised/reflected and lymph nodes approached. In the first group-I (n=206), Lymph node dissection was continued with the conventional technique, and in the group (n=324) lymph node was inserted with a silk suture for traction as the loop is adopted (Fig-1). After careful dissection, the lymph node was removed by gently preserving surrounding structures, including blood vessels and nerves. The wound was sutured and covered with an aseptic dressing. The post-procedural assessment was for the difficulty level of dissection, time duration, and preservation of architecture (capsule tearing, rupture, crushing, and incomplete removal of lymph nodes were counted as the distortion of sampling)^{4,5}. The sample was labeled according to protocols and forwarded with clinical notes to the histopathology department. The random allocation sequence was carried out by using a computerized system. It was based on a minimization

method in which patients were assigned to the two study groups while ensuring equal distribution based on sex, age, and lymph node enlargement. SPSS version 26 was used for statistical analysis. The values mentioned in the graph are average of individual level.

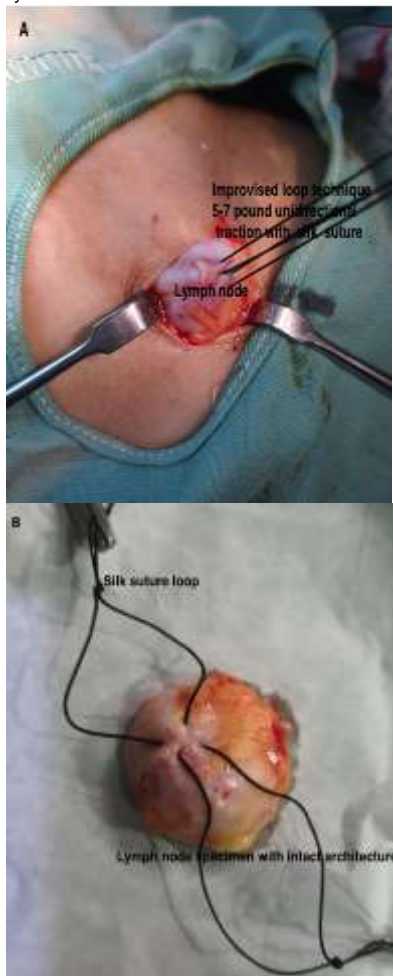
Statistical analysis: For the statistical evaluations, the χ^2 test was performed to compare proportions for the time duration of surgery and structural damage to the lymph node to be excised. P values less than 0.05 were considered to indicate a significant difference. P values less than 0.05 were considered to indicate a significant difference.

X2 value of less than 0.05 was recorded for both analyses via chi-square testing, considering the variables

1. Time duration of the dissection
2. Architectural distortion of lymph node

It was found that the double loop traction procedure is more beneficial in the sense that there was less rupture and more preservation of the architecture of the lymph node; furthermore, it was found that the duration of the overall procedure was decreased in the improvised loop traction procedure.

Figure 1: Improved loop traction technique in cervical lymph node excisional biopsy



RESULTS

Among 530 Patients (Male=76.03%: Female=23.96%), the mean age in years of the patient was simple dissection technique n=206(range=20-69 mean 39) and loop techniques n=324(mean 41 and range 21-66).

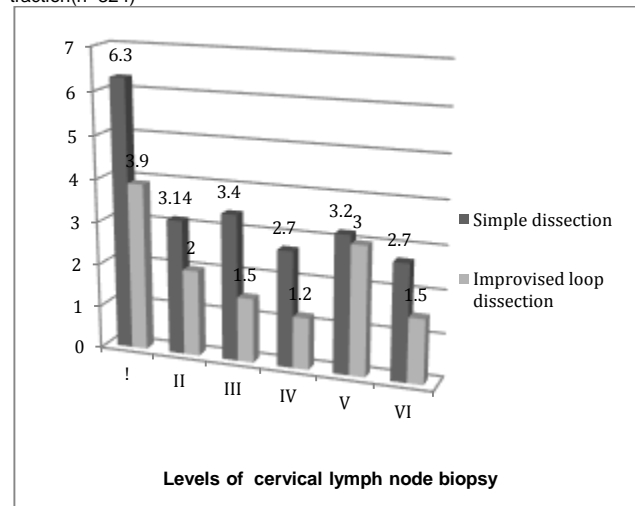
Table 1. Levels of cervical regional lymph node excisional biopsies

Level	Simple traction technique		Improved loop traction technique	
	206 (100%)	Average dissection time (Mints)	324 (100%)	Average dissection time (Mints)
I	53(25.7%)	15.9	75 (23.1%)	11.1
II	4 (23.7%)	17.1	72 (22.2%)	13.5
III	37(17.9%)	19.9	63 (19.4%)	14.9
IV	15 (7.2%)	17.7	36 (11.1%)	16.1
V	27(13.1%)	23.9	44 (13.5%)	18.2
VI	25(12.1%)	21.4	34 (10.1%)	17.3
				< p =0.005

Difficulty level for simple dissection was moderate

On average, 19.30 minutes for loop improvised and structural preservation was 226(69.75%), while rupture with the simple technique was observed in about 18(8.7%).

Figure 2: Lymph node distortion between simple(n=206) vs improvised loop traction(n=324)



DISCUSSION

Several surgical pathologies can spread through the lymphatic system. Improvisation on the continuous verge of attaining adequate sampling of the lymph nodes with intact architecture for a conclusive diagnosis. Fine needle aspiration is a less invasive alternative but is frequently nondiagnostic as tissue architecture is typically required for diagnosis⁹.

Adeyinka and associates, 2016 in their research mentioned that the improvisation of instruments and techniques could help an operating surgeon to achieve sound outcomes for their procedure^{10,11}. Likely, Wistermayer and colleagues also mentioned betterment with modification of existing dissection of cervical lymph nodes¹².

Pre-hand mapping of cervical region lymph nodes is essential for appropriate surgical preparation and coming surgical events. In both techniques, biopsies of cervical lymph nodes have been sampled surgically to find the presence or absence of disease. Dissection techniques play a pivotal role in the preservation of architecture and associated structural damage by simple dissection as Oji, in his study, agrees that open cervical lymph node biopsy can alter patterns of lymphatic drainage for up to 1 year following surgery but does not portend a poor prognosis provided adequate and early treatment is subsequently given⁵.

In socio-economical downfalls, the patients turned out lately, and patient needs a comprehensive, decisive diagnosis regarding his/her disease; management is essential and likely agreed with the impact of delayed presentation. The lymph node cervical excisional biopsy region is a gateway for conclusive treatment. The

Median for age simple dissection was 38(n=206), and the improvised technique was 40(n=324)⁷. A significant difference was observed in time duration Tab. 1 likely study by Andrew et al., concluded that a change of technique can alter outcome⁴. Arielle and associates valued adaptation of improvised technique if outcomes are positive^{9,14}.

The wound site infection was insignificant difference. The removal of stitches was better with the loop traction technique to a mean of 11±2 days (n=324). It was observed that the loop technique was with sound sampling and preservation of the lymph node 324(87%) and 206(21.4%) damaged lymph nodes (Fig. 2). Appropriate traction with Improvisation provided a positive outcome^{12,13}.

CONCLUSIONS

Traction and gripping play a pivotal role in the dissection of the cervical lymph node biopsy. Modification of inserting silk suture as a double loop reduces duration, facilitation in dissection, and preservation of architecture of lymph node sample.

Conflict of interest: This study carries no conflict of any kind with institute / person

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