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Microscopic Excision of Intradural Extra-Medullary Spinal Cord Tumors

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Abstract

Background: Intradural extra-medullary spinal cord tumors represent about 60-70% of all spinal cord tumors.

Aim of Study: The significant and dramatic improvement of most patient had IDEM spinal cord tumor is the main goal of surgery.

Patient and Method: During period of 10 years from 2014-2024, 30 patient of IDEM spinal cord tumor underwent to surgery.

Results: 30 patient underwent to surgery, 83.3% was female and 16.7% was male. Ranged from 30-60yrs as age group.

The most clinical presentation were back pain and radiculopathy followed by motor weakness and sphincter disturbance.

The most site was thoracic region, but the most common pathology was meningioma (66.7%) followed by schwanoma (20%) and hemangioblastoma (13.3%). The tumor was complete removal in all cases.

Conclusion: The aim to surgery for IDEM spinal cord tumor is complete removal of tumor.

Key Words: *Meningioma – Neurofibroma.*

Introduction

INTRADURAL extra-medullary spinal cord tumor represent 60-70% of all spinal cord tumors.

The aim of this study has to evaluate surgical outcome of intradural extra-medullary tumor removal and to clarify dramatic improvement of clinical presentation of patient **[1].**

Meningioma is the most common tumor of spinalcord, there is female predominance, 80% of these tumors affects thoracic region of spine **[2].**

The decision of surgical intervention in IDEM spinal cord tumor depend on location and site of tumor, clinical presentation of patient, patient status and neurosurgeon experiences **[3].**

Patients and Methods

In this study 30 patient underwent for surgical intervention during period 2014-2024 the most of patient were female 25 case represent (83.3%) and other were male 5 case represent (16.7%) the age of them range from 30 to 60 years.

Pre-operative spinal MRI: Post-operative MRI

Fig. (1): Meningioma MRI.

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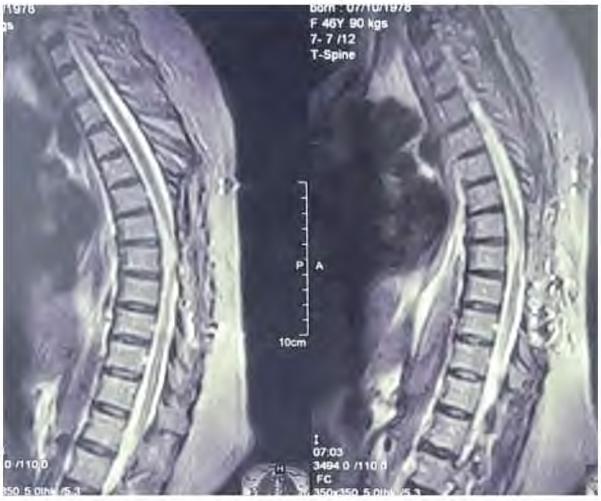


Fig. (2): Post-operative.

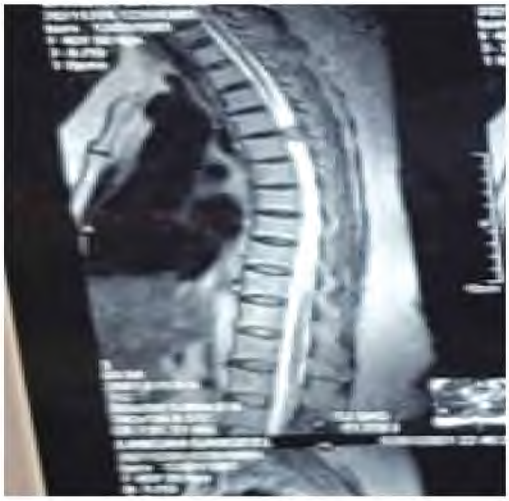


Fig. (3): Hemangiobblastoma MRI.

Fig. (4): Post-operative.

Fig. (5): Schwanoma (Schwanoma).

Fig. (6): Pre-operative MRI.

Fig. (7): Tumor post excision.

Surgical technique:

All patient underwent for G/A midline skin incision followed by sub periosteal dissection and reflection of Para spinal muscles was accomplished, then full laminectomy was done.

Then dura is opened along the midline and sutured laterally to the muscles under guidance of microscope.

The tumor is identified, some of them was dorsal to lateral and others ventrolateral.

Localization of tumor is the important step to provide clear visual operative field and more delicate maneuvers during removal of tumor if easy to be excision or internal debulking was done but if tumor attached tonerve root minimal nerve fibers may be cuties, no poor result were noted, after removal of tumor, proper hemostasis of tumor bed is performed using sargicele or fibrillar, then the dural layer was used to close the dura in water tight fashion.

Intra operative finding and tumor post excision:

Fig. (8): Intra operative.

Fig. (9): Tumor post excision.

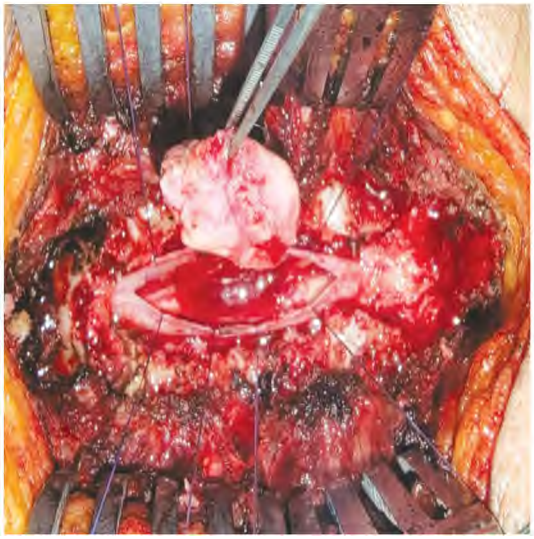


Fig. (10): Intra operative.

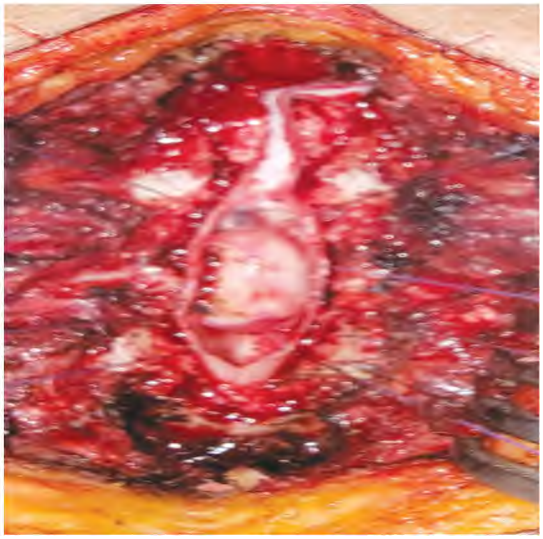


Fig. (11): Tumor after excision.

Results

This study include 30 patient 25 female represent (83.3%) and 5 male represent (16.7%) the most age group affected was from 40-50 years represent (66.7%).

Table (1)

Age	No. of patient	Percentage %
30-40	4	13.3
41-50	20	66.7
51-60	6	20

The most clinical presentation of patient was back pain, radiculopathy followed by motor weakness, but the sphincter disturbance was the last clinical presentation as clarified in Table (2).

Table (2)

Clinical presentation	No.	Percentage
Radiculopathy	30/30	100
Back pain	28/30	93.3
Motor weakness	8/30	26.7
Sphincter disturbance	5/30	16.7

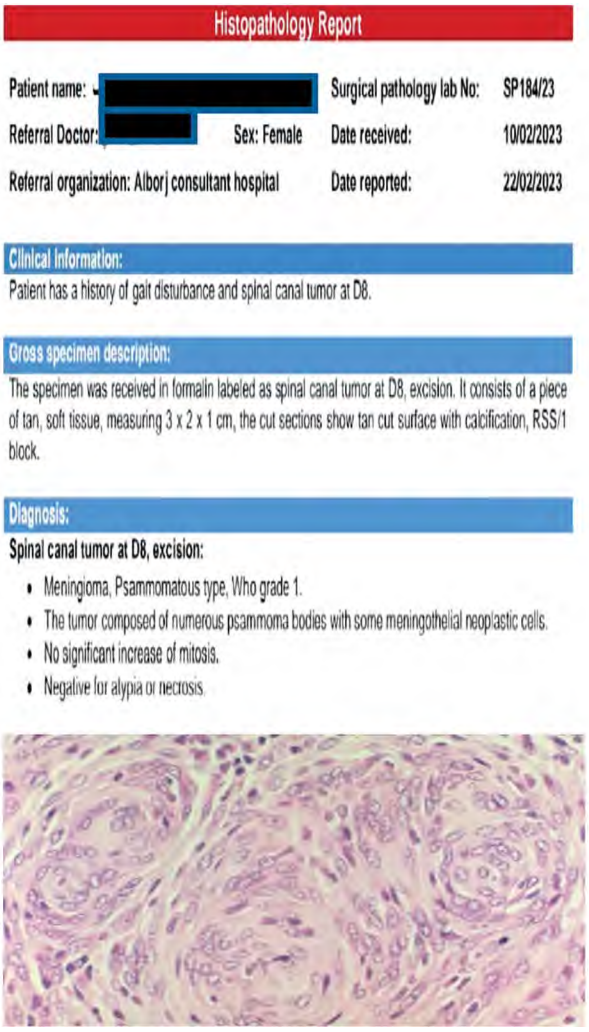
Table (3): Site of tumor.

Site	No.	Percentage
Cervical	2	6.7
Thoracic	18	60
Lumbar	10	33.3

Table (4)

Tumor type	No.	Percentage
Meningioma	20	66.7
Schwanoma	6	20
Hemangioblastoma	4	13.3

Hisopathology Reports:



Histopathology Report

Patient name: [redacted] Surgical pathology lab No: SP184/23

Referral Doctor: [redacted] Sex: Female Date received: 10/02/2023

Referral organization: Alborj consultant hospital Date reported: 22/02/2023

Clinical Information:

Patient has a history of gait disturbance and spinal canal tumor at D8.

Gross specimen description:

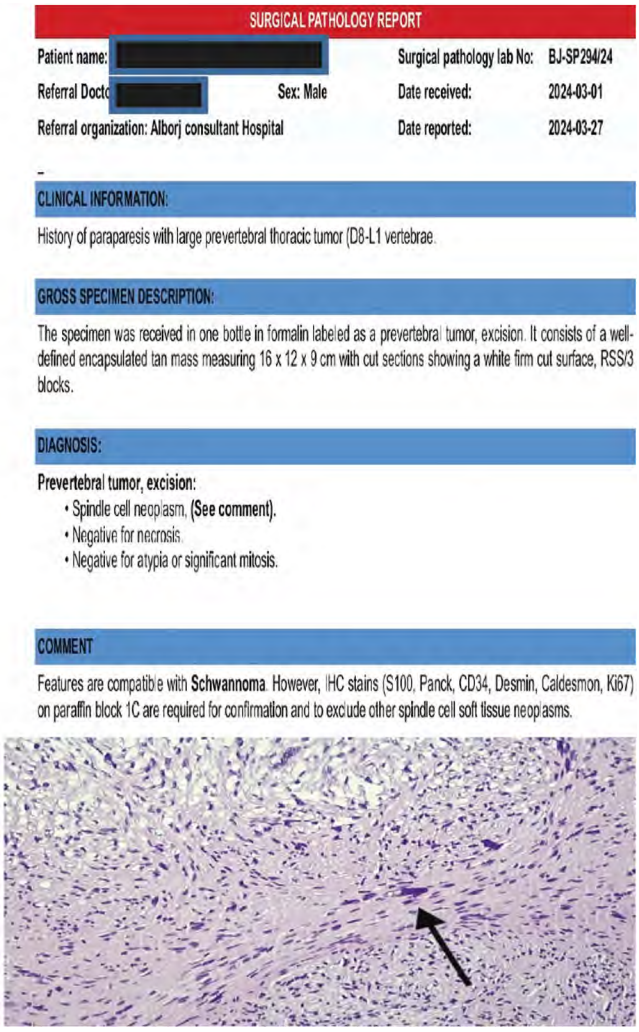
The specimen was received in formalin labeled as spinal canal tumor at D8, excision. It consists of a piece of tan, soft tissue, measuring 3 x 2 x 1 cm, the cut sections show tan cut surface with calcification, RSS/1 block.

Diagnosis:

Spinal canal tumor at D8, excision:

- Meningioma, Psammomatous type, Who grade 1.
- The tumor composed of numerous psammoma bodies with some meningothelial neoplastic cells.
- No significant increase of mitosis.
- Negative for atypia or necrosis.

Fig. (12): Meningioma.



SURGICAL PATHOLOGY REPORT

Patient name: [redacted] Surgical pathology lab No: BJ-SP294/24

Referral Doctor: [redacted] Sex: Male Date received: 2024-03-01

Referral organization: Alborj consultant Hospital Date reported: 2024-03-27

CLINICAL INFORMATION:

History of paraparesis with large prevertebral thoracic tumor (D8-L1 vertebrae.

GROSS SPECIMEN DESCRIPTION:

The specimen was received in one bottle in formalin labeled as a prevertebral tumor, excision. It consists of a well-defined encapsulated tan mass measuring 16 x 12 x 9 cm with cut sections showing a white firm cut surface, RSS/3 blocks.

DIAGNOSIS:

Prevertebral tumor, excision:

- Spindle cell neoplasm, (See comment).
- Negative for necrosis.
- Negative for atypia or significant mitosis.

COMMENT

Features are compatible with **Schwannoma**. However, IHC stains (S100, Panck, CD34, Desmin, Caldesmon, Ki67) on paraffin block 1C are required for confirmation and to exclude other spindle cell soft tissue neoplasms.

Fig. (13): Schowanoma.

The follow-up of patient in 3 and 6 month.

Table (5)

Excellent	Good	Fair
10	18	2
33.3%	60%	6.7%

The improvement of sign and symptoms during period from 6 month-4 years post operation seem in Table (6).

Table (6)

Clinical presentation	No. of patients	Improvement
Back pain	30	Complete
Radiculopathy	28	Complete
Motor weakness	8	6 case complete
		2 case not improved
Sphincter disturbance	5	4 case complete
		1 case not improved

Complication:

One case had C.S.F leak for 1 month post-operative, not response to medical treatment, re-operation was done and closure dura with graft from facialata.

Discussion

The IDEM tumors are benign tumor represent about 65-70% of the spinal cord tumors ***[1]***.

In this study spinal meningioma is the most common tumor represent about 66.7%, and affected female more than male, this corresponding with Hufama V., et al., 2005 report spinal meningioma tended to occur in women ***[2]***.

The localization of spinal meningioma is laterally to spinal cord, some of them located ventrolateral which associated with motor weakness as clinical presentation of patient in our study, this agree with other studies, reported this location of spinal meningioma ***[3-7]***.

Thoracic region is the most common site for spinal tumors and also for meningioma in our study, thoracic region represent 66.7%, this is agree with authors reported meningioma localized to thoracic region approximately 80% ***[8-10]***.

The back pain and radiculopathy are the most common complaint of patient in this study, which different with other studies reports radiculopathy and motor weakness are the most manifestations ***[11]***.

The clinical improvement which noted in 6 month post-operative, this period of duration was seen in all patient of this study and correlated with other authors reported similar outcome among their patients during this duration ***[12]***.

The Frequencies of schwanomas among IDEM spinal cord tumors about 40-50%, most reports schwanomas produce localized pain, radiculopathy and caudaequina syndrome, this is not correlated with our study ***[2,5]***.

Schwanomas in this study represent 20%, and no patient present with cauda equine syndrome.

Hemangioblastoma is uncommon IDEM spinal cord tumors, in this study 4cases represent 13.3%, all 4 cases present with back pain and motor weakness, but sphincter disturbance occur in 2 cases only.

Embolization, angiography or arteriography not done, but intra-operation finding the lesion was hypervascular and blood loss more than other tumors excision.

Complication during surgery for IDEM spinal cord tumor is rare, we recorded one case cerebrospinal fluid leak this correlate with one study report one case with spontaneous resolution, but in our study this case follow-up for 6 week not resolution and underwent to another operation then close dura with graft from fascia lata.

Conclusion:

The aim to surgery for IDEM spinal cord tumor is decompression and complete excision of tumor in safety and effective option.

The most of patients had complete removal of tumor, then had relief of symptoms and return to full activity within few months.

The significant and dramatic improvement in most of patient is the main goal of surgery.

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