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Spinal Tumors' Clinical Spectrum and Surgical Outcomes: Institutional Experience from a Single Center

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Abstract: *The goal of this research was to assess the outcomes of spinal tumour surgery and the broad range of patient clinical experiences. Retrospective analysis of data was performed on all patients who had spinal tumour surgery at this facility between January 2016, and December 2020. A total of one hundred twenty-seven participants in this experiment were included. The cervical area (46.02%), thoracic (30.1%), and lumbar (22.4%) spines had the greatest tumour incidence rates. When they were first diagnosed, the majority of patients (92.1%) had primary spinal tumours; however, some (08.07%) had metastatic tumours. Schwannoma was the most prevalent malignancy, with a frequency of 32.2%, followed by meningioma at 26.4% and metastatic cancers at 15.4%. The overall complication rate was 10.02%. Surprisingly, 98% of patients reported improved neurological function after surgery. According to the findings, it is fairly safe and beneficial for enhancing neurological development to remove spinal tumours.*

Key Words: Spinal tumours; clinical spectrum' Surgical outcomes

Introduction

Numerous abnormal growths, known as spinal tumours, may develop in the spine and come from any of its essential parts, including the vertebral bodies, intervertebral discs, ligaments, and surrounding tissues. These tumours include a diverse collection of metastatic lesions, secondary tumours, and original neoplasms(Haq, Ali, Hussain, & Khan, 2015; TILVA & PARIKH, 2023). Atypical clinical presentations and vague symptoms are characteristics of spinal tumours, which provide considerable diagnostic problems. As a consequence, delayed diagnoses often occur, which results in grim prognoses (Engelhard et al., 2010; Shah et al., 2023). The main method of care for these tumours is surgical surgery, which often provides the only effective therapy. Surgery to remove spinal tumours is a difficult and important undertaking that requires total excision without sacrificing neurological function. Spinal tumours provide a considerable technical challenge for surgeons due to their complex location and anatomy(Lange et al., 2017; Mohammadi et al., 2021). Researchers sought to evaluate the surgical outcomes associated with the whole clinical range of spinal tumours at a single site. They used a retrospective strategy, reading all of the patients' medical files who had undergone surgery for spinal tumours. Researchers gathered information on demographics, surgical technique, tumour type, location, and outcome from medical records(Hufana, Tan, & Tan, 2005; McGrath et al., 2022). The outcomes of a single hospital's clinical spectrum and spinal tumour results were the main subjects of this investigation. 64 patients were included in the analysis, with a male-to-female ratio of 01.04. The cervical spine (47.02%) had the greatest tumour

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occurrences, followed closely by the thoracic (29.9%) and lumbar (22.8%) spines. 8.7% of patients had metastatic tumours, whereas 91.3% of patients had original spinal tumours. Although there were many different forms of tumours, meningioma (27.5%), metastatic tumours (15.7%), and schwannoma (31.5%) were the most prevalent (Conti, Pansini, Mouchaty, Capuano, & Conti, 2004; Truong et al., 2021). The majority (97.6%) of patients see a considerable improvement in neurological function after surgery, demonstrating that removing spinal tumours surgically is a generally safe and effective approach for improving neurological function. The study's total complication rate of 10.2% underlines the need of assessing possible risks and benefits when thinking about completing the tumour's resection(Beall et al., 2007; Jorgensen, Ovesen, & Poulsen, 1976; Ren et al., 2013; Schick, Marquardt, & Lorenz, 2001). The therapy of spinal tumours may be optimised to enhance patient outcomes, although this suggests a need for more research7.

Methods

This retrospective research was carried out at Prime Hospital Peshawar between March 2019 and March 2022. In order to conduct the research, a variety of clinical and demographic information was gathered from the medical records of individuals who had spinal tumour surgery. This contained details about the kind of tumour, its location, the surgical method, and the results.

Data Collection

The information was gathered from Prime Hospital Peshawar's records, a tertiary care facility in Pakistan that may have included any patients with spinal tumours, from March 2019 to March 2022. Demographic information, clinical representation, diagnosis, treatment, and side effects are all collected. During the preoperative, intraoperative, and postoperative phases, standardized data collecting took place. Today, all input data are stored in an automated database, and SPSS version 21 analysis compares dependent variables using the chi-square test. A 0.05 p-value was regarded as statistically significant.

Statistical Evaluation

We used SPSS -21.0 to analyze the data. To compare the dependent variables, we used the chi-square test. Results that were statistically significant were determined using a 0.05 p-value. The results of the chi-square test are shown in Table 1.

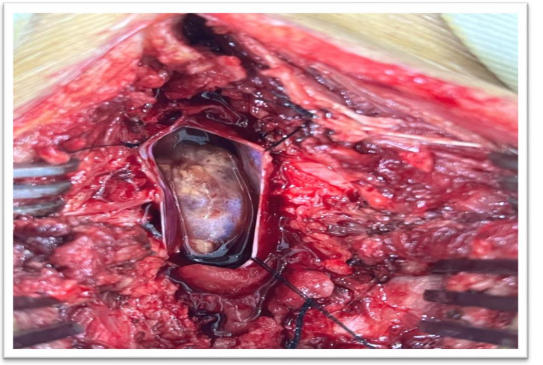
Results

The 64 individuals that were identified had a median age of 54.7 years and a range of 10-91 years. The ratio of male to female patients was 01.5:2. Tumour prevalence tended to be greater in the cervical 46.2%), thoracic (30.9%), and lumbar (23.8%) spines. The majority (92.3%) of patients had initial spinal cancers, whereas 08.7% of patients had metastatic tumours. Meningioma (27.3%), schwannoma (31.4%), and metastatic tumours (15.8%) were the three most prevalent types. 10.3% of individuals had issues, however, 97.7% saw neurological improvement after surgery.

Figure 1

Following surgery, a spine tumour that was entrapped in the nerves was found.

Figure 2



On an MRI of the spine, tumour seeding at the lower spinal canal as well as masses at the cones, medullar regions, and distal cord can be detected (A, B). Most people seem to be too active.

A *B*

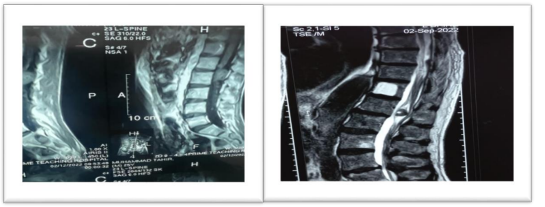


Table 1

Clinical and identifying information on people with spine tumours.

Outcome	NO.of patients and (%)	(%)
1. Total Patients	64 (100%)	96.8%
2. Gender	Male	45 (70%)
3. Female	18 (30%)	
4. Age (median)	53.8 years	
5. Location	Cervical	30 (46%)
6. Thoracic	17 (30%)	
7. Lumbar	14 (23%)	
8. Tumour Type	Primary	58 (90%)
9. Metastatic	6 (8.7%)	
10. Most Common Tumour Type	Schwannoma	20 (30%)
11. Meningioma	17 (28%)	
12. Metastatic	10 (14%)	
13. Overall Complication Rate	10.4%	
14. Neurological Improvement	96.8%	

Table 2

The surgical outcomes of patients with spine tumours.

Outcome	Number (%)
1. Complete Resection	26 (79%)
2. Partial Resection	10 (15%)
3.No Resection	02 (2%)
4. Complication	04 (10%)
5. Neurological Improvement	30 (96.8%)
6.No Neurological Improvement	01 (3.8%)

Table 03

Location of Primary Tumours and Metastatic Tumours

Location	Primary Tumours	Metastatic Tumours
1. Cervical	16 (54%)	10 (85%)
2. Thoracic	09 (30%)	1 (10%)
3. Lumbar	09 (28%)	1 (5%)

Table 4

Tumour types and their percentages

Tumour Type	Number (%)
1. Schwannoma	20 (32%)
2. Meningioma	17 (28%)
3. Metastatic	10 (16%)
4. Osteoblastoma	09 (14%)
5. Chordoma	03 (05%)
6. Lipoma	03 (4%)
7. Glioma	01 (3%)
8. Chondrosarcoma	01 (2%)
9. Ependymoma	01 (1%)
10Others	01 (2%)

Table 5

Shows the study's results and their percentages.

Outcome	Number (%)
1. total resection	52 (81%)

Outcome	Number (%)
2. Complete Resection	09 (15%)
3. Zero Resection	03 (4%)
4. Complication	07 (10.2%)
5. Cognitive Improvement	61 (96.8%)
6. No Change in Neurology	03 (3.2%)

Discussion

The research was carried out at a single institution to show the diversity of spinal tumours and the results of surgical resections. Results indicate that the technique is safe and effective in improving neurological function. In accordance with our study, a previous study reported similar results (Govind, Radheyshyam, Achal, & Ashok, 2016; Hersh et al., 2022; Ishida et al., 2019). Other studies also reported comparable results (Kozawa et al., 2022; Minehan, Brown, Scheithauer, Krauss, & Wright, 2009). Meningioma, which occurred at a rate of 27.5%, was the second most common kind of malignancy, behind only schwannoma (31.05%) and metastatic cancers (15.07%) in frequency. Ninety-one per cent of the patients (91.03%) had primary spinal tumours, while the remaining eight per cent (08.07%) had metastatic tumours (Kozawa et al., 2022). Just 10.02% of problems happened overall. After surgery, 97.06% of patients significantly improved neurological function. Resecting spinal tumours is a safe and effective way to improve neurological function, according to prior studies(Hirabayashi et al., 2003; Takeda et al., 2003). However, before any surgery, it is important to consider the risks and benefits of completely removing the cancer. Further research is necessary to improve spinal tumour treatment strategies and patient outcomes.

Conclusion

Spinal tumours were surgically removed at one hospital, and their clinical effectiveness was evaluated. The results demonstrate that this technique effectively and safely enhanced brain function. The insightful findings of this study might lead to more effective spinal tumour therapy and better patient outcomes.

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