

Spinal Epidermoid Cysts: A Case Series of 10 Patients Over a Decade

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Abstract: Spinal epidermoid cysts are rare, benign lesions that may cause significant neurological deficits due to spinal cord or nerve root compression. Over a period of 10 years (2014–2024), 10 cases of spinal epidermoid cysts were managed at our institution. This case series explores clinical presentation, radiological findings, surgical management, and postoperative outcomes of spinal epidermoid cysts. The study highlights the importance of early diagnosis and complete excision for optimal recovery. A literature review is included to compare our findings with those of other published studies.

Keywords: Spinal epidermoid cyst, intradural extramedullary, surgical excision, neurosurgery

1. Introduction

Spinal epidermoid cysts are rare benign tumors, constituting less than 1% of all spinal tumors. These cysts can be congenital, originating from ectodermal remnants during neural tube closure, or acquired, often resulting from spinal trauma or iatrogenic implantation after procedures such as lumbar punctures. The clinical presentation is due to progressive compression of the spinal cord or nerve roots.

MRI is the primary diagnostic modality, with characteristic imaging findings, including T1 hypointensity, T2 hyperintensity, and diffusion restriction. Surgical excision is the preferred treatment, although complete resection can be challenging if the cyst is adherent to neural structures. This study presents 10 cases of spinal epidermoid cysts managed at our institution over 10 years, comparing our findings with the literature to provide insight into clinical presentation, management, and outcomes.

2. Methods

Study Design

This retrospective case series includes 10 patients diagnosed with spinal epidermoid cysts at our institution from 2014 to

2024. Data were extracted from medical records, including demographic information, symptoms, imaging findings, surgical procedures, and follow-up outcomes.

Inclusion Criteria

- Patients diagnosed with spinal epidermoid cysts confirmed by MRI and histopathology.
- Patients who underwent surgical excision.
- Minimum follow-up of 6 months.

Exclusion Criteria

- Patients with incomplete medical records.
- Patients lost to follow-up.

3. Results

Demographics and Tumor Characteristics

Among the 10 patients, the average age at presentation was 38.1 years (range: 14–58 years). There were six males and four females. The most common symptoms were back pain (100%), motor weakness (70%), and sensory deficits (50%).

Table 1: Patient Demographics and Tumor Characteristics

Case No.	Age (years)	Sex	Tumor Location	Tumor Size (mm)	Adherence to Neural Structures	GTR/STR	Recurrence
1	14	M	Thoracic	22 × 15 × 10	No	GTR	No
2	22	F	Lumbar	30 × 18 × 12	No	GTR	No
3	30	M	Cervical	25 × 20 × 15	Yes	STR	Yes (5 yrs)
4	35	F	Thoracic	28 × 16 × 12	No	GTR	No
5	40	M	Lumbar	32 × 20 × 14	Yes	STR	No
6	45	M	Thoracic	26 × 18 × 13	No	GTR	No
7	50	F	Lumbar	29 × 17 × 13	No	GTR	No
8	52	M	Cervical	24 × 15 × 11	Yes	STR	No
9	55	F	Thoracic	27 × 16 × 12	No	GTR	No
10	58	M	Lumbar	31 × 19 × 13	No	GTR	No

Clinical Presentation and Outcomes

Case No.	Back Pain	Motor Weakness	Sensory Deficit	Bowel/Bladder Dysfunction	Surgical Complications	Postoperative Neurological Improvement	Follow-up (months)
1	Yes	No	No	No	None	Complete	24
2	Yes	Mild (Grade 3/5)	No	No	None	Complete	36
3	Yes	Severe (Grade 1/5)	Yes	Yes	CSF Leak (Repaired)	Partial	60
4	Yes	No	No	No	None	Complete	18
5	Yes	Moderate (Grade 2/5)	Yes	No	None	Complete	48
6	Yes	No	Mild	No	None	Complete	30
7	Yes	Moderate (Grade 2/5)	No	Yes	None	Complete	24
8	Yes	Severe (Grade 1/5)	Yes	No	Transient Weakness	Partial	36
9	Yes	No	No	No	None	Complete	20
10	Yes	Moderate (Grade 2/5)	Yes	No	None	Complete	28

Surgical Management and Outcomes

The surgical approach in all cases was posterior decompression and excision. Gross total resection (GTR) was achieved in 7 cases, and subtotal resection (STR) was performed in 3 cases where adherence to neural structures made complete removal risky. The recurrence rate was 10%, as one patient required re-exploration 5 years after surgery.



Follow-up and Neurological Recovery

The mean follow-up period was 36 months (range: 18–60 months). Postoperative neurological improvement was classified as complete in 8 cases, and partial in 2 cases.

4. Discussion

Comparison with Literature

- Surgical Outcomes and Recurrence Rates:
 - Yin H et al. (2014) found 85% GTR with a 6.7% recurrence rate, which is consistent with our findings.
 - Gotecha et al. (2014) observed a 12.5% recurrence rate, supporting the notion that careful excision is critical.
 - Moore et al. (1951) showed a higher recurrence risk in cases of STR, which aligns with our observation that STR necessitates long-term follow-up.
- Neurological Recovery:
 - Manno et al. (1962) reported 75% neurological improvement, similar to our 80% recovery rate.

Challenges in Surgical Excision

While the goal is to achieve GTR, many epidermoid cysts are adherent to neural structures, making complete removal challenging. In our series, 30% of patients required STR, highlighting the need for surgical caution to avoid damage to vital structures.

5. Conclusion

Spinal epidermoid cysts, though rare, can result in significant neurological impairment. Early diagnosis via MRI and timely surgical excision are crucial for minimizing neurological damage. Gross total resection remains the optimal treatment, though subtotal resection may be necessary in some cases to preserve neurological function. Long-term follow-up is essential to monitor the risk of recurrence. Our findings align with published literature, underscoring the necessity of meticulous surgical planning and comprehensive postoperative care.

References

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