

Neurological Outcomes of Decompression Stabilization and Fusion Surgery for Spinal Metastases at Prof. Dr. IGNG Ngoerah General Hospital: A Retrospective Case Series

I Ketut Suyasa¹, I Gusti Lanang Ngurah Agung Artha Wiguna¹,
Ida Bagus Gede Arimbawa¹, Anak Agung Ngurah Krisna Dwipayana²

¹Spine Surgeon Consultant of Orthopaedic and Traumatology Department, Faculty of Medicine, Udayana University, Prof.Dr. IGNG Ngoerah General Hospital

²Resident of Orthopaedic and Traumatology Department, Faculty of Medicine, Udayana University, Prof.Dr. IGNG Ngoerah General Hospital

Corresponding Author: Anak Agung Ngurah Krisna Dwipayana

DOI: <https://doi.org/10.52403/ijrr.20231217>

ABSTRACT

Background: Patients with metastatic spinal cord compression (MSCC) frequently experience not only pain but also neurological deficits and decreased functional autonomy. Paralysis due to spinal cord compression is the most feared of the complications associated with metastatic spine disease. Surgical decompression has been shown to improve neurological outcomes. This case series present patients with metastatic bone disease underwent surgical decompression.

Case Presentation: From total of 55 patients with MSCC. Among 55 patients, most were caused by lung cancer followed by mammary, ovary and another type of cancer at the least. We present 5 patients with neurological deficits on both lower extremities due to spinal compression. Most patients came with continuous progressive backpain overtime. Decompression, stabilization and fusion surgery was done on all the patients. The outcomes were satisfying on 5 presented cases with improvement on neurological deficits and patient's quality of life at 3 months follow-up. Patients continue cancer's regiment therapy following their clinical outpatient control.

Conclusion: Patients with MSCC frequently experience not only pain but also neurological deficits and decreased functional autonomy. Paralysis due to spinal cord compression is the

most feared of the complications associated with metastatic spine disease. Surgical decompression can improve the patient's condition by improving their neurological outcomes.

Keywords: metastatic bone disease; metastatic spinal cord compression; decompression, stabilization, fusion.

INTRODUCTION

Bone is considered as the most common site of metastatic cancer and responsible for a significant clinical burden and demand on health-care resources. Advances in cancer treatment have increased the survival rate of patients with spinal metastasis. Metastases to the skeleton have a better prognosis than visceral metastases, as evidenced by a median survival of 20 months after first bone relapse versus 3 months after first liver recurrence. More than half of these patients will require radiotherapy or surgical intervention for spinal cord or nerve root compression. (Curtin, 2017; Wagner, 2021) Patients with metastatic spinal cord compression (MSCC) frequently experience not only pain but also neurological deficits and decreased functional autonomy. Severe back pain, spinal deformity, pathologic

fractures, and neurologic compromise can all result from metastatic spine disease.

Paralysis due to spinal cord compression is the most feared of the complications associated with metastatic spine disease. Spinal cord compression can occur in 5% to 10% of cancer patients and up to 40% of patients with a history of non-spinal bone metastasis. This has a negative impact on their ability to receive adjunct treatment and, as a result, their overall survival. (Vanek, 2015; Schmidt, 2005)

However, although surgical decompression has been shown to improve neurological outcomes, the effect of early surgery is unknown. In this case series we present patients with metastatic bone disease underwent surgical decompression. Our goal was to describe the effects of surgery for acute MSCC with spinal metastases.

MATERIALS & METHODS

In this Case Series study, we described the neurological outcome and radiological features of 55 patients with Decompression Surgery of Spinal Metastases at Prof. Dr. IGNG Ngoerah General Hospital, Denpasar, Bali from 2018 – August 2022. We present 5 patients as representative of 55 patients in this the study.

RESULT

CASE PRESENTATION

Case 1

Female, 67 years old, presents with chief complaint of backpain for 8 months before admitted. Pain was felt constantly and getting worse overtime especially in supine and while changing position. Pain was accompanied by paralysis of both legs and in the last 1 month before admitted the patient was unable to walk and in need for a wheelchair. Another complain was feeling numbness from the abdominal region to the feet that felt constantly. History of long cough, fever was denied. There was a decrease in bodyweight but normal urinate and faecal reflexes.

From the past history, patient claimed to have a history of falling in a sitting position

2 years ago (2018) but denied of having any symptoms. The patient also denies having a history of lumps in the neck, breasts, and abdomen. She was a referred to the Central Hospital by Orthopaedic Surgeon with diagnosis of Compression Fracture CV Th10 ec Susp Spinal Tumor.

From the clinical examination (Fig 1) patient was found with VAS 3/10, BP 150/80mmHg, and midline tenderness on palpation at level Th9-Th11 and hypoesthesia below Th10. Physiological reflex was found exaggerated and there was a paralysis on both extremity with muscular strength of 32232/23333 respectively.

Laboratory examination was found normal, except for blood sedimentation rate was 74.0 (normal<20mm/hr), C-Reactive Protein (CRP) was 28.56 (normal 0.00-5.00 mg/L). Diagnostic Examination as in Fig 2.

Patient was assessed with Pathological Fr CV Th 10 ec Susp MBD dd/Infection, UMN type lesion ec Spinal Canal Stenosis Th10-Th11, L4-L5 Paraparese, Type II Diabetes Mellitus (DM), hypertensive Heart Disease, Hypertension stage II. Patient was planned to undergo posterior decompression, stabilization and fusion.



Figure 1. Clinical Examination

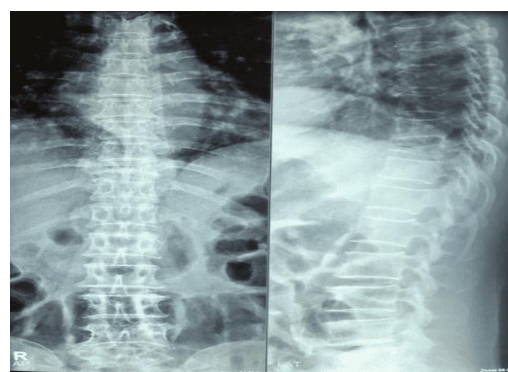


Figure 2. Thoracolumbar AP/ Lateral View

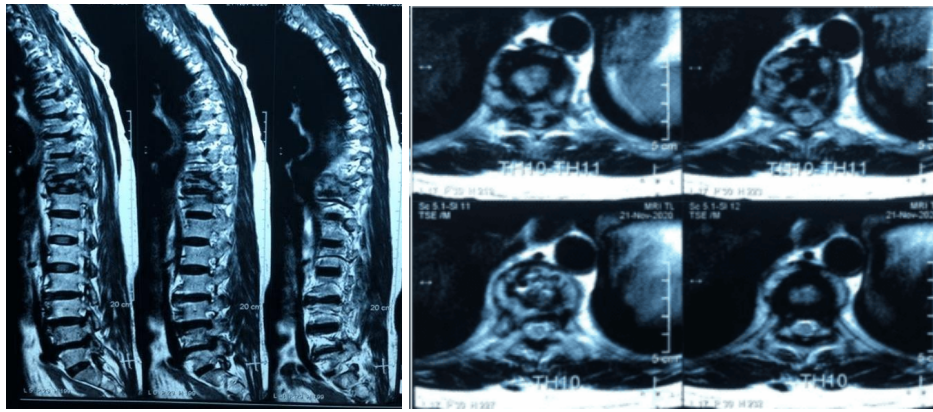


Figure 3. MRI Thoracolumbar Sagittal T2W View (Left); Axial T2W View (Right)

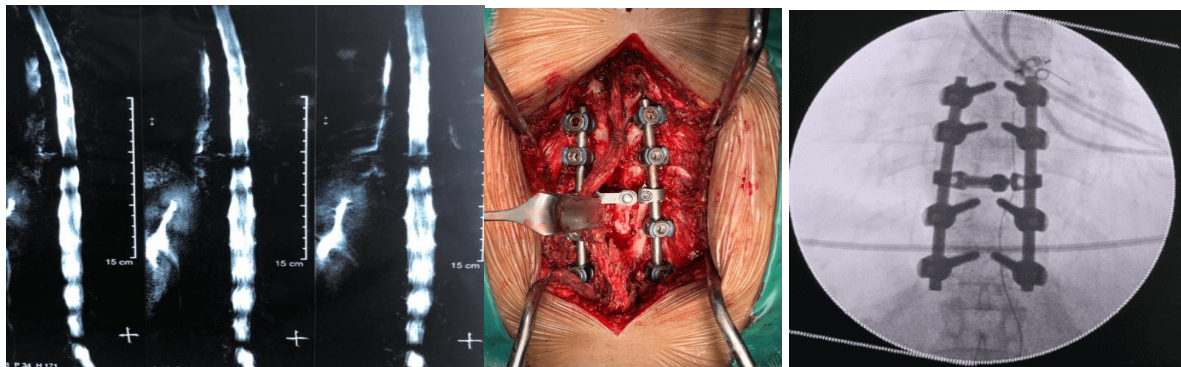


Figure 4. Myelography (Left); Post Operative (Right)

During operation, biopsy specimen was taken and examined. At follow-up post-surgery, patient was having a good recovery with an improve of muscular strength on both extremities was 44454/45544 respectively. The patient was discharged without any complain and continue physiotherapy and outpatient control.

Case 2

Male, 55 years old with complaint of backpain in the last 4 months prior consultation. The pain was felt getting worse 1 months ago with intermittent tingling sensation and history of weight loss. He was referred by neurologist with diagnosis of low back pain with red flag.

From physical examination with VAS 5/10 and midline tenderness at level L1 and decrease of motoric strength on both legs as 44444/44444. Clinical presentation and diagnostic examination as on figures below. The patient was diagnosed with lytic lesion CV Th9, Th11, L1 ec Susp MBD Lung cancer with Suspected Left Lung Tumor and Cancer Pain and planned with DCF surgery. On clinical examination post-surgery patient was having an improvement on motoric at maximum level of 55555/55555 without any complain and continue physiotherapy and outpatient control.

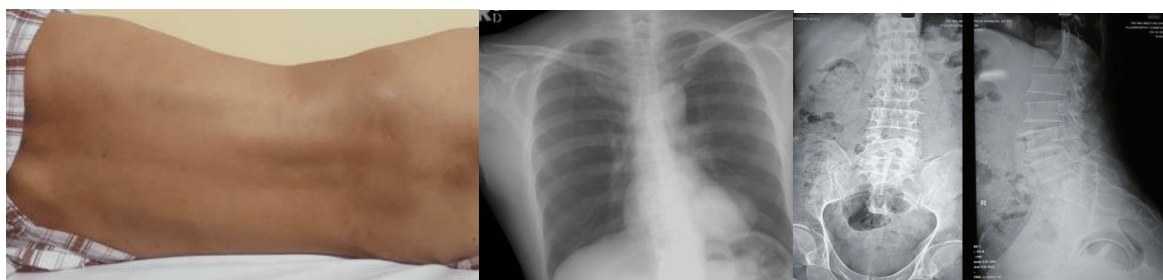


Figure 5. Clinical Examination and X-Ray Thorax AP View with Thoracolumbar AP/ Lateral View



Figure 6. MRI Lumbosacral T2 Sagittal View (Left); T1 Sagittal View (Right)

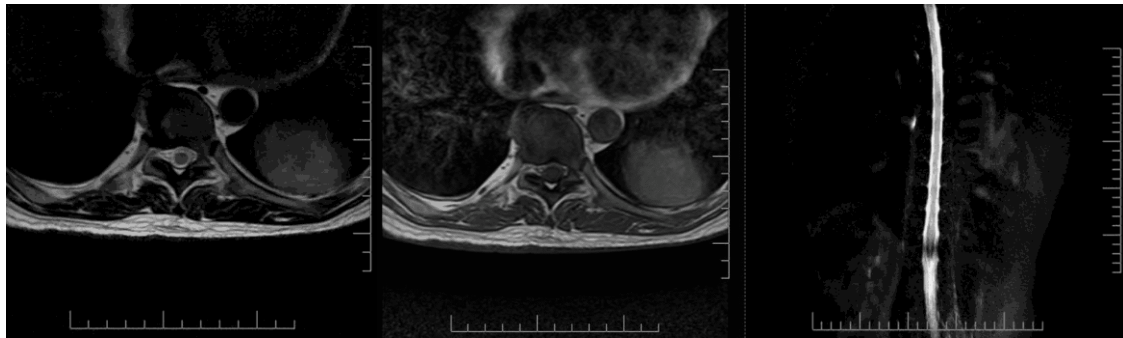


Figure 7. MRI Thoracolumbal Axial View T2; Thoracolumbal Axial View T1; Myelography

Case 3

Female 49 years old, with chief complaint of having backpain for the last 7 months prior admission that was felt continuously and make the patient unable to walk and sleep properly. The pain was getting worse since 1 month following paralysis on both lower extremities. It was also said that the pain getting worse on supine and while she was starting to change position. From the past history, patient was having a decrease about 10kg bodyweight and night sweat since 3 months. She also had history of having hysterectomy caused by myoma uteri 2 years ago.

On physical examination patient with normal vital signs, VAS 4/10, gibus at thoracolumbar region and midline tenderness on level Th12-L1 with motoric decrease on both legs of 33334/43333 respectively. Physiological reflexes on both extremities were found exaggerated.

From laboratory examination, NLR was 4.88 (normal ≤ 3.13), Blood sedimentation rate 33.0 (normal < 20 mm/hr), SGOT 37.5 (normal 5-34U/L) and SGPT 41.10 (normal 42-98U/L) and ALP 108 (normal= 42-98U/L)

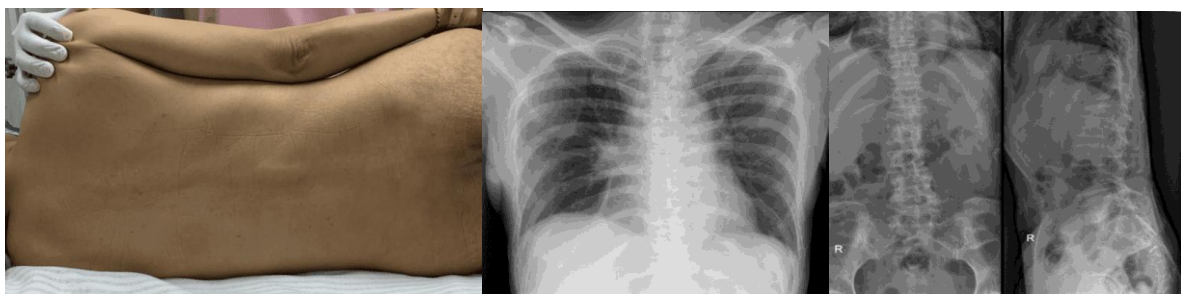


Figure 8. Clinical Examination and X-Ray Thorax AP View with Thoracolumbar AP/ Lateral View

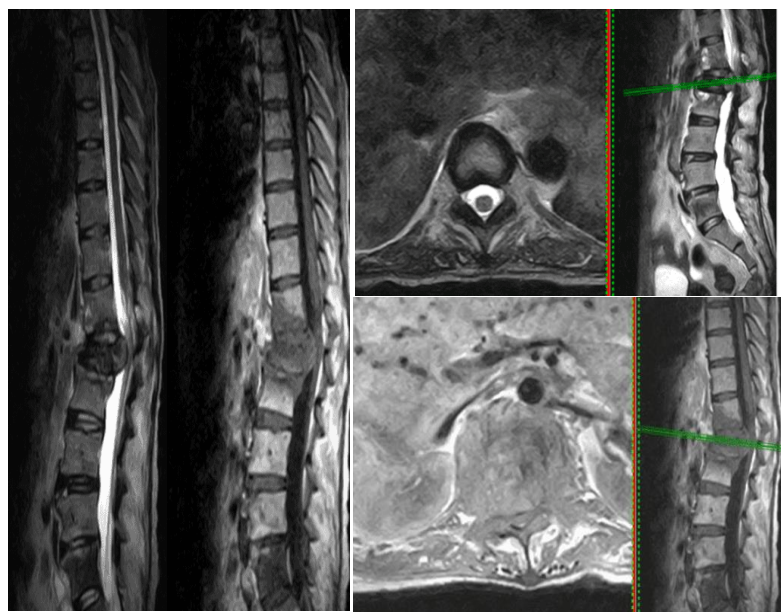


Figure 9. Thoracolumbar MRI T2W Sagittal View; T1W Sagittal View; T2W Axial View Th12-L2; T1W Axial View Th12-L2

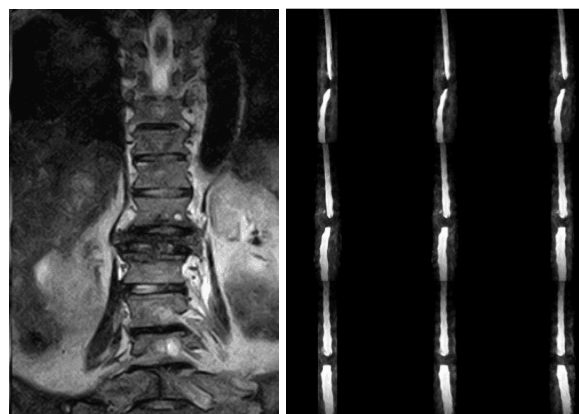


Figure 10. Thoracolumbar MRI T2W Coronal View and Myelography

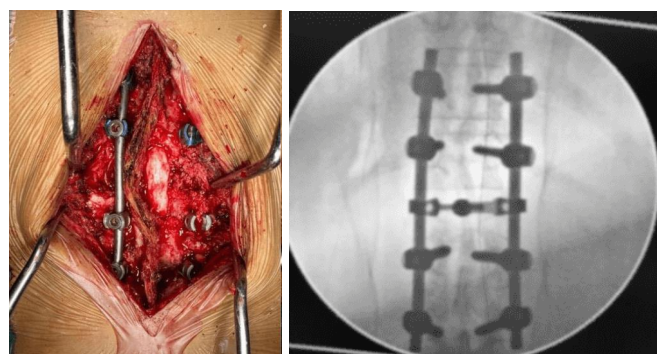


Figure 11. Post Operative

The patient was assessed with Pathological Fracture CV L1 e.c. Susp. Spondylitis TB dd/ MBD and planned to undergo DCF and Culture Biopsy. On the post-operative follow up patient was having an improvement of motoric strength with maximum points of 55555/55555 on both lower extremities. The patient was discharged without any complain and

continue on physiotherapy and outpatient control.

Case 4

Female 44 years old with complain of paralysis on both legs 10 days prior admission. It was said that patient was feeling numbness on both legs since 1 month ago that getting worse over the past 2

weeks and numb on both thighs and calves. From the history patient admitted that she was having intermittent backpain over 3 years that not relieved with changing position, it was told that the pain was getting worse on activity and relieved with painkiller and rest. She also complaint of having urinating difficulty for 10 days prior admission. Another complaint of the patient was active coughing with no fever.

From the past history, patient was diagnosed with breast cancer and underwent mastectomy surgery 6 years prior admission. She also had history of lung metastase and spinal metastase with treatment of radiotherapy and chemotherapy. Patient also had history of

hypertension that was controlled with medicines. She was then referred to the central hospital with compression fracture of Th1-Th3 ec breast cancer metastasis by orthopaedic surgeon.

From physical examination, VAS 5/10 with normal vital signs. Midline tenderness over Th1-Th3 and hypoesthesia at level Th10. Motoric function was decreased on both legs as 14112/14112 with Babinski reflexes and TSA positive on both legs. From the laboratory examination, LDH was 212 (normal= 240-480U/L), PPT 9.9 (normal= 10-12.7second), INR 0.86 (normal= 0.9-1.1) and Ca²⁺ 7.7 (normal 8.8-10.2mg/dL). Diagnostic examination as on figures below.

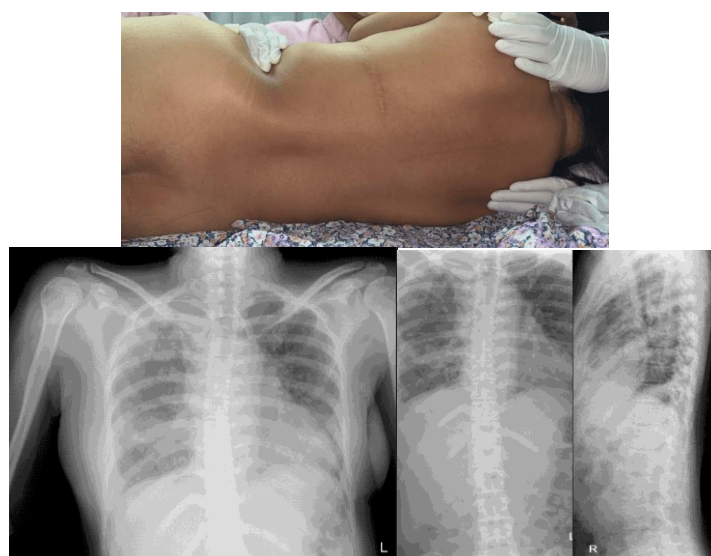


Figure 12. X-Ray Thorax AP View; Thoracolumbar X-Ray AP/ Lateral View

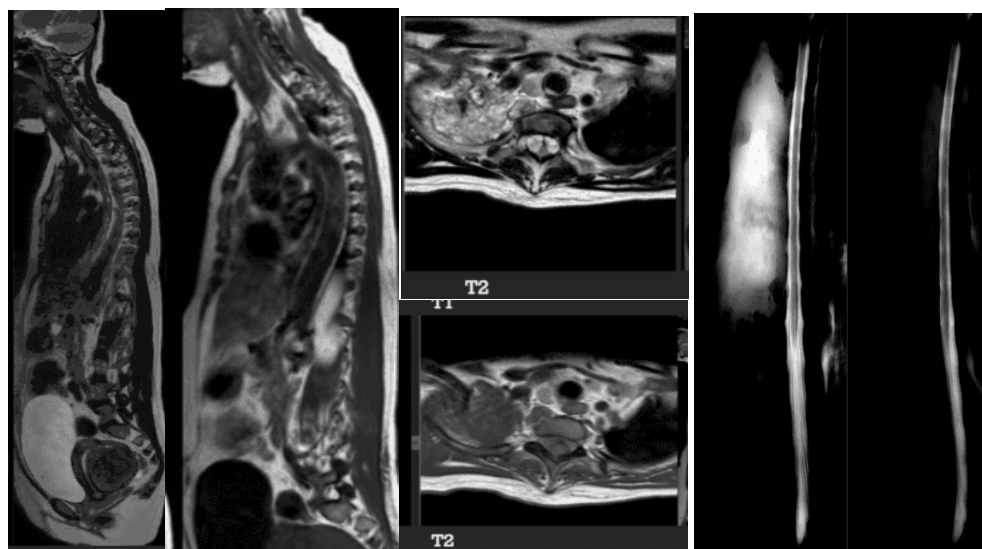


Figure 13. Whole Spine MRI T2W Sagittal View; Whole Spine MRI T1W Sagittal View; T2W Axial View; T1W Axial View; Myelography

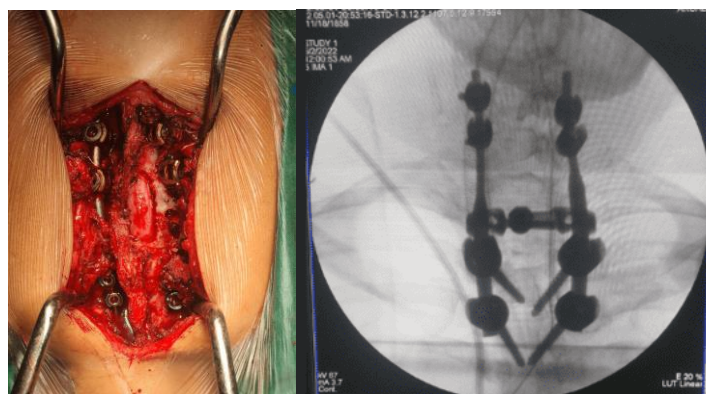


Figure 14. Post Operative

The patient was assessed with Pathological Fracture at level CV Th2 ec susp. MBD ec Ca Mammae dd/ Infection Post Left MRM (2019) ec Left Breast Cancer Stage IIB and planned with DCF and culture biopsy. On the follow up after surgery, patient was having improvement on both lower extremities as 23333/23333. The patient was discharge while using brace and continue her outpatient follow-up.

Case 5

Female patient 48 years old with complain of weakness on both legs 6 months prior

admission and getting worse 3 months after. The weakness came gradually worsening and disable patient’s mobility. It was said that the patient also felt tingling sensation from both thighs to feet which happens all the time and did not improve at all. She denied any other symptoms.

From physical examination, there was midline tenderness at level Th7-Th10 with hypoesthesia at level Th12, motoric function was decrease as 44332/45344, positive clonus and positive pathological reflexes. Diagnostic examination as on the figures below.

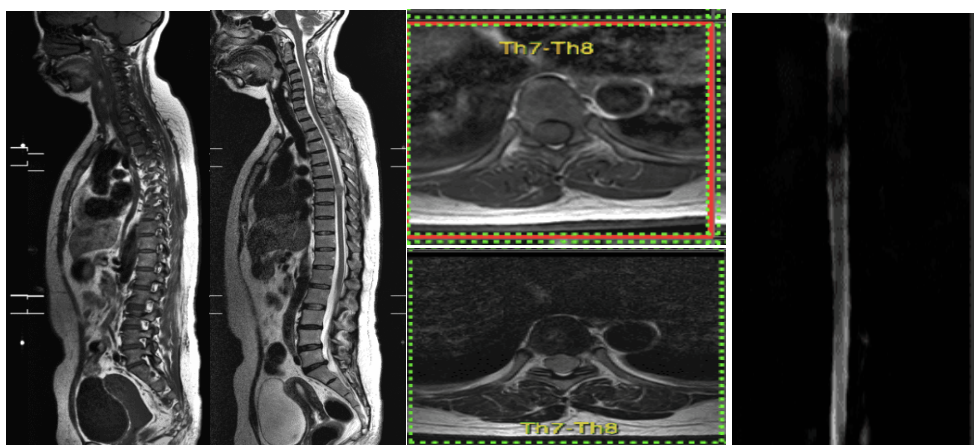


Figure 15. Whole Spine MRI T1W Sagittal View; Whole Spine MRI T2W Sagittal View; T1W Axial View; T2W Axial View; Myelography

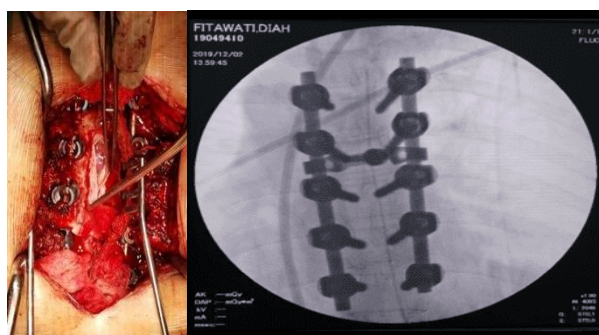


Figure 16. Post Operative

The patient was assessed with intradural extramedullary tumor spinal cord at level Th7-Th7 ec susp MBD. We planned for DCF and biopsy for the patient. On the follow-up after surgery, the patient's motoric function was improved on both legs as the strength was 55533/55555 respectively. The patient was discharged without any complain and continue on physiotherapy and outpatient control.

Table 1 below presents data from 55 patients with metastatic bone disease who were treated for the last 5 years at Prof IGNG Ngoerah Hospital, Denpasar. Among the 55 patients, 28 of them were male (50.9%) and 27 of them were female (49,1%). Based on the type of primary cancer, 7 of them originated from the prostate (12.72%), 12 originated from

mammary cancer (21.8%), 13 from the lung (23.6%), 10 were male (18.18) and 3 of them were female (5.45%), 5 from ovary cancer (9.09%), 2 from the thyroid (3.63%) all male, 2 from renal cancer (3.63%) all male, 2 from uterus cancer (3.63%) 1 from melanoma (1,81%), 1 from cervical (1,81%) and 1 from mediastinal tumors (1.81%). All of them were treated with decompression, stabilization and fusion, and among the 55 patients, 41 of them improved clinically (74,5%), 11 were clinically settled (20%), and only 3 of them were clinically worsened (5,4%). Of 55 patients, most improvement were found in female patients (18.8%) with breast cancer followed by lung cancer (16.36%), while the clinical worsening from 3 patients were found in male patients with prostate cancer (66%).

Table 1. Neurological Outcomes of Decompression Surgery for Spinal Metastases Patient in Prof. IGNG Ngoerah General Hospital, Denpasar

	Initial	Gender	Diagnosis	Primary Cancer's Site	Pre-Operative Neurological Deficit	Post Operative Neurological Deficit	Description
1	KOS	Male	Pathological Fracture CV L2-L3 ec Susp MBD ca Prostat	Prostate	55555 55555 44444 44444	55555 55555 55555 55555	Improved
2	GG	Female	Pathological Fracture CV Th 12 ec susp MBD Ca Mamae	Breast	55555 55555 00000 00000	55555 55555 44332 45344	Improved
3	IWS	Male	Myelopathy Compressive Th4-5 ec susp MBD dd/ Spondylitis TB	Prostate	55555 55555 55555 55555	55555 55555 55555 55555	Improved
4	INS	Male	Pathological Fracture at Level Th 10 ec MBD	Thyroid	55555 55555 44444 44444	55555 55555 55555 55555	Improved
5	SHW	Male	Pathological Fracture CV L2-L3 ec Susp MBD ca Paru	Prostate	55555 55555 00000 00000	55555 55555 44332 45344	Improved
6	AA	Female	Pathological Fracture CV Th 11-12 ec susp MBD Ca Mamae	Breast	55555 55555 55555 55555	55555 55555 55555 55555	Improved
7	NWR	Female	Pathological Fracture at level CV Th9-Th10 ec susp Spondylitis TB dd/ MBD DM Type 2	Melanoma	55555 55555 44444 44444	55555 55555 55555 55555	Improved
8	SMT	Female	Pathological Fracture C5, Th2, Th7, Th10 ec MBD Ca Mammae Paraplegia	Breast	55555 55555 44332 45344	55555 55555 55555 55555	Improved
9	NMS	Female	Pathological Fracture CV Th10, Th11, S1 ec MBD Ca Mammae	Breast	55555 55555 00000 00000	55555 55555 00001 00001	Improved
10	INS	Male	Pathological Fracture CV L4 ec Susp Renal Osteodystrophy dd/ MBD ACKD ec post Renal on CKD ec Susp NO	Prostate	55555 55555 00000 00000	55555 55555 55555 55555	Improved
11	IBS	Male	Lytic Lession CV Th9, Th11, L1 ec MBD Ca Paru Adenocarcinoma Left Lung std IV Wild Type Cancer Pain	Thyroid	55555 55555 44444 44444	55555 55555 55555 55555	Improved
12	LS	Female	Pathological Fracture CV C5 ec MBD Lung Cancer Pathological Fracture CV Th6 Frankel A ec MBD Lung Cancer Adenocarcinoma Left Lung Cancer St IVA (T2NXM1b) Ulcus Decubitus Regio Sacrum Grade III	Breast	55555 55555 00000 00000	55555 55555 00001 00001	Improved
13	IMW	Male	Pathological Fracture CV L1-L2 ec Susp MBD ca Prostat	Prostate	55555 55555 00000 00000	55555 55555 00000 00000	Improved

14	PA	Female	Pathological Fracture CV Th 11 ec susp MBD Ca Mamae	Lung	55444 44455 55555 55555	55444 44455 55555 55555	Improved
15	MS	Male	Pathological Fracture CV Th 5 ec Susp Spondylitis TB dd/ MBD + Paraplegia	Mediastinum	55555 55555 00000 00000	55555 55555 00000 00000	Settled
16	GO	Male	Myelopathy Compressive Th4-5 ec susp MBD dd/ Spondylitis TB	Lung	55555 55555 00000 00000	55555 55555 00000 00000	Improved
17	ND	Male	Pathological Fracture Th9 ec Susp.MBD + Paraplegia Inferior	Lung	55555 55555 00000 00000	55555 55555 00000 00000	Improved
18	DAA	Male	Post Decompression stabilization fusion + biopsy ec Pathological Fracture at Level CV Th 10 ec Suspect MBD Ca Prostate dd/ MM	Lung	55555 55555 44443 34444	55555 55555 44443 33344	Worsened
19	BGM	Male	Pathological Fracture CV L1 ec. Susp MBD dd Spondilitis TB		55555 55555 55555 55555	55555 55555 55555 55555	Improved
20	DFM	Female	Tumor Intradural Ekstramedullary at level Spinal Cord Th7 – Th8 susp Primary dd MBD	Breast	55555 55555 44332 45344	55555 55555 55533 55555	Improved
21	MW	Male	Pathological Fracture at Level Th 11 ec MBD (M84.58)	Lung	55555 55555 00000 00000	55555 55555 00001 00011	Improved
22	NNP	Female	Paraplegi ec Residif MBD Ca Mammae Post Decompression – Stabilization – Fusion – Biopsy (September 2018) ec Pathological Fracture at Level Th5 ec MBD Ca Mammae	Lung	55555 55555 00000 00000	55555 55555 00000 00000	Settled
23	IPA	Male	Pathological Fracture CV Th5, Th6, Th7 and L2 ec suspect MM dd MBD + Multiple Lytic Lesion	Lung	55555 55555 34444 44444	55555 55555 34444 44444	Improved
24	NKS	Female	Pathological Fracture CV C6-C7 ec Suspect Infection DD Susp MBD Spondylosis Cervicalis	Breast	55555 55555 55555 55555	55555 55555 55555 55555	Improved
25	INS	Male	Monoparese Blastic lesion at CV L1-L2 ec Suspect MBD dd/ suspect Spondylitis TB	Renal	55555 55555 55555 55555	55555 55555 55555 55555	Improved
26	KAS	Male	Pathological Fracture at level CV Th9-Th10 ec susp Spondylitis TB dd/ MBD DM Type 2	Lung	55555 55555 54445 54445	55555 55555 55555 55444	Improved
27	IS	Female	Pathological Fracture at level CV Th12-L1 ec Susp MBD DD/ Infection Relapse Lung Tuberculosis	Breast	55555 55555 00000 00000	55555 55555 00000 00000	Settled
28	NRA	Female	Pathological Fracture CV L4 ec Susp MBD DD Infection Lumbar Foraminal Stenosis L3-L4,L4-5, L5-S1 Spondylolisthesis L5 – S1 Myerding grade I Lumbar Spondylosis	Breast	55555 55555 55555 55555	55555 55555 55555 55555	Improved
29	AG	Male	Pathological Fracture at level CV Th 2 ec susp MBD dd/ Infection		55555 55555 34233 34233	55555 55555 34343 34343	Improved
30	GNS	Male	Pathological Fracture CV L3 ec Suspect MBD Ca Prostate Adeno Carcinoma Prostate T4NxM1 Cancer pain	Lung	55555 55555 44444 44444	55555 55555 44444 44444	Improved
31	KEY	Male	Pathological Fracture C5, Th2, Th7, Th10 ec MBD Ca Mammae Paraplegia	Lung	55555 55555 00000 00000	55555 55555 00000 00000	Improved
32	IKS	Male	Pathological Fracture CV Th5 + Th8 ec Susp MBD dd/ MM Post Core Biopsy (05/11/20) e.c. Pathological Fracture Right Proximal Humerus, Lytic Lesion Right and Left Ilium + Right and Left Proximal Femur ec Susp MBD dd/ MM Lytic Lesion Right Posterior 6th Rib + Left Lateral 6th Rib ec Susp MBD dd/ MM Mild Anemia e.c. Chronic Illness (Hb 9.40) Mild Renal Impairment (SC 1.64)	Renal	55555 55555 00000 00000	55555 55555 00000 00000	Settled
33	SKA	Male	Pathological Fracture at level CV	Lung	55555 55555	55555 55555	Improved

			Th9-Th10 ec susp Spondylitis TB dd/ MBD DM Type 3		54445 54445	54455 55555	
34	GAA	Female	Pathological Fracture CV Th4-Th5 ec susp MBD (Ca Mammae)	Breast	55555 55555 22232 22222	55555 55555 23332 23222	Improved
35	SMT	Female	Pathological Fr CV Th 10 ec Susp MBD dd/ Infection Spinal Canal Stenosis Th10-Th11, L4-L5	Breast	55555 55555 23223 23333	55555 55555 44454 45544	Improved
36	ZUL	Female	Pathological Fracture at Level CV Th11, L4, L5 ec susp MBD Ca Mammae Tumor Left Mammae susp. Malignancy T4dN2M1 susp. Meta tulang, meta paru, meta Liver	Uterus	55555 55555 44444 55555	55555 55555 55555 55555	Improved
37	SUM	Female	Lumbal Spinal Canal Stenosis ec Pathological Fracture at level L2 ec susp MBD Thyroid dd/ Infection HNP at level L4-5 Tumor Colli Dextra Susp. Mass dd/ Tumor Residive	Breast	55555 55555 55555 55555	55555 55555 55555 55555	Settled
38	MAS	Male	Pathological Fracture CV C6 ec Susp MBD Ca Thyroid dd/ Infection Tetraparesis	Prostate	55222 55222 00000 00000	23555 55533 00000 00000	Worsened
39	MAT	Male	Pathological Fracture CV Th 4 ec Susp MBD dd/ Infection Lytic Lesion at Left 4th, 5th Left Costae Spondylosis Thoracolumbalis	Lung	55555 55555 00000 00000	55555 55555 00000 00000	Settled
40	NUR	Female	Lumbal Canal Stenosis ec MBD Melanoma Maligna dd Infection Pathological Fracture CV Th 11 ec Susp MBD Melanoma Maligna	Uterus	55555 55555 00000 00000	55555 55555 00000 00000	Settled
41	SRI	Female	Pathological Fracture at level CV Th 2-4 ec. Susp. MBD dd/ MM Obs. Paraplegia ec Thoracal Canal Stenosis at Level Th 2-4 ec susp. MBD dd/ MM Decubitus Ulcer Grade 4 at Sacrum Region	Ovary	55555 55555 00000 00000	55555 55555 00000 00000	Settled
42	HAJ	Female	Pathological Fracture CV Th 5-6 ec Susp. MBD dd/ Infection Lumbal Canal Stenosis at Level L4-5 and L5-S1	Lung	44444 44444 44444 44444	44444 44444 44444 44444	Settled
43	NKW	Female	Pathological Fracture CV L1 ec Susp. Spondylitis TB dd/ MBD	Ovary	55555 55555 45333 45333	55555 55555 55555 55555	Improved
44	NNS	Female	Lumbar Spinal Canal Stenosis ec HNP at level L3-L4, L4-L5 Old Fracture CV L5 ec Susp MBD dd/ Infection Lumbar Spondylosis	Ovary	55555 55555 44444 44444	55555 55555 44444 44444	Settled
45	YTJ	Female	Lumbal Spinal Canal Stenosis CV L4-L5, L5-S1 ec HNP Susp Pathological Fracture at level Th12 ec susp Infection dd/ MBD dd/ Osteoporosis	Ovary	55555 55555 55555 55555	55555 55555 55555 55555	Improved
46	RAO	Female	Pathological Fracture CV Th 6 - Th 7 ec susp MBD ec Susp Ca Mammae Tumor Right Mammae (T4NxMx) Susp Malignancy Pathological Fracture Left 4th Rib Multiple lytic lesion at Right 3rd, 5th Ribs	Cervix	55555 55555 55555 55555	55555 55555 55555 55555	Improved
47	JUN	Male	Metastatic Bone Disease ec Lung Tumor Pathological Fracture Th2, Th3, Th4 ec susp MBD ec Lung Tumor	Prostate	55555 55555 00000 00000	55555 55555 00000 00010	Improved
48	HAL	Female	Pathological Fracture CV L4 ec Susp. MBD Ca Mammae Lumbar Canal Stenosis ec HNP at Level L3-L4, L4-L5	Ovary	55555 55555 00011 21000	55555 55555 00011 21000	Improved

			Right Breast Cancer				
49	KON	Male	Pathological fracture CV L3 ec Susp. MBD dd/ Osteoporosis Lumbal canal stenosis ec HNP at level L2-L3 and L3-L4 Old Burst fracture CV Th8 and Th12 Scoliosis de Novo	Lung	55555 55555 55555 54444	55555 55555 55555 54444	Settled
50	SUL	Female	Pathological Fracture CV Th3-Th4 ec Susp Spondylitis TB dd MBD Paravertebral Abscess at Level Th3- Th4	Breast	55555 55555 00000 00000	55555 55554 00000 00000	Worsened
51	MIR	Female	Pathological Fracture CV L3 ec susp MBD Ca Paru Right Lung Cancer ec Adenocarcinoma Right Pleural Effusion		55555 55555 55334 54444	55555 55555 55334 54445	Improved
52	LAN	Male	Lumbar Canal Stenosis ec HNP at Level L2-3, L3-4, L4-5, L5-S1 dd/ MBD Spondylosis Lumbalis	Lung	55555 55555 00000 00000	55555 55555 00000 00011	Improved
53	SUK	Female	Pathological Fracture CV Th12, L1 ec Susp Infection dd/ MBD Left Loculated Pleural Effusion ec. Susp. Malignancy	Breast	55555 55555 55555 55555	55555 55555 55555 55555	Improved
54	ARD	Male	Posterior mediastinal tumor ec susp. malignancy VCSS gr 3 (improved) Compression Fracture at level CV Th5 ec susp MBD dd/ Spondylitis TB Bilateral pleural effusion CAP pneumonia Decubitus ulcer of the sacrum region gr 3	Lung	55555 55555 00000 00000	55555 55555 00000 00011	Improved
55	SUB	Male	Pathological Fracture CV L2 ec Susp MBD Ca Prostat dd/ MM Multiple Lytic Lesion Thoracolumbar Region ec Susp MBD Ca Prostat dd/ MM Spondylosis Lumbalis Adenocarcinoma Prsotate T2bN0M1b Gelasom score 8-10	Lung	55555 55555 10001 11000	55555 55555 55334 54445	Improved

DISCUSSION

In the last ten decades, the treatment of spinal metastases has undergone numerous changes while the treatment of patients presents a unique challenge. The restoration of a proper clinical status in a metastatic patient is required to maintain a good quality of life while avoiding a decrease in overall survival. (Kumar, 2017) Still, patients suffering from MSCC may have long-term functional impairment. Although surgical decompression has been shown to improve neurological outcomes, the effect of early surgery is still debatable. However, initially, the treatment of symptomatic spinal cord compression was primarily surgical, because surgery can quickly rescue the spinal cord when necessary. (Cofano, 2020) The goal of spinal tumor surgery is complete resection to achieve a cure. However, in the setting of metastatic disease

with a cure unlikely, the goal of surgery becomes palliation. (Kimball, 2013) In our case series, surgical decompression was done to improve patient's quality of life.

In theoretically, Patients with suspected MSCC require a thorough diagnostic work up. History, physical examination, and imaging are undertaken to establish a diagnosis and provide the basis for assessing management options and formulating treatment strategies. Back pain is the earliest and most compelling manifestation of MSCC and over 95% of patients have the symptom at the time of diagnosis. The duration of pain is variable and may be present for weeks or months, accompanied by neck pain, followed by weakness, sensory loss, and sphincters dysfunction. Physical examination should include an assessment of strength, sensation, reflexes, and sphincter function. (Bugmann, 2009)

According to Soto et al, pain is the most reported symptom in patients with bone metastases. (Soto, 2000) In our case presentation case 1-3, pain appear to start before other symptoms begun following by paralysis on extremities. In some cases, patients appear to have a decrease in reflexes and sphincter function and hypoesthesia.

Treatment for MSCC occurs once diagnosis is confirmed ideally with an MRI. Pre-treatment ambulatory status has consistently been shown to be the most important factor in determining treatment response. Treatment options include corticosteroids, bisphosphonate therapy, chemotherapy, and surgical intervention such as decompression. (Cole, 2008)

Patients with MSCC may experience long-term functional impairment. It has been established that surgical decompression improves neurological outcomes, but the effect of early surgery remains uncertain. Meyer et al, evaluated the impact of early versus late surgery for acute MSCC due to spinal metastases, they report from 140 patients (21.7%) had acute MSCC, defined as neurological impairment corresponding to ASIA grade D or lower, acquired within 72 h before admission. They also concluded that, early surgery is pivotal in acute MSCC, substantially increasing the chance for neurological improvement without increasing complication rates. (Meyer, 2022)

This study accordance with our cases, that the patients underwent surgery had improvement on motoric functions and hence their quality of life.

CONCLUSION

Patients with MSCC frequently experience not only pain but also neurological deficits and decreased functional autonomy. Paralysis due to spinal cord compression is the most feared of the complications associated with metastatic spine disease. Surgical decompression can improve the patient's condition by improving their neurological outcomes.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Curtin M, Piggott RP, Murphy EP, Munigangaiah S, Baker JF, McCabe JP, Devitt A. Spinal Metastatic Disease: A Review of the Role of the Multidisciplinary Team. *Orthop Surg.* 2017 May;9(2):145-151.
2. Vanek P, Bradac O, Trebicky F, Saur K, de Lacy P, Benes V. Influence of the Preoperative Neurological Status on Survival After the Surgical Treatment of Symptomatic Spinal Metastases With Spinal Cord Compression. *Spine (Phila Pa 1976).* 2015 Dec;40(23):1824-30.
3. Wagner, A.; Haag, E.; Joerger, A.K.; Jost, P.; Combs, S.E.; Wostrack, M.; Gempt, J.; Meyer, B. Comprehensive surgical treatment strategy for spinal metastases. *Sci. Rep.* 2021, 11, 7988
4. Schmidt MH, Klimo P Jr, Vrionis FD. Metastatic spinal cord compression. *J Natl Compr Canc Netw.* 2005 Sep;3(5):711-9.
5. Cofano F, Di Perna G, Zenga F, Ducati A, Baldassarre B, Ajello M, Marengo N, Ceroni L, Lanotte M, Garbossa D. The Neurology-Stability-Epidural compression assessment: A new score to establish the need for surgery in spinal metastases. *Clin Neurol Neurosurg.* 2020 Aug;195:105896.
6. N. Kumar, R. Malhotra, A.S. Zaw, K.Maharajan, N. Naresh, A. Kumar, *et al.* Evolution in treatment strategy for metastatic spine disease: Presently evolving modalities *Eur. J. Surg. Oncol.*, 43 (9) (2017), pp. 1784-1801
7. Soto S, Artaza T, Gomez R, Camacho FI, Rodriguez I, Gonzalez C, Potenciano JL, Rodriguez R. Rib metastasis revealing hepatocellular carcinoma. *Scand J Gastroenterol.* 2000;35:333-336.
8. Kimball J, Kusnezov NA, Pezeshkian P, Lu DC. Minimally invasive surgical decompression for lumbar spinal metastases. *Surg Neurol Int* 2013;4:78.
9. Buhmann Kirchhoff S, Becker C, Duerr HR, Reiser M and Baur-Melnyk A: Detection of osseous metastases of the spine: comparison

- of high resolution multi-detector-CT with MRI. *Eur J Radiol* 69(3): 567-573, 2009.
10. Cole JS and Patchell RA: Metastatic epidural spinal cord compression. *Lancet Neurol* 7(5): 459-466, 2008
 11. Meyer HS, Wagner A, Raufer A, Joerger AK, Gempt J, Meyer B. Surgery in Acute Metastatic Spinal Cord Compression: Timing and Functional Outcome. *Cancers (Basel)*. 2022 Apr 30;14(9):2249.

How to cite this article: I Ketut Suyasa, I Gusti Lanang Ngurah Agung Artha Wiguna, Ida Bagus Gede Arimbawa, Anak Agung Ngurah Krisna Dwipayana. Neurological outcomes of decompression stabilization and fusion surgery for spinal metastases at Prof. Dr. IGNG Ngoerah General Hospital: a retrospective case series. *International Journal of Research and Review*. 2023; 10(12): 132-144.
DOI: <https://doi.org/10.52403/ijrr.20231217>
