

# Spinal Meningioma- Surgical Outcome

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Spinal meningiomas are benign neoplasms encountered commonly in women. They usually present with local pain or signs of compression of adjacent neural structures. Total surgical removal can be achieved and outcome is favourable. Recurrence of these tumors is rare. This study includes a series of consecutive spinal meningiomas (23 patients) operated in our department with aim to find out short and long-term outcome and late complications. A total of 23 patients underwent surgery. Out of which 21 were females and 2 males. In most patients, the presenting complaint was progressive difficulty in walking. There were 10 patients who could walk with support, 6 patients were unable to walk but could move legs, 3 patients were paraplegic while four could walk without support. Tumor resection was achieved by posterior approach and considered to be total in all except in one case, because of its anterior extension. Dural base was excised in 16 cases and diathermised in the remaining. Seventeen patients improved to walk independently while two patients required some support to walk; one patient deteriorated while three remained in the same neurological status. Overall there was improvement in 74% of cases, only one patient deteriorated and no recurrence was found.

**Key words:** Spinal tumour, meningioma

Spinal Meningiomas are well circumscribed, encapsulated and slowly growing neoplasms. They make up almost 30-35% of the primary spinal neoplasms and are most commonly encountered in the 5<sup>th</sup> decade with marked predilection for female sex<sup>1,2</sup>.

These tumors usually present with local pain and signs of compression of adjacent neural structures. Their benign nature is well documented and total surgical removal can usually be achieved. Outcome is favourable in those who are not severely crippled before operation<sup>1,3</sup>. Recurrence is also very rare. This study consists of a series of 23 patients with spinal meningioma operated at the Department of Neurosurgery K.E.M.C./ Mayo Hospital Lahore between November 1999 to September 2002 with the emphasis on short term and long term surgical outcome and late complications.

## Material and methods:

A total of 23 patients underwent surgery for spinal meningioma. There were 21 female and two male patients. The age varied from 34 to 62 years, median age being 42 years. In every patient detailed record of complaints, Neurological signs, Radiological details and surgical findings were carefully noted for evaluation. The follow up was advised every month, after discharge.

## Clinical Feature

The most common presenting complaint was progressive difficulty in walking. This being the earliest symptom in 13 patients. Sensory disturbance occurred first in three and backache in seven. However at the time of presentation the neurological status of the patient was that 4 patients could walk without support, 10 patients could walk with support, 6 patients were unable to walk but could move legs and 3 patients were paraplegic. All the patients had definite sensory level. Out of 23 patients 16 patients had urinary

complaints, 4 of which had urinary urgency while 12 patients had to be catheterized because of urinary retention or poor urinary control.

Table:1 Preoperative mobility

Mobility Status	n=
Walking without support	4
Walking with support	10
Unable to walk but can move legs	6
Paraplegia	3

## Radiological Features:

All patient were investigated with X-Ray spine AP/ Lateral views & either Myelography (in 6 patients) & M.R.I (17 patients). Plain X-Rays of the spine showed unilateral pedicle thinning in only three patients while there was no abnormality in the rest.

M.R.I spine, available in 17 patients, showed enhancing tumour and its relation to the adjacent structures. Myelography performed in 11 patients, showed complete block with a crescentic margin in 10 patients and partial block in one.

In 22 patients tumour was located in thoracic spine while in one it was in cervical spine.

## Operative findings:

In all patients tumour resection was achieved by posterior approach, bilateral muscle strip and laminectomy of the relevant vertebra.

The location of the tumour relative to the spinal cord was that in 4 cases it was located anterior to the cord, was posterior to the cord in three while in 16 it was predominantly lateral to the cord.

Total microsurgical tumour resection was considered to be achieved in 22 cases. However in one patient it was not possible to excise completely because of its anterior position. Two methods were employed for dealing with



tumour base: In 16 patients base was excised while in 7 patients diathermy was applied to the base.

**Results:**

As shown in the Table 1, there were 4 patients who could walk independently but with some difficulty before operation, all four patients improved post-operatively, three being completely asymptomatic while one patient improved within one month to completely normal state.

Ten patients who were able to walk with support before operation also improved by surgery, six were soon able to walk without support while remaining four patients required 3-4 months time to walk without support.

Out of the six patients who were unable to walk and bed bound but retained leg movements pre-operatively, three patients improved significantly and were able to walk independently while two patients required support for walking. One patient deteriorated & rendered paraplegic who in spite of intensive physiotherapy could only move her toes.

Of the three patients who were paraplegic, two did not show any improvement after surgery, however in one patient there was progressive improvement of leg power till her last follow-up but still she was unable to walk (Table 2).

It is quite interesting to note that there were sixteen patients who had urinary complaints pre-operatively out of which eight patients were voiding normally while four patients still have some urinary urgency & remaining four were catheterized till their last follow-up.

Table 2. Postoperative mobility

Mobility Status	N=
Walking without support	17
Walking with support	2
Unable to walk but can move legs	2
Paraplegia	2

**Discussion:**

Spinal Meningiomas are well-circumscribed benign neoplasms with marked predilection for female sex and thoracic spine. They have long been recognized as having a particular favourable prognosis<sup>3,4</sup>. As Cushing & Eisenhardt described their removal as being "One of the most gratifying of all the operative procedures"<sup>5</sup>. In our study more than 90% of the patients were female & all the tumours were located in thoracic spine except one, which is quite consistent with the international literature<sup>3,4,6</sup>.

The most common presenting complaint in our series was difficulty in walking (56% of cases) which is contrary to other series<sup>2,3</sup> where backache is reported to be the commonest presenting complaint. In our series backache was found to be initial complaint in 30% of cases while sensory disturbances in 14% of the patients. Although M.R.I. is the investigation of choice in spinal meningioma, in 17 patients it was possible to get M.R.I. spine while in

rest of the six patients myelogram was available because of financial constraints.

All patients were operated through posterior approach via laminectomy of the relevant vertebra whatsoever the site of tumour might be. While meningioma can be situated in any site around the cord we found laterally arising tumour quite common as compared to pure posteriorly or anteriorly located tumors, which again is consistent with findings of others<sup>1,2</sup>. This maybe related to concentration of the arachanoid cap cells around nerve sleeves.

Despite post-operative follow-up was a problem in our circumstances, the surgical outcome is quite favourable in most of the patients. About 74% of our patients improved by surgery to the extent of being independently mobile. Only one patient deteriorated after surgery & rendered paraplegic. Although in other series favourable outcome has been reported in more than 95%<sup>1,2,4</sup>. It may be due to significant delay between the onset of clinical symptoms and operation as all the patients with paraplegia had interval of more than two years between the initial symptoms and surgery. Thus early diagnosis and operation may help in achieving favourable results<sup>7</sup>.

Although our follow-up is not very long but we have not yet observed recurrence in any of our cases. In spite of excision of dural base in sixteen while cauterization of the dural base in rest of the patients, no recurrence was observed. A.T. King et al in their series also observed recurrence of only one case in their 20 year follow-up of 78 cases<sup>1</sup>. In the series of Solero two cases of tumour recurrence were observed in the 25 patients who had radical dissection of the dural attachment (8%) and seven cases of tumour recurrence among the 125 patients who had coagulation of the dural base (5.6%)<sup>6</sup>. Thus there seems to be no evidence that dissection of the dural attachment reduces recurrence rate. Slow growth, together with the late age at which these tumours present, are obvious factors to be added to those related to the benign nature of the tumour. It also seems unnecessary to use more complicated anterolateral approaches to excise dural base because obviously it is not possible to excise the dural base of anterior tumour if a simple laminectomy is used to approach it. Dural base adequately treated with diathermy, will almost equally prevent recurrence<sup>1,6</sup>.

**Conclusion:**

Spinal Meningiomas are benign neoplasms which particularly have favourable outcome if treated early. Recurrence of these tumours is rare even if the dural base is not excised but treated with cauterization.

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