

Systematic Review

Selective deep lobe parotidectomy: a systematic review and meta-analysis of outcomes

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Abstract

Deep lobe parotid tumours are difficult to remove due to their location and proximity to the facial nerve. Total parotidectomy is standard but has high complication rates. Selective deep lobe parotidectomy preserves the superficial lobe and may reduce morbidity. This study is the first systematic review and meta-analysis of selective deep lobe parotidectomy outcomes. A PRISMA-based systematic review and meta-analysis was performed. Databases searched on 23 August 2025 included MEDLINE, Embase, CINAHL, PubMed, Google Scholar, and CENTRAL. Eligible studies reported outcomes of selective deep lobe parotidectomy. Data were analysed with a random-effects model, and risk of bias was assessed using the Newcastle–Ottawa Scale. Eight studies (299 patients) met the study criteria. All tumours were benign. Pleomorphic adenoma accounted for 225 cases (75.3%); other benign histologies were less commonly found. No malignancies were reported. Temporary facial weakness occurred in 24.2%, permanent weakness in 3.0%, Frey's syndrome 1.1%, infection 0.8%, contour deformity 11.8%, haematoma 3.1%, seroma 2.7%, auricular numbness 36.7%, and recurrence 0.8%. Heterogeneity was low. Selective deep lobe parotidectomy is a safe option for benign deep lobe tumours with low complication and recurrence rates. Larger prospective comparative studies with long-term follow up are required.

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Keywords: Parotidectomy; Selective deep lobe parotidectomy; Facial nerve; Benign parotid tumours; Systematic review; Meta-analysis

Introduction

Parotidectomy is a surgical procedure undertaken for tumours of the parotid gland,¹ with benign lesions, particularly pleomorphic adenomas, representing the majority of cases.² Tumours in the deep lobe present particular difficulties because of their close relationship to the facial nerve and their tendency to extend into the parapharyngeal space.³ Historically, total parotidectomy (TP) was widely considered the treatment of choice in order to ensure complete excision and oncological safety.^{4,5} Over time, however, less extensive

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resections have gained popularity, particularly for superficial lobe disease. While TP provides access to deeper regions of the gland and allows direct visualisation of the facial nerve, more limited procedures such as selective deep lobe parotidectomy (SDLP) are now emerging as alternatives.⁶

The key concern following parotidectomy is facial nerve injury.⁴ The facial nerve courses through the gland and must be identified and preserved during surgery.⁷ Temporary weakness of one or more branches is commonly observed in the immediately postoperative period,⁵ while permanent palsy occurs less frequently but carries significant functional and cosmetic implications.⁸ Comparative data suggest that more extensive resections, such as TP, may increase the risk of both temporary and permanent nerve dysfunction.^{4,6} In addition, other complications of parotidectomy include Frey's syndrome, haematoma, salivary fistula, seroma, wound infection, contour deformity, and first-bite syndrome.^{9–13} These complications contribute to long-term morbidity and reduced patient satisfaction.¹⁴

Over the last two decades, several single-centre series and at least one comparative cohort have reported outcomes after SDLP,^{4,6,7,12,14–16} and techniques such as the retroauricular hairline incision have also been described.⁶ Although various complication rates have been reported in individual studies, the overall evidence on SDLP, including comparisons with TP, has not previously been systematically reviewed.^{6,15} To our knowledge, the present work represents the first analysis of available studies to guide surgical decision-making.

Methods

This systematic review and meta-analysis were performed as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement standards (PRISMA).¹⁷

Eligibility criteria

Inclusion criteria are: (1) Studies reporting extractable outcome and/or complication data of SDLP for both benign and malignant tumours; (2) Randomised or non-randomised trials or any observational/cohort study/case series (10 or more patients); (3) Adult population (Age >18 years old).

Exclusion criteria are: (1) Recurrent tumours at baseline or superficial lobe disease only; (2) Studies with no adult population (age <18 years); (3) Case reports/Case series with fewer than 10 patients; (4) Animal/in-vitro/in-vivo studies; (5) Letters to the editor; (6) Abstracts; (7) Unpublished data; (8) Review articles/Discussions; (9) Book chapters; (10) Non-English language articles; (11) Cadaveric studies.

Outcome measures

The primary outcome of this review was the incidence of facial nerve injury following SDLP, including both temporary and permanent facial nerve weakness.

The secondary outcomes included the incidence of Frey's syndrome, infection, facial contour defect, haematoma, seroma, greater auricular nerve injury, tumour recurrence, first bite syndrome, salivary function and length of hospital stay.

Literature search strategy

Searches of the electronic databases of MEDLINE, Embase, CINAHL, PUBMED, Google scholar, and the Cochrane Central Register of Controlled Trials (CENTRAL) were undertaken. The last search was performed on 23 August 2025, using the terms “selective deep lobe parotidectomies”, “benign”, “malignant”. No date restrictions were applied. The terms were combined using the operators “AND” and “OR”. To ensure comprehensive coverage, the bibliographies of relevant articles were also examined.

Selection of studies

All identified records were imported into Zotero (Version 7.0.24, macOS)¹⁸ for deduplication and screening. Titles and abstracts were initially screened by all authors. Full texts of shortlisted articles were then independently reviewed for eligibility by two authors (IB and MM), with discrepancies resolved through discussion and consensus.

Data extraction and management

An electronic data extraction spreadsheet in line with the Cochrane's data collection form for intervention was created. A pilot test was performed with the spreadsheet extracting data from articles selected and adjusted accordingly.

Data synthesis and statistical analysis

Data analysis was carried out using openMetaAnalysis software. For single-arm evaluations of complication rates involving dichotomous data, the untransformed proportion metric was applied, and where substantial heterogeneity was present, a generic inverse variance function was used. All analyses were performed on a random effects model with results displayed on forest plots with 95% confidence intervals (CI). Heterogeneity was assessed with the Cochran Q test (χ^2) and quantified using the I^2 statistic, interpreted as follows: 0–25% low heterogeneity, 25–75% moderate heterogeneity, and >75% high heterogeneity.

Methodological quality and risk of bias assessment

All eight studies included in the systematic review and meta-analysis were assessed for methodological quality and potential sources of bias using the Newcastle–Ottawa Scale.¹⁹ This tool evaluates non-randomised studies across three domains: selection, comparability, and outcome, employing a star-based scoring system with a maximum of nine stars per study.

Results

Literature search results

The literature search initially identified 62 articles. Following the removal of duplicates and screening, eight studies met the eligibility criteria (Fig. 1, Table 1)^{4,6,7,12,14–16}. Among the eight included studies (published between 1997 and 2024), four were SDLP case series (sample sizes ranging from 19 to 177) and four were retrospective cohort studies (sample sizes ranging from 11 to 22), comprising a total of 299 patients. Seven of the studies were retrospective in design. Follow up duration differed between series.

Across the included studies, all tumours were benign (Table 2). Histopathological analysis showed that pleomorphic adenoma was the most common diagnosis, occurring in 225 of 291 cases (75.3%). The remaining 74 cases (22.7%) including Warthin's tumour (n = 34), basal cell adenoma (n = 13), oncocytoma (n = 8), benign lymphoepithelial cyst (n = 5), simple benign cyst (n = 2), and schwannoma (n = 3). Additional rare lesions were reported, including lipoma (n = 1), neurofibroma (n = 1), solitary fibrous tumour

(n = 1), haemangioma (n = 2), reactive lymphadenopathy (n = 1), and two non-diagnostic cases.

No malignant tumours were identified within any of the SDLP cohorts. The few malignant pathologies within these studies (Wallerius et al)⁶ were confined to total parotidectomy cases and were excluded from this pooled analysis.

Primary outcomes

Temporary facial nerve injury

Seven studies reported on postoperative temporary facial nerve injury. This included 263 patients, among whom 66 developed postoperative weakness (Fig. 2). The untransformed proportion meta-analysis demonstrated an incidence of 24.2% (untransformed proportion metric 0.242, 95%CI 0.19 to 0.30%, $p < 0.001$) with low heterogeneity ($I^2 = 39.08$, $p = 0.131$).

Permanent facial nerve injury

Eight studies reported on permanent facial nerve injury, with permanent weakness defined as a persisting clinical deficit beyond 12 months postoperatively. Among the 162 patients

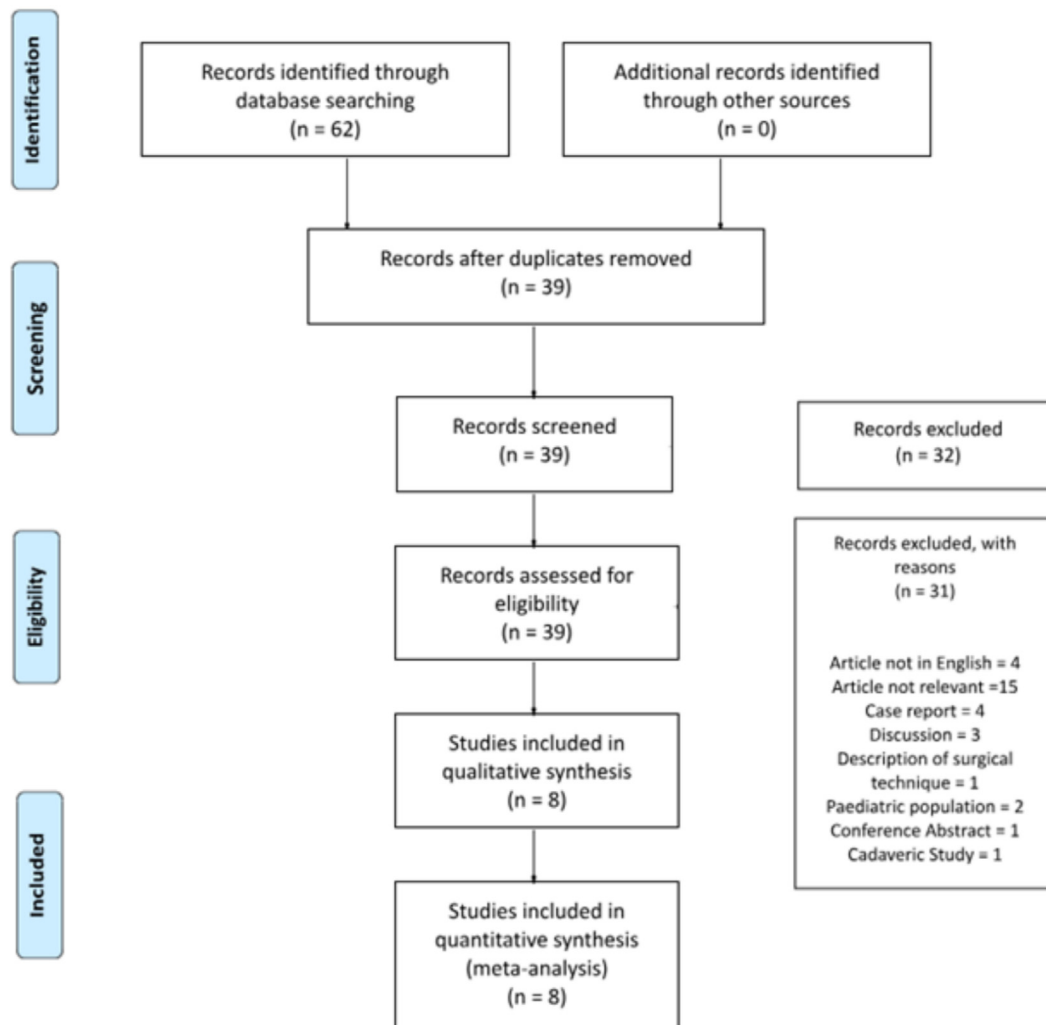


Fig. 1. Prisma flow diagram.

Table 1
Demographic variables from all eight studies including study design, age and sex distribution, tumour pathology and follow up period.

First author, year, reference	Publication type	Number of patients	Age, mean (SD)	Sex distribution, M:F	Length of hospital stay, (days) mean (SD)	Tumour pathology, (n)		Tumour size, (mm) mean (SD)	Follow up period, (weeks) mean (SD)
						Pleomorphic adenoma	Other		
Leverstein, 2008 ⁴	Retrospective cohort study	16	46.73 (51.08)	N/A	N/A	16	0	N/A	412 (median)
Colella, 2006 ¹⁴	Retrospective cohort study	12	41 (10.57)	8:4	N/A	12	0	18.5 (4.2)	78
Roh, 2008 ¹⁶	Prospective case series	19	46 (27.92)	8:11	N/A	12	7	43 (19.5)	165.3 (115.3)
Sesenna, 2013 ¹²	Retrospective cohort study	11	42.8 (4.86)	4:7	3.4 (1.23)	9	2	N/A	294.6 (165.75)
Vaiman, 2015 ⁷	Case series	14	40.64 (9.57)	10:4	N/A	7	7	20.29 (5.54)	96
Roh, 2023 ¹¹	Case series	28	44.0 (12.9)	15:13	N/A	28	0	34.5 (9.4)	471.5 (200.8)
Wallerius, 2023 ⁶	Case series	177	57 (15.65)	122:55	1	128	49	N/A	65 (median)
Bayram, 1997 ¹⁵	Retrospective cohort study	22	47.3 (15.8)	10:12	N/A	13	9	34 (9)	311.5 (92.1)

Table 2
Pathological diagnoses across the selective deep lobe parotidectomy (SDLP) population.

Author	SDLP cases (n)	Pleomorphic adenoma	Warthin's tumour	Basal cell adenoma	Oncocytoma	Benign lympho-epithelial cyst	Simple cyst	Schwannoma	Other
Leverstein, 2008 ⁴	16	16	–	–	–	–	–	–	–
Colella, 2006 ¹⁴	12	12	–	–	–	–	–	–	–
Roh, 2008 ¹⁶	19	12	6	1	–	–	–	–	–
Sesenna, 2013 ¹²	11	9	–	–	–	–	–	–	Non-diagnostic 2
Vaiman, 2015 ⁷	14	7	6	–	–	–	–	–	Haemangioma 1
Roh, 2023 ¹¹	28	28	–	–	–	–	–	–	–
Wallerius, 2023 ⁶	177	128	16	12	8	5	2	2	Neurofibroma 1; Lipoma 1; SFT 1; Monomorphic adenoma 1
Bayram, 1997 ¹⁵	22	13	6	–	–	–	–	1	Haemangioma 1; Reactive LAP 1
Total (8 studies)	299	225	34	13	8	5	2	3	9

SFT: Solitary fibrous tumour; LAP: lymphadenopathy.

with adequate follow up, only three were reported to have permanent facial nerve dysfunction (Fig. 3). The untransformed proportion meta-analysis indicated an incidence of 3% (untransformed proportion metric 0.030, 95%CI 0.00 to 0.06%, $p = 0.022$) with no observed heterogeneity ($I^2 = 0\%$, $p = 0.978$).

Three studies, Colella et al,¹⁴ Wallerius et al,⁶ and Bayram et al,¹⁵ used the House–Brackmann (HB) scale, a standard system for grading facial nerve function after surgery or injury (Grade I = normal, symmetrical movement; Grade VI = complete paralysis). Among these, Wallerius et al⁶ reported early postoperative deficits ranging from HB II–IV, with all patients achieving HB I by one year. Bayram et al¹⁵ described three cases (13%) of temporary facial nerve weakness graded as HB III, all of which resolved within 2 months. Colella et al¹⁴ reported transient weakness in five of twelve patients, without specifying HB grades numerically, but all recovered to HB I by 6 months.

Secondary outcomes

Frey's syndrome

Seven studies reported the occurrence of Frey's syndrome following SDLP (Fig. 4). Across these studies, two events

were identified among 243 patients. An untransformed proportion metric analysis evidenced an incidence of 1.1% (untransformed proportion metric 0.011, 95%CI 0.00 to 0.02%, $p = 0.097$). There was no observed heterogeneity ($I^2 = 0\%$, $p = 0.929$).

Infection

Three studies (Vaiman et al,⁷ Wallerius et al,⁶ Bayram et al¹⁵) reported on postoperative infection following SDLP (Fig. 5). Among 189 patients, only a single case was documented, an untransformed proportion metric analysis evidenced an incidence of 0.8% (untransformed proportion metric 0.008, 95%CI -0.005 to 0.020%, $p = 0.223$). There was no observed heterogeneity ($I^2 = 0\%$, $p = 0.759$).

Facial contour defect

Four studies (Roh & Park,¹⁶ Sesenna et al;¹² Wallerius et al;⁶ Bayram et al¹⁵) assessed facial contour defects after SDLP (Fig. 6). Two studies reported cosmetic outcomes qualitatively, with 'excellent outcome' considered equivalent to 'no defect' for statistical analysis. Across 214 patients, 34 developed a contour defect. An untransformed proportion metric analysis evidenced an incidence of 11.8% (untransformed proportion metric 0.118, 95%CI 0.00 to 0.24%,

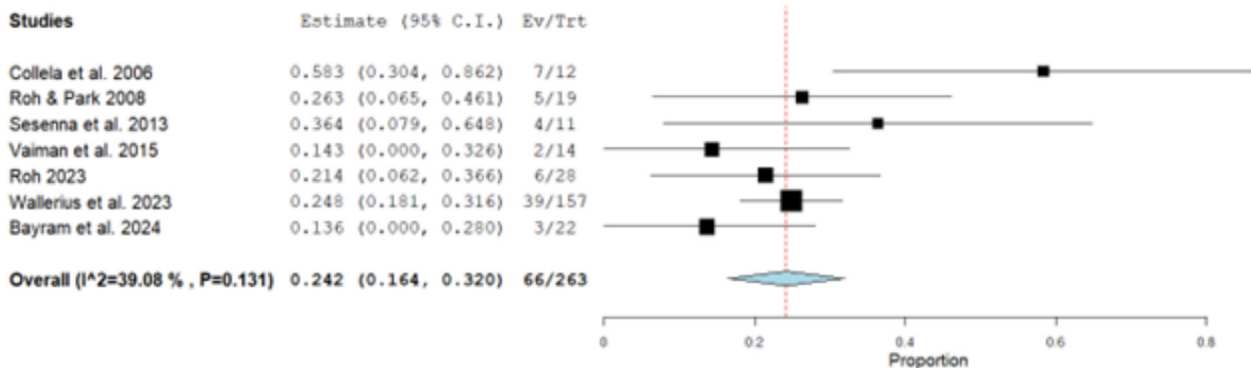


Fig. 2. Forest plot demonstrating incidence of temporary facial nerve injury following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.242 (95%CI: 0.164 to 0.320%, $p < 0.001$).

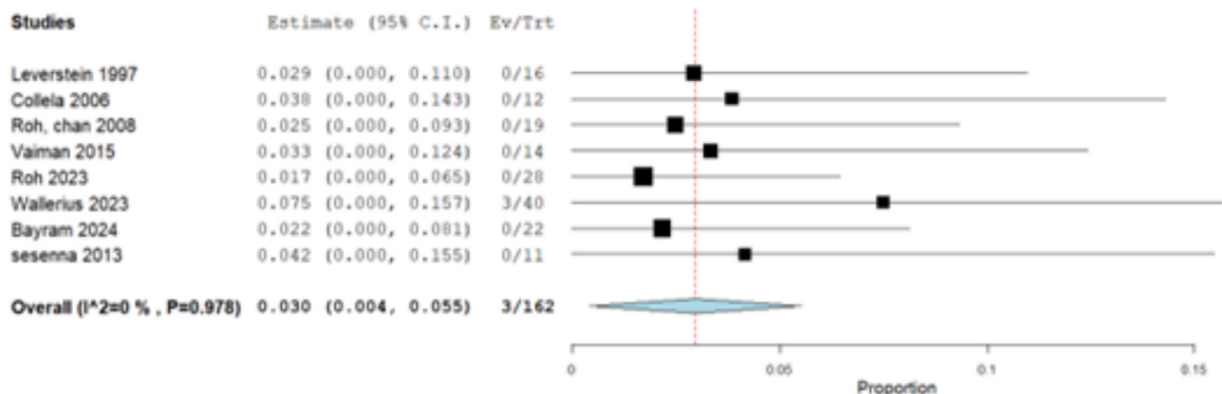


Fig. 3. Forest plot demonstrating incidence of permanent facial nerve injury following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.03 (95%CI, 0.004 to 0.055%, $p = 0.022$).

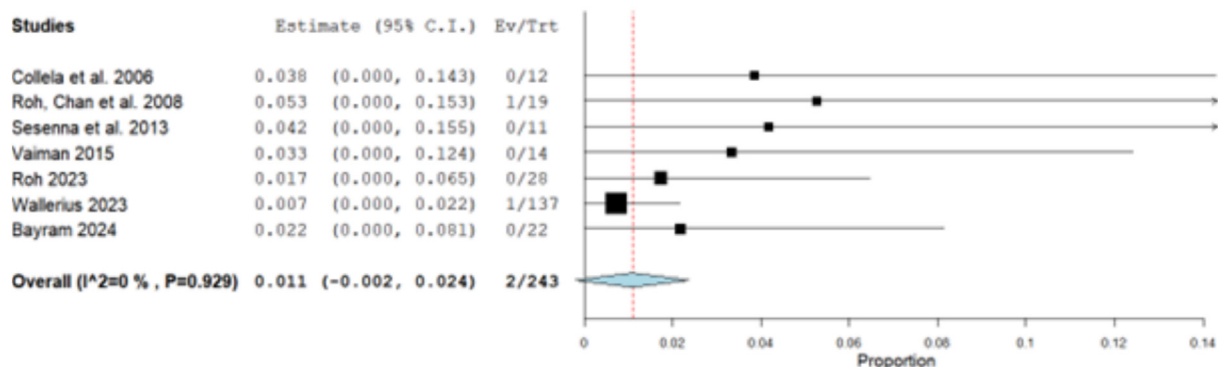


Fig. 4. Forest plot demonstrating incidence of Frey's syndrome following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate; 0.011 (95%CI, 0.002 to 0.024%, $p = 0.097$).

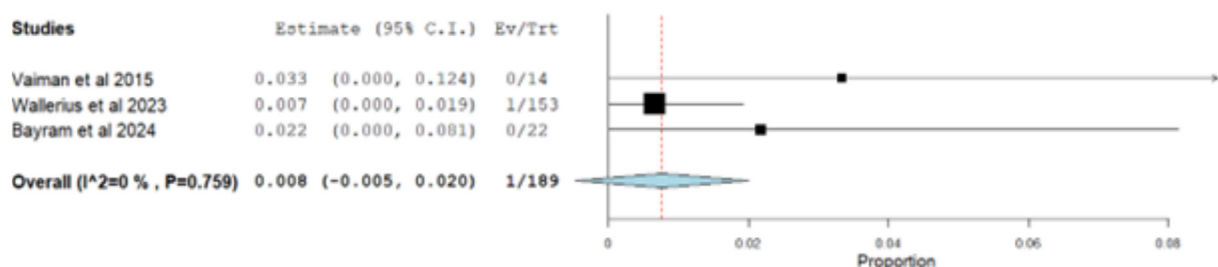


Fig. 5. Forest plot demonstrating incidence of infection following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.008 (95%CI -0.005 to 0.020%, $p = 0.223$).

$p = 0.097$). There was no observed heterogeneity ($I^2 = 0\%$, $p = 0.010$).

Haematoma

Three studies (Roh 2023;¹¹ Wallerius et al;⁶ Bayram et al¹⁵) reported the incidence of haematomas following SDLP (Fig. 7). Across 215 patients, seven cases were observed, an untransformed proportion metric analysis evidenced an incidence of 3.1% (untransformed proportion metric 0.031, 95%CI 0.01 to 0.06%, $p = 0.008$). There was no observed heterogeneity ($I^2 = 0\%$, $p = 0.676$).

Seroma

Three studies (Sesenna et al;¹² Wallerius et al;⁶ Bayram et al¹⁵) reported on seroma formation following SDLP

(Fig. 8). Among 210 patients, seven cases were identified. An untransformed proportion metric analysis evidenced an incidence of 2.7% (untransformed proportion metric 0.027, 95%CI 0.00 to 0.05%, $p = 0.044$). Heterogeneity was low ($I^2 = 3.66\%$, $p = 0.354$).

Greater auricular nerve (GAN) injury

Four studies (Roh & Park;¹⁶ Roh;¹¹ Wallerius et al;⁶ Bayram et al¹⁵) assessed GAN injury, typically presenting as ear numbness, after SDLP (Fig. 9). Across 227 patients, 81 reported postoperative numbness, which was temporary in all the cases. An untransformed proportion metric analysis evidenced an incidence of 36.7% (untransformed proportion metric 0.367, 95%CI 0.29 to 0.45%, $p < 0.001$). Heterogeneity was low ($I^2 = 19.77\%$, $p = 0.291$).

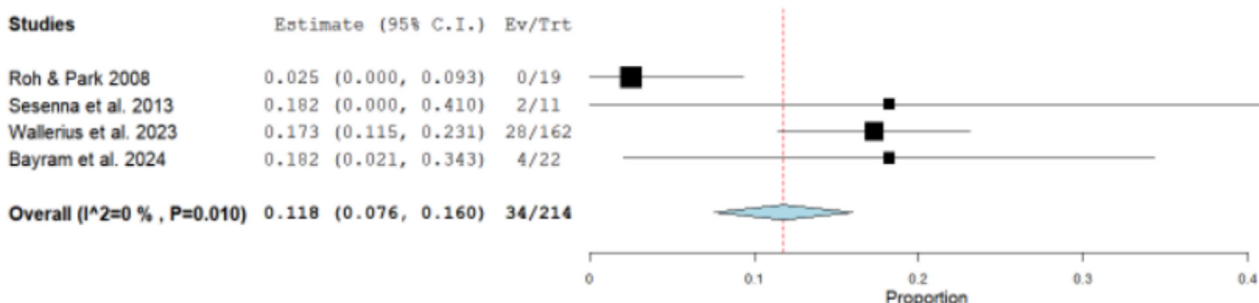


Fig. 6. Forest plot demonstrating incidence of facial contour defect following selective deep lobe parotidectomy utilising the untransformed proportion metric analysis. Overall estimate: (95%CI 0.002 to 0.024%, $p = 0.097$).

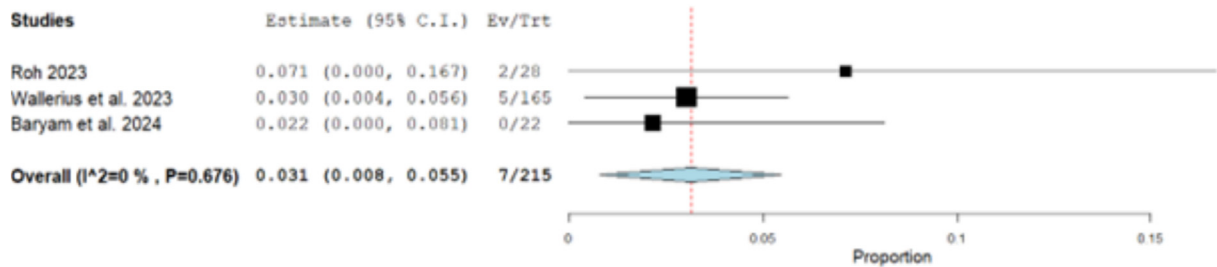


Fig. 7. Forest plot demonstrating incidence of haematoma following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.031 (95%CI: 0.008 to 0.055%, $p = 0.008$).

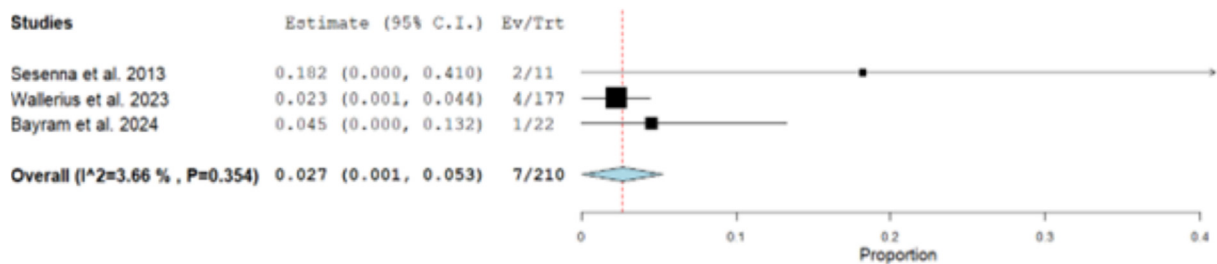


Fig. 8. Forest plot demonstrating incidence of seroma following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.027 (95%CI, 0.001 to 0.053%, $p = 0.044$).

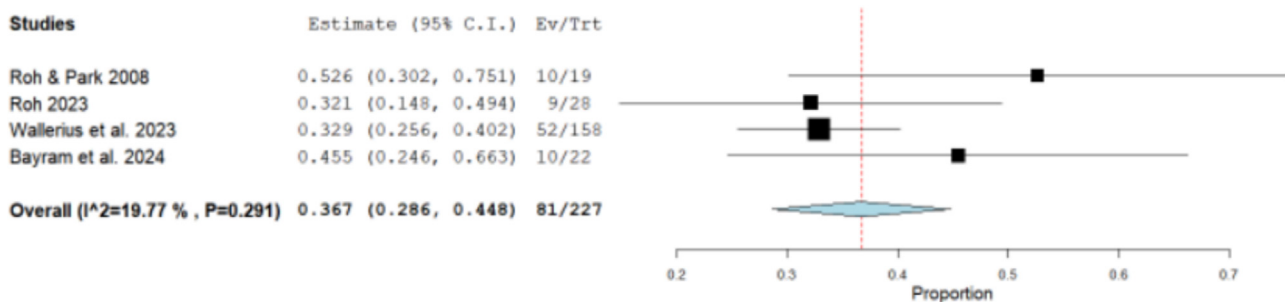


Fig. 9. Forest plot demonstrating incidence of greater auricular nerve injury following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.367 (95%CI, 0.286 to 0.448%, $p < 0.001$).

Tumour recurrence

Seven studies evaluated tumour recurrence after SDLP (Fig. 10). Across 285 patients, only one recurrence was documented. An untransformed proportion metric analysis evidenced an incidence of 0.8% (untransformed proportion metric 0.8, 95%CI 0.00 to 0.02%, $p = 0.122$). There was no observed heterogeneity ($I^2 = 0\%$, $p = 0.945$).

First-bite syndrome

First-bite syndrome, defined as parotid region pain occurring with the first bite of a meal and improving with continued chewing, was examined in two studies. Wallerius et al.⁶ reported a higher incidence following SDLP (22.9%) compared with total parotidectomy (8.97%), whereas Bayram et al.¹⁵ observed no cases among 22 patients. As few studies addressed this complication, meta-analysis was not performed.

Salivary function

Three studies reported salivary outcomes. Roh and Park¹⁶ found postoperative salivary flow on the operated side at 74% of baseline, with no significant difference from the contralateral gland (0.45 ± 0.25 vs 0.62 ± 0.29 ml/min). Colella et al.¹⁴ reported preserved radionuclide uptake (CI 5.5 ± 3.6 ; CI ratio 84%). Roh¹¹ found similar pre-stimulation uptake ratios (5.4 vs 5.8) and salivary excretion fractions (61.6% vs 65.5%) between operated and non-operated glands. Differences in methodology prevented quantitative pooling.

Length of hospital stay

Several additional outcomes were reported across the included studies. Two studies (Sessena et al.¹² Bayram et al.¹⁵) documented the length of hospital stay following SDLP, with mean durations ranging from 3.4 ± 1.23 to 3.9 ± 1.3 days. Owing to the limited number of studies, quantitative meta-analysis was not undertaken.

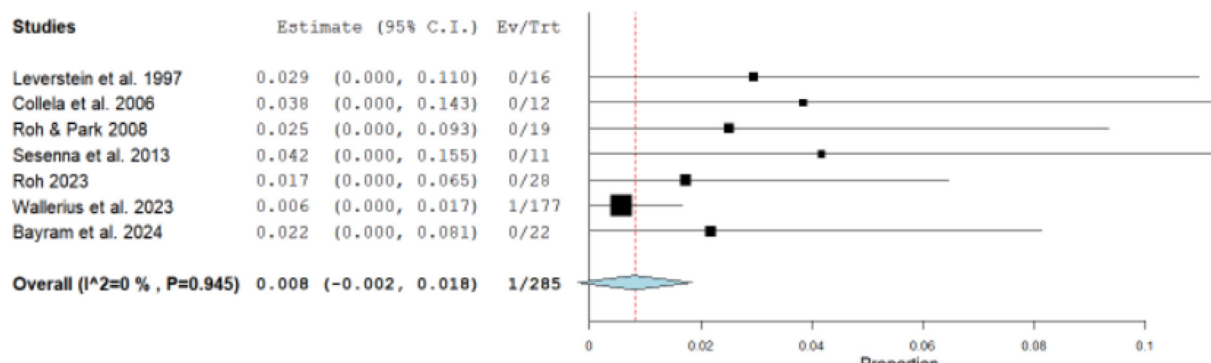


Fig. 10. Forest plot demonstrating incidence of tumour recurrence following selective deep lobe parotidectomy using the untransformed proportion metric analysis. Overall estimate: 0.008 (95%CI, -0.002 to 0.018%, $p = 0.122$).

Methodological quality and risk of bias assessment

Five studies were rated moderate risk of bias and three low risk. Scoring discrepancies were resolved through discussion (Table 3).

Discussion

This systematic review and meta-analysis, the first to the authors' knowledge on this topic, synthesises the available evidence on the outcomes of selective deep lobe parotidectomy (SDLP) for benign tumours. Based on data from 299 patients across eight studies, the analysis indicates that SDLP is a safe and effective procedure, characterised by a low incidence of permanent complications and tumour recurrence.

Preservation of the facial nerve remains the principal determinant of functional morbidity following parotid surgery. The pooled analysis demonstrated temporary facial weakness in 24.2% of patients, with permanent deficits in only 3%, indicating that SDLP carries a low risk of long-term dysfunction. However, transient weakness remains relatively common, although it typically resolves over time.

Comparative data support the notion that SDLP represents a favourable, or at least equivalent, alternative to total parotidectomy (TP) with respect to facial nerve preservation. Wallerius et al.⁶ reported immediate postoperative facial weakness in 51% of total parotidectomy (TP) cases compared with 24% following SDLP, while Leverstein et al.⁴ observed 5–7% rates of permanent facial nerve palsy after TP for pleomorphic adenoma. In the broader literature, Mashrah et al.²⁰ identified temporary facial nerve weakness

in 36.3% of 648 patients and permanent weakness in 2.9% of 585 patients, reinforcing the low risk of long-term morbidity comparable to, or better than, more extensive resections.²⁰

The House–Brackmann (HB) scale was used in three of the included studies, demonstrating that grading the extent of facial nerve injury is both feasible and desirable for evaluating postoperative outcomes. However, in two of these studies the grading results were not clearly reported, which limits the ability to interpret the severity of weakness and its short-term impact on quality of life. While the HB scale is quick, simple, and widely recognised, it provides only a broad categorical assessment of facial function. More refined systems, such as the Sunnybrook Facial Grading System, offer superior reliability, regional specificity, and sensitivity to clinical change.²¹ Future research should therefore employ standardised, validated grading systems to enhance comparability and clinical relevance.

Rates of Frey's syndrome were notably low, occurring in only 1.1% of SDLP cases compared with 53% reported across 604 patients in the meta-analysis by Mashrah et al.²⁰ Hussain and Murray²² suggested that the incidence of this complication is likely to be reduced when the superficial lobe remains attached to the overlying skin, thereby limiting aberrant reinnervation. This finding is clinically significant, as Baek et al.²³ identified Frey's syndrome as a major postoperative quality-of-life concern for patients following parotidectomy. A reduction of this magnitude is therefore likely to translate into a meaningful and sustained improvement in quality of life for a substantial proportion of patients.

Table 3
Newcastle-Ottawa scale assessing risk of bias for cohort studies.

First author, year and reference	Selection	Comparability	Outcome	Total	Risk
Leverstein, 1997 ⁴	**		***	5	Moderate
Colella, 2006 ¹⁴	****	*	***	8	Low
Roh, 2008 ¹⁶	***		***	6	Moderate
Sesenna, 2013 ¹²	***	*	***	7	Low
Vaiman, 2015 ⁷	**		**	4	Moderate
Roh, 2023 ¹¹	***		***	6	Moderate
Wallerius, 2023 ⁶	***	*	***	7	Moderate
Bayram, 2024 ¹⁵	****	*	***	8	Low

Aesthetic outcomes were also favourable, with 88.2% achieving satisfactory contour preservation Colella,¹⁴ Roh and Park,¹⁶ and Sesenna¹² described how the preserved superficial lobe can be repositioned intraoperatively to reconstruct the parotid bed, to yield good cosmetic results. Only Wallerius et al⁶ reported on the use of fat-graft reconstruction following SDLP, which was required far less frequently than after TP (1% vs 21%). Consistent with these findings, a large cohort study of 3229 TP patients found that 17.8% underwent a concurrent volume-restoration procedure (Bovenzi et al, 2019).²⁴ Similarly, Hussain and Murray²² reported that SDLP may preclude the need for secondary corrective procedures, having also observed satisfactory outcomes without reconstruction. Collectively, these findings indicate that SDLP markedly reduces the likelihood of secondary corrective procedures, associated healthcare costs, and operative risks.

Other complications, including haematoma, seroma, and infection, were rare and comparable to the rates reported for total parotidectomy (TP) by Wallerius et al.⁶ Greater auricular nerve numbness occurred in 36.7% of cases across the included studies, which is slightly higher than the 25% reported for TP by Wallerius et al.⁶ However, heterogeneity for this outcome was greater than for others ($I^2 = 19.7\%$), limiting the precision of the pooled estimate. Further research with larger, standardised cohorts is required to provide more reliable and generalisable data.

Tumour recurrence was exceptionally low, occurring in 0.8% of cases across the seven included studies, compared with a 1.4% recurrence rate among 148 TP patients in the review by Mashrah et al,²⁰ which likewise included only benign tumours. These findings suggest that recurrence rates following SDLP are at least comparable to, and potentially better than, those reported after more extensive procedures when performed in the appropriate cohort of benign cases. This reinforces that limited resection of the deep lobe does not compromise oncological safety in benign disease.

Salivary function was objectively preserved following SDLP. However, direct comparison with TP cohorts was not possible within this review. Such data would be valuable, as existing literature suggests that more extensive resections can reduce residual salivary output, contributing to xerostomia and reduced oral comfort.²⁵

Finally, first bite syndrome emerged as a functional complication of interest. Wallerius et al⁶ reported higher rates following SDLP compared with TP, whereas Bayram et al¹⁵ reported none. These discrepancies may reflect differences in technique, follow up duration, or under reporting. Given its potential impact on quality of life, prospective studies with standardised assessment of first-bite syndrome are warranted.

Limitations

This review has several limitations. All included studies were non-randomised, and only two had a total parotidectomy comparison group. Most were small, retrospective case series

which introduces a high risk of selection bias. There was significant heterogeneity in duration of follow up, outcome definitions, and reporting standards across the studies. We did not perform a formal cost-effectiveness analysis, although the reduced need for secondary reconstructive procedures suggests that SDLP may be a more cost-effective strategy. Finally, our search was limited to English language publications, which may have excluded relevant studies from other regions.

Future research

Future research should include prospective or randomised studies comparing SDLP with total parotidectomy, using standardised complication definitions and uniform outcome measures. Longer follow up is needed to assess long-term safety. The role of SDLP in selected malignant cases requires further study. Patient-reported outcomes, including cosmesis, function, and quality of life, should be incorporated. The impact of surgical approach, including incision type, needs evaluation. Comparisons between SDLP and extracapsular dissection may also be informative.

Conclusion

This review shows that selective deep lobe parotidectomy is a safe and effective option for benign deep-lobe tumours. Across eight studies, permanent facial weakness was low, cosmetic outcomes were favourable, salivary function was preserved, and recurrence rates were rare. SDLP avoids many of the morbidities associated with total parotidectomy while maintaining oncological safety in benign disease. Larger prospective and randomised studies with standardised reporting are needed to confirm long-term outcomes and further define its role in parotid surgery.

Authorship declaration

I confirm that I. Burrridge and M. Marwat are co-first authors of this work, having contributed equally to the conception, development, analysis, and manuscript preparation. All listed co-authors have made significant contributions to the research, analysis, and/or preparation of this manuscript.

Contribution statement

All authors contributed to data extraction, analysis, interpretation, and manuscript preparation in accordance with ICMJE authorship criteria. Co-first authors (I. Burrridge and M. Marwat) contributed equally to analysis, coordination of the review, and drafting of the manuscript.

Registration

This systematic review and meta-analysis was not registered in any public review registry (e.g., PROSPERO).

Protocol availability

A formal review protocol was not prepared prior to undertaking this review, and no publicly accessible protocol exists.

Amendments

No protocol or registration record was created; therefore, no amendments were made.

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Conflicts of interest

We have no conflicts of interest.

Availability of data and materials

All data used in this review were extracted from previously published studies.

Appendix A. Supplementary material

Supplementary material to this article can be found online at <https://doi.org/10.1016/j.bjoms.2026.03.007>.

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