Epidural Stimulation Surgery / T7, Malaysia

Patient Case Report
#ES180047

Patient Overview

Age: 35

Sex: Male

Nationality: Malaysian

Diagnosis on Admission: Spinal Cord Injury, T7

Treatment Received: Epidural Stimulation Surgery, Medtronic Restore Advance 16-electrode MRI Compatible Device. hAFSC and MSCs 120 million.

Date of Admission: 05/08/2018

Date of Discharge: 10/09/2018

Patient's Condition on Admission

Patient is suffering from traumatic spinal cord injury at T7 level resulting from a car accident in 2018. His MRI scan showed T7 fracture-dislocation with subsequent myelomalacia. Patient has minimal motor or sensory functions below the level of injury and is suffering from neurogenic bowel and bladder. Patient does have a history of mild to moderate spasticity and suffers from moderately intense back and leg spasms. Patient does not suffer from neuropathic pain. Patient is paraplegic and has normal upper limb functions.

Treatment Received

After a Spinal MRI scan and comprehensive blood work, patient underwent Laminectomy and implantation of the Epidural stimulation device on on August 6, 2018. The surgery was completed without issue and no complications were reported during the postoperative hospital stay. Surgical wounds healed normally and no spinal cord or superficial wound infection was reported.

Device Mapping and therapy were carried out after surgery for 35 days, then patient was discharged.

Post-Surgical Care	Total Sessions	Sessions Per Week	Time (Hr) Per Session
Mapping	100	20	1
Physical Therapy	27	6	1
Occupational Therapy	-	-	-

Cytotherapy

Type	Amount	Delivery Method	Number of Applications
MSCs	40 Million	IV Injection	1
hAFSCs	80 Million	Lumbar Puncture Injection	2

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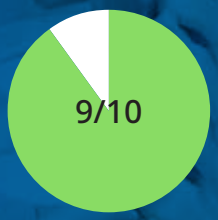
Symptoms Improvement Post-Surgery

Abilities & Symptoms	Motor & Sensory Function (below injury level, before ES surgery)	Improvement Observed (35 days after admission)
Motor Function		
Standing with support	Not Possible	Yes
Stepping with support	Not possible	Yes
Gross motor Skills	Not Present	Yes
Fine Motor skills	Not Applicable	Not Applicable
Balance	Poor	Yes
Coordination	Poor	No
Muscle Mass	Low	Yes
Stamina	Low	Yes
Fatigue	Present	Yes
Spasms	Present	Yes
Spasticity	Present	Yes
Sensory Function		
Neuropathic pain	Present	No
Bladder Function	No	No
Bowel Function	No	No
Sweating Ability	No	No

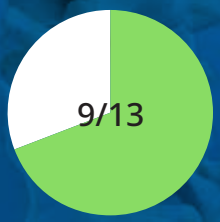
Improvements are monitored in 15 targeted areas: 11 Motor areas and 4 Sensory areas. However, the number of targeted areas may vary depending on patient's condition prior to admission. If patient does not experience symptoms in certain Motor/Sensory functions, or is not impaired in a specific targeted area prior to surgery, it is excluded from the report (Not Applicable). If there is progress in any given area -- either mild, moderate, or significant -- it is measured and reported as positive ("Yes"). No improvement, the existence of pain or spasms, or an inability to perform a measured function is reported as "No".

Motor Functions



Sensory Functions

Overall Functions



Results Interpretation

Since patient is paraplegic with normal upper limb function, improvement in Fine Motor Skills was considered "Not Applicable". Patient does not suffer from Neuropathic pain therefore it was also considered "Not Applicable". Motor Function improved in 9 out of 10 targeted areas when the Epidural Stimulation device was switched on. Patient has not experienced any changes in Sensory Function, but more feedback will be collected after 3 months to note any improvements made by cytotherapy. Overall, improvements were recorded in 9 out of 13 targeted Motor and Sensory Function areas.

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Treatment Summary

After Epidural Stimulation surgery, patient received 100 Mapping sessions and 27 Physical Therapy sessions. Patient also received 120 million: 40 million MSCs and 80 million hAFSCs through one IV injection and two lumbar puncture injections, respectively. All three applications went well without adverse effects and no short-term or acute complications have been reported.

Patient's Gross Motor skills have improved significantly, including ankles, hip and knee flexion, and knee extension (kicking out and pushing out). Patient has good static sitting balance with minimal support, and dynamic sitting balance has improved slightly.

When standing and stepping with support, patient did not require a hoist and was able to use a walking frame and parallel bars. When moving from sitting position to standing position, patient requires moderate assistance and must hold the parallel bars. Assistance is required to lock knees while standing, however when patient uses a knee brace he is able to lock his knees himself. Patient is still unable to lock his hips during standing and requires assistance for weight bearing on both legs.

When stepping, patient is able to lift both feet and does not require any assistance in foot placement. While wearing a knee brace, patient is able to lock his knees very well during stepping, however without it patient requires assistance. Patient is not yet able to coordinate between left and right feet when taking steps.

Patient's muscle mass has increased and endurance has improved significantly. Two mapping programs were conducted by physical therapists for spasticity and spasms, leading to reduced flexor spasms that patient experiences during sleep.

There was no noticeable change in bladder and bowel functions. Patient received cytotherapy, therefore we expect to see results in these areas within 3 months time. After 35 days, patient was discharged and will continue his physiotherapy back home.

For more information please contact:

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