

Outcome Of Selective Neck Dissection In Tubercular Cervical Lymphadenopathy: A Single Centered Experience Of 26 Cases

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Abstract

Introduction: Tubercular Cervical Lymphadenopathy (TCL) is a complex condition requiring a multifaceted approach to diagnosis and treatment. While anti-tubercular therapy remains the primary treatment modality, surgical interventions such as selective neck dissection have been explored in specific cases. This study aimed to evaluate the outcomes of selective neck dissection in TCL, focusing on primary, relapse, and failure cases.

Methods: This retrospective observational study was conducted over four years at Dhaka Medical College Hospital, Bangladesh, including 26 cases who underwent selective neck dissection for TCL. The study categorized patients into primary, relapse, and failure cases based on specific criteria. Data were processed using SPSS version 20.0, and the outcomes were analyzed and presented through tables.

Result: The majority of participants were aged 15-30 (76.92%) and female (73.08%). Primary cases accounted for 19.23%, relapse cases 11.54%, and failure cases 69.23%. Unilateral node involvement was observed in 76.923%, and multiple-level nodal involvement in 61.538%. Gene Xpert reports were positive in all primary and relapse cases, and 38.89% of failure cases. Post-surgery complications included hypertrophic scarring (61.538%) and post-operative neck pain (up to 53.846%).

Conclusion: The study provides valuable insights into the outcomes of selective neck dissection in TCL, highlighting the complexity of the condition and the importance of individualized treatment planning. The findings support the integration of surgical and medical therapies in TCL management, emphasizing the role of selective neck dissection in primary and failure cases. The study contributes to the broader understanding of TCL and may guide future research, clinical practice, and policy development.

Keywords: Tubercular Cervical Lymphadenopathy, Surgery, Anti-TB therapy, Lymph Node

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I. INTRODUCTION

Tuberculosis, a scourge since prehistoric times, affects more than 9 million people and causes the death of 1.5 million people each year. Effective treatment has been available for 60 years, but such treatment takes at least 6 months, and resistance to the drugs, which is increasing throughout the world, threatens the effectiveness of treatment. [1] *Mycobacterium tuberculosis* bacteria are sequestered in compartments that are inaccessible to antibiotic action; this could explain the poor long-term treatment response in some patients despite the clearance of bacteria from the sputum. The leading candidates for these sequestered compartments are the interior of granulomas, abscesses, and cavities. [2] MTB infection of the human host manifests in the lungs and is referred to as pulmonary TB (PTB), but TB can also affect other sites in the body, which is known as extra-pulmonary TB (EPTB). EPTB accounts for 15% of newly diagnosed TB cases worldwide, of which 10-35% manifest in the head

and neck region. [3] The standard 6-month treatment regimen for drug-susceptible tuberculosis is an exceptionally long course of treatment as compared with the duration of treatment of other bacterial infectious diseases. The prolonged regimen poses two major challenges to success: managing drug toxicity and ensuring that patients adhere to the full course of treatment. [4][5] Before the advent of chemotherapy, surgical excision of all the lymph nodes was the mainstay of treatment for tuberculous lymphadenopathy. [6] In the 1950s, when chemotherapy for tuberculosis was just introduced, excision of all involved lymph nodes followed by anti-tuberculous chemotherapy for 12–24 months was found more effective treatment. [7] Despite the current effectiveness of anti-bacillary chemotherapy in most tubercular sites, peripheral lymph node involvement continues to pose a challenge to treatment. [8] The lymph node is the most common extra-pulmonary location, accounting for 52% of all extra-pulmonary locations. The cervical form is predominant, accounting for 70% to 90% of all lymph node locations. The diagnosis of TB is based on standard microbiology, but also histological study. However, molecular biology has revolutionized the means available for the diagnosis of lymph node tuberculosis (LNTB). The treatment of LNTB is essentially medical. However, surgery is largely used not only for diagnostic but also for therapeutic purposes even before starting anti-bacillary treatment in certain specific indications, for example in the event of a tubercular cold abscess, or an adenopathy fistulized to the skin. [9] It could be said that lymph node involvement is always secondary to TB development in their tributary organ, or, in other words, LNTB can be considered a local manifestation of systemic disease. [10] Regarding detection of the disease, imaging and clinical features of head and neck tuberculosis are often varied and nonspecific and frequently mistaken for those of carcinoma. [11]

II. OBJECTIVE

General Objective

- To analyze the surgical outcome of neck dissection in patients with tubercular cervical lymphadenopathy.

Specific Objectives

- To know the sociodemographic status of the participants.
- To assess the size of the affected lymph nodes.
- To see the indication of this surgery.
- To know about the complications of the surgery.

III. METHODS

This retrospective observational study was conducted over a period of 4 years, from January 2019 to January 2023, at the Department of ENT & Head Neck Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh. Available hospital records of a total of 26 cases who had undergone selective neck dissection for tubercular cervical lymphadenopathy were included in the study. The study included data of both Primary cases and relapse cases. Data were processed by SPSS version 20.0. Processed data were shown in the study by tables and pie charts. The neck lymph nodes were classified as levels and the involvement was studied for each category. Consent was taken from the participants and they were also assured of their right to withdraw from the study at any point without any impact on their treatment. The study was approved by the Ethical Review Committee of Dhaka Medical College Hospital. All data collected for the study were anonymized to maintain the confidentiality of the participants.

Inclusion Criteria

- Patients of both gender over the age of 15 years.
- For primary cases, patients with 1 or 2 levels of nodal involvement having non-progressive swelling for 2-3 months
- For relapse cases, patients with single level nodal involvement having non-tender and non-progressive swelling for 1-2 months
- Patients who had undergone selective neck dissection for TCL.

Exclusion Criteria

- Patients who were diagnosed with other forms of tuberculosis.
- Patients who did not undergo selective neck dissection
- Patients with incomplete hospital records

IV. RESULTS

Table 1: Distribution of participants by socio-demographic characteristics (n=26)

Characteristics	N	%
Age		
15-30	20	76.92%
31-45	4	15.38%
>45	2	7.69%
Gender		
Male	7	26.92%
Female	19	73.08%
Residence		
Urban	9	34.62%
Rural	17	65.38%
Socioeconomic Status		
Lower class	9	34.62%
Middle class	16	61.54%
Upper class	1	3.85%

The distribution of participants by age revealed that the majority were in the 15-30 age group, comprising 76.92% (n=20) of the sample. Participants aged 31-45 and above 45 years represented 15.38% (n=4) and 7.69% (n=2) of the sample, respectively. Gender distribution showed a predominance of female participants, accounting for 73.08% (n=19) of the total, while males constituted 26.92% (n=7). Regarding residence, 65.38% (n=17) of the participants were from rural areas, and 34.62% (n=9) were from urban locations. The socioeconomic status of the participants was also assessed, with the majority falling into the middle-class category, representing 61.54% (n=16) of the sample. Lower-class participants accounted for 34.62% (n=9), and only 3.85% (n=1) were classified as upper class.

Table 2: Distribution of patients by their indication of surgery (n=26)

Indication	n	%
Primary cases of TCL	5	19.23%
Relapse cases of TCL	3	11.54%
Nodal Size \geq 2 cm after anti-TB therapy for >1.5 years	18	69.23%

Primary cases of TCL, defined as those who hadn't started anti-TB therapy and opted for surgery due to having non-progressive swelling in the neck for 2-3 months involving unilateral one or two-level nodes, accounted for 19.23% (n=5) of the patients. Relapse cases of TCL, referring to those who had completed and were declared cured earlier from any form of Tuberculosis, constituted 11.54% (n=3) of the sample. The majority of the patients, 69.23% (n=18), fell into the category of having nodal size 2 cm or more after completion of anti-tubercular therapy for at least one and a half years. This group represents the failure cases where the indication was the persistence of significant nodal size despite prolonged therapy.

Table 3: Distribution of respondents according to lymph node involvement (n=26)

Nodal Characteristics	n	%
Site of node		
Unilateral Node	20	76.923%
Bilateral Node	6	23.077%
Level of Involvement		
Single level nodal involvement	10	38.462%
Multiple level nodal involvement	16	61.538%

In terms of the site of the node, the majority of respondents, 76.923% (n=20), exhibited unilateral node involvement, while 23.077% (n=6) had bilateral node involvement. When assessing the level of involvement, the

study found that 38.462% (n=10) of the respondents had single-level nodal involvement, and 61.538% (n=16) had multiple-level nodal involvement.

Table 4: Distribution of participants by outcome of surgery via Gene Xpert report (n=26)

Gene Xpert Report	Primary Cases (n=5)		Relapse cases (n=3)		Failure cases (n=18)	
	n	%	n	%	n	%
Positive	5	100.00%	3	100.00%	7	38.89%
Negative	0	0.00%	0	0.00%	11	61.11%

The outcome of surgery was evaluated using Gene Xpert reports among the 26 participants, categorized into primary cases (n=5), relapse cases (n=3), and failure cases (n=18). For primary cases, all five participants (100.00%) had a positive Gene Xpert report, indicating the presence of TB. Similarly, in the relapse cases, all three participants (100.00%) also had a positive Gene Xpert report. In contrast, among the failure cases, the Gene Xpert report was positive in 38.89% (n=7) of the participants, while 61.11% (n=11) had a negative report.

Table 5: Distribution of subjects by recorded post-surgery complications (n=26)

Complication	N	%
Relapse case (after 1 year)	1	3.846%
Delayed wound healing (>2 weeks)	7	26.923%
Post-operative neck pain (up to 1 year)	8	30.769%
Post-operative neck pain (up to 6 months)	14	53.846%
Hypertrophic scar	16	61.538%

A relapse case was observed in 3.846% (n=1) of the subjects after one year following surgery. Delayed wound healing, defined as healing taking longer than 2 weeks, was noted in 26.923% (n=7) of the subjects. Post-operative neck pain was a common complication, with 30.769% (n=8) of subjects experiencing pain up to 1 year, and 53.846% (n=14) experiencing pain up to 6 months. Hypertrophic scarring was the most prevalent complication, recorded in 61.538% (n=16) of the subjects.

V. DISCUSSION

The distribution of participants by age in our study revealed a concentration in the 15-30 age group, comprising 76.92% of the sample. This finding aligns with the general observation that Tubercular Cervical Lymphadenopathy (TCL) often affects younger individuals. [12],[13] The lower representation of older age groups may reflect the natural history of the disease or specific epidemiological factors in the study population. The predominance of female participants (73.08%) in our study contrasts with some literature where tuberculosis has been reported to affect both genders equally. [14] This discrepancy may be attributed to social, cultural, or biological factors that influence the gender distribution of TCL in the study region. The majority of participants were from rural areas (65.38%), reflecting the pattern of tuberculosis in developing countries, where some types of the disease are more common in rural settings. [15],[16] The socioeconomic status distribution, with a majority in the middle class, may reflect the accessibility and affordability of healthcare services in different socioeconomic groups.

The categorization of patients into primary, relapse, and failure cases in our study offers a nuanced understanding of the indications for surgery in TCL management. Primary cases, constituting 19.23% of the patients, were those who hadn't started anti-TB therapy and opted for surgery due to non-progressive swelling in the neck for 2-3 months involving unilateral one or two-level nodes. Relapse cases, making up 11.54% of the sample, were those who had completed their anti-TB therapy and were declared cured earlier from any form of Tuberculosis. The majority of the patients, 69.23%, fell into the failure category, having nodal size 2 cm or more after completion of anti-tubercular therapy for at least one and a half years. This group represents the failure cases where the indication was the persistence of significant nodal size despite prolonged therapy. The predominance of unilateral node involvement (76.923%) and multiple-level nodal involvement (61.538%) in our study contributes to the understanding of nodal engagement in TCL. The positive Gene Xpert reports in all primary and relapse cases after surgery indicates the need for further anti-TB therapy, as the surgery was unable to remove the tuberculosis bacterium completely. However, among the failure cases, 61.11% had seen negative GeneXpert results, indicating a complete removal of tuberculosis bacterium from the patients. The recorded complications, including delayed wound healing, post-operative neck pain, and hypertrophic scarring, highlight the potential

challenges following selective neck dissection. The high prevalence of hypertrophic scarring (61.538%) underscores the importance of surgical technique and post-operative care. These findings align with a study that evaluated the role of surgical dissection in TCL. [15] One of the notable findings in our study was the occurrence of a relapse in tubercular cervical lymphadenopathy on the other side of the neck in one patient after 11 months of surgery. This case was referred to a higher center for further management, emphasizing the potential complexity and unpredictability of TCL's course even after surgical intervention. The relapse underscores the importance of ongoing monitoring and a multidisciplinary approach to care, recognizing that TCL management may extend beyond the initial surgical treatment. Additionally, all cases with positive Gene Xpert reports were further treated with anti-TB therapy for further management. This coordinated approach reflects evidence-based practice and underscores the importance of integrating surgical and medical therapies in the comprehensive management of TCL. The utilization of Gene Xpert as a diagnostic tool followed by targeted anti-TB therapy represents a strategic alignment of diagnostic and therapeutic modalities, contributing to the optimization of patient outcomes.

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

VI. CONCLUSION

The present study offers valuable insights into the outcomes of selective neck dissection in TCL, reflecting a single-centered experience with a diverse sample. The findings align with and expand upon existing literature, highlighting key aspects of the condition, surgical management, and post-operative care. The study underscores the importance of individualized treatment, ongoing monitoring, and a multidisciplinary approach to optimize outcomes in TCL. The unique insights into relapse, Gene Xpert utilization, and post-surgery complications contribute to the broader understanding of TCL and may guide future research and clinical practice.

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Ethical approval: The study was approved by the Institutional Ethics Committee

VII. RECOMMENDATION

Based on the findings of this study, several recommendations can be made for the management of Tubercular Cervical Lymphadenopathy (TCL). First and foremost, anti-tubercular therapy should be considered the first choice of treatment, aligning with standard protocols and reflecting its central role in managing the disease. Secondly, surgery may be a viable option in primary cases, particularly when unilateral single node level involvement is present with non-progressive, non-tender swelling. This approach may offer an effective solution for specific clinical presentations and should be considered in the context of individual patient needs and preferences. Lastly, in failure cases where significant nodal size persists despite prolonged therapy, selective neck dissection can be a valuable option before starting retreatment. This surgical intervention may help to shorten the drug duration, optimizing patient outcomes and minimizing potential side effects. These recommendations emphasize a patient-centered, evidence-based approach to TCL management, recognizing the importance of individualized treatment planning and the integration of medical and surgical therapies.

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