

# Parapharyngeal Space Liposarcoma: A systematic review of cases

Srivatsa Surya Vasudevan, MD, MS<sup>1</sup>; Estephania Candelo, MD, MSc<sup>1</sup>; Jeffrey R. Janus, MD, FACS<sup>1</sup>  
<sup>1</sup> Department of Otorhinolaryngology and Head and Neck Surgery, Mayo Clinic Florida, Jacksonville, FL, USA

## ABSTRACT

### Introduction:

Parapharyngeal space (PPS) tumors are rare occurrences that account for less than 2% of head and neck cancers. The incidence of liposarcoma (LS) in PPS is even more uncommon. As such, we aim to investigate the clinical characteristics, management and prognosis of this unique tumor in this complex location.

### Methods:

We performed a systematic review of cases using Pubmed, OVID, Scopus, Web of Science, ScienceDirect, and EBSCO (CINAHL) for articles on "Parapharyngeal" and "Liposarcoma" published from inception to July, 2023. Two independent reviewers screened the abstracts and full-texts articles using COVIDENCE. This study followed the PRISMA guidelines.

### Results:

A total of 293 articles were retrieved. Out of which, 10 studies were included. In total, 11 participants met the inclusion criteria. 72.7% of patients were male and 27.2% of patients were female. The mean age was 51.3 years (range, 12- 77.5). The most frequently described clinical feature was neck swelling (n=11, 100%), Dysphagia (n=6, 54.5%), and other features include dysarthria, odynophagia, and obstructive sleep apnea. A pre-operative imaging was done in 90.9% of the cases and fine needle aspiration was performed in 45.4% of cases, out of which 60% were inconclusive. Surgery was the preferred choice of treatment in all the patients and transcervical excision of the tumor was the most common approach. Adjuvant radiotherapy and chemotherapy were required in 54.5% and 9% of patients respectively. The tumor recurred in 4 (36.3%) patients, with the average number of tumor recurrences being 2.5 per patient, often requiring revision surgery. The patients were followed up for an average of 27.1 months.

### Conclusion:

Parapharyngeal space liposarcoma (PPS-LS) is a very rare malignancy affecting predominantly men. Surgery was the definitive treatment of choice for both primary and recurrent cases. It is necessary to maintain strict surveillance given the recurrence rate and associated mortality. To our knowledge, this review is the first to group all the current evidence.

## OBJECTIVES

The Primary aim of this systematic review was to determine the most common clinical characteristics, diagnosis and treatment of PPS-LS.

## METHODS

**1. Search Strategy:** A comprehensive literature search was executed across six major databases: Pubmed, OVID, Scopus, Web of Science, ScienceDirect, and EBSCO. The search spanned from database inception until 2023. The study followed PRISMA guidelines<sup>1</sup>

### 2. Selection Criteria:

*Inclusion Criteria:* Articles discussing parapharyngeal space liposarcoma.; Types of studies: Case reports, case series, and observational studies.

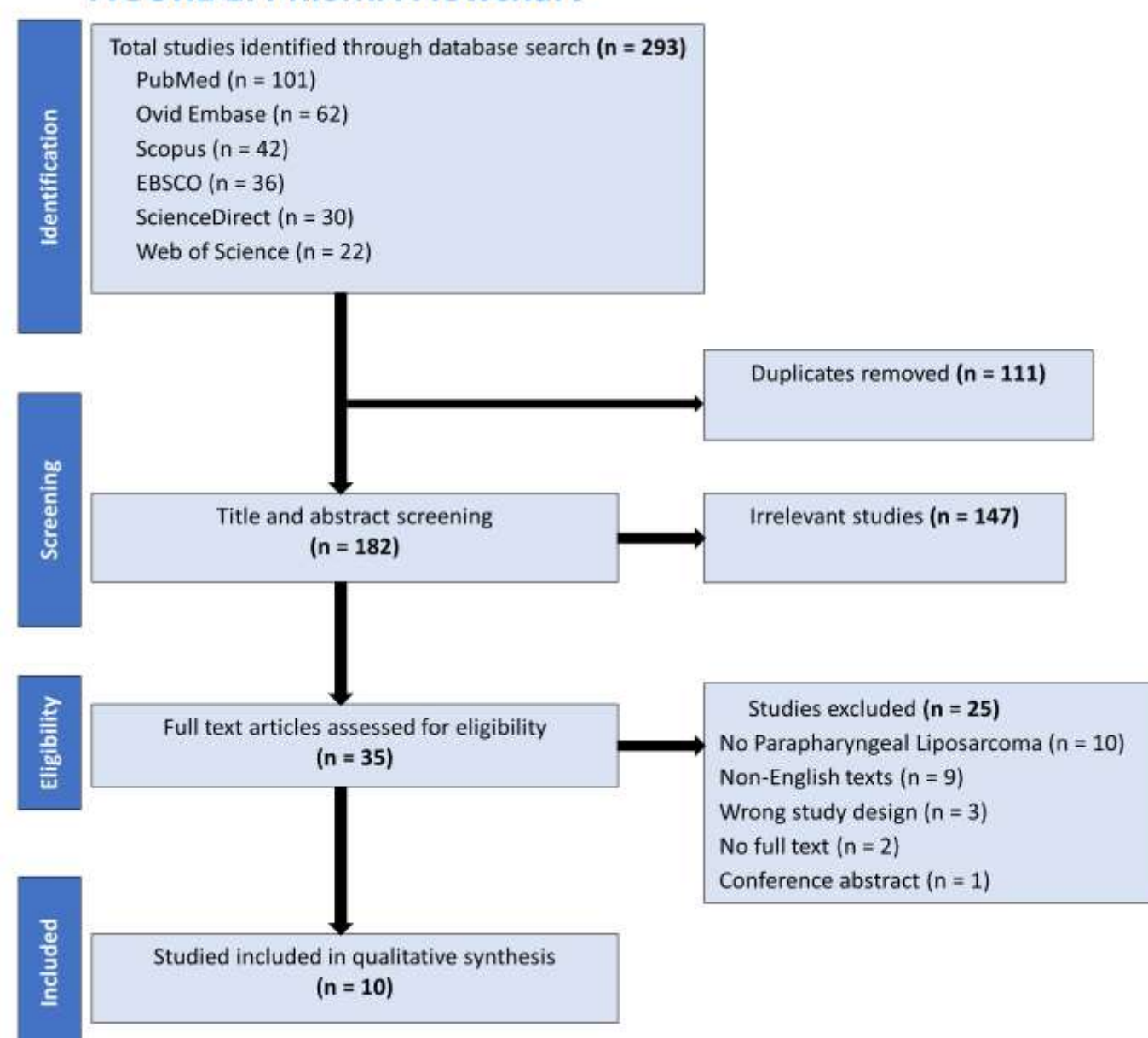
*Exclusion Criteria:* Review articles, animal-based research, non-English full text articles.

**3. Data Extraction & Analysis:** Data extraction and analysis were meticulously conducted by two independent reviewers to ensure accuracy and comprehensiveness. Discrepancies, if any, were discussed and resolved by consensus.

**4. Statistical Analysis:** Descriptive statistics were employed to assess continuous and categorical outcomes. Results are represented as percentages (%) for categorical data and mean (standard deviation, SD) for continuous data.

## RESULTS

FIGURE 1. PRISMA Flowchart

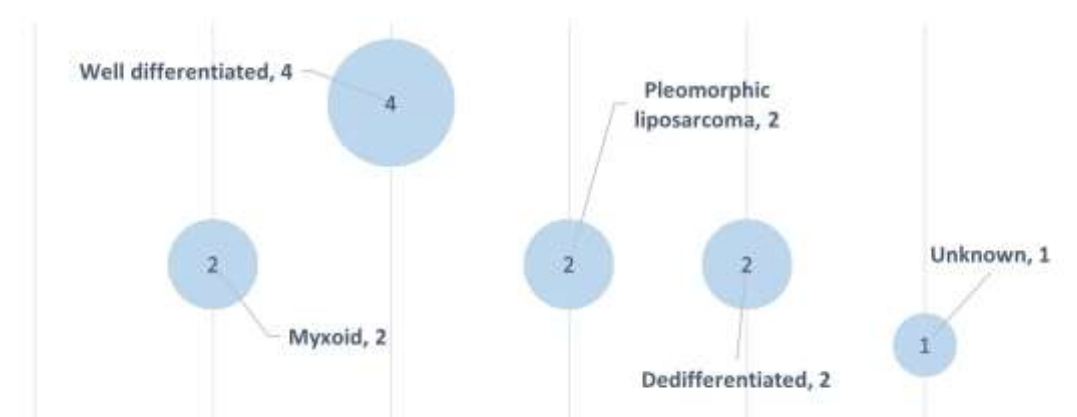


- From a total of 10 manuscripts detailing 11 cases (Figure 1), 40% of the studies originated from the US. India and Japan each contributed 20%, while the UK, China, and South Korea each represented 10% with one manuscript. Of these cases, 72.7% were male (Table.1)

Table 1. Characteristics of the included studies

Total population (n = 11)		
<b>Demographics</b>		
Age (years)	51.3	
Male	8	72.7%
Female	3	27.2%
<b>Clinical features</b>		
Neck swelling	11	100%
Dysphagia	6	54.5%
Facial pain	2	18.1%
Dysarthria/ Odynophagia, Obstructive sleep apnea/ Dysarthria	1	9%
<b>Diagnosis</b>		
FNAC	5	45.4%
CT scan	10	90.9%
<b>Management</b>		
Surgical excision	11	100%
Size	7.3 x 6.8 x 3.8	
Average revision	0.36	
Radiotherapy	6	54.5%
Chemotherapy	1	9%

Figure 2. Histological types in PPS-LS



- Figure 2. elicits the histological types of PPS-LS that we encountered in the literature.
- Out of 45.5% of the cases undergoing FNAC, almost 70% were inconclusive. Transcervical approach was the most commonly utilized approach.
- *Recurrence:* During the average follow-up of 27.1 months, there were recurrence in 36.3% of the patients. Among myxoid type PPS-LS, all cases experienced recurrence of up to 3 times per patient requiring an average of 3-4 procedures per patients.
- 54.5% of the cases required radiotherapy with only one patient undergoing chemoradiation.
- *Mortality:* One patient of pleomorphic PPS-LS died due to recurrence

## Discussion

- The clinical characteristics and the approach to treating the PPS-LS are similar to that of the other PPS tumors<sup>2</sup>
- The primary constraint of this systematic review is its reliance on case reports, which inherently limits its broader applicability and generalizability

## Conclusions

This study is the first among the reviews to describe the high recurrence rate of myxoid type of PPS-LS requiring a strict follow-up. FNAC was inconclusive.

## REFERENCE

1. This study is the first among the reviews to describe the high recurrence rate of myxoid type of PPS-LS requiring a strict follow-up. FNAC was inconclusive.
2. Grilli G, Suarez V, Muñoz MG, Costales M, Llorente JL. Parapharyngeal space primary tumours. Tumores primarios del espacio parafaríngeo. Acta Otorrinolaringol Esp (Engl Ed). 2017;68(3):138-144. doi:10.1016/j.otorri.2016.06.003