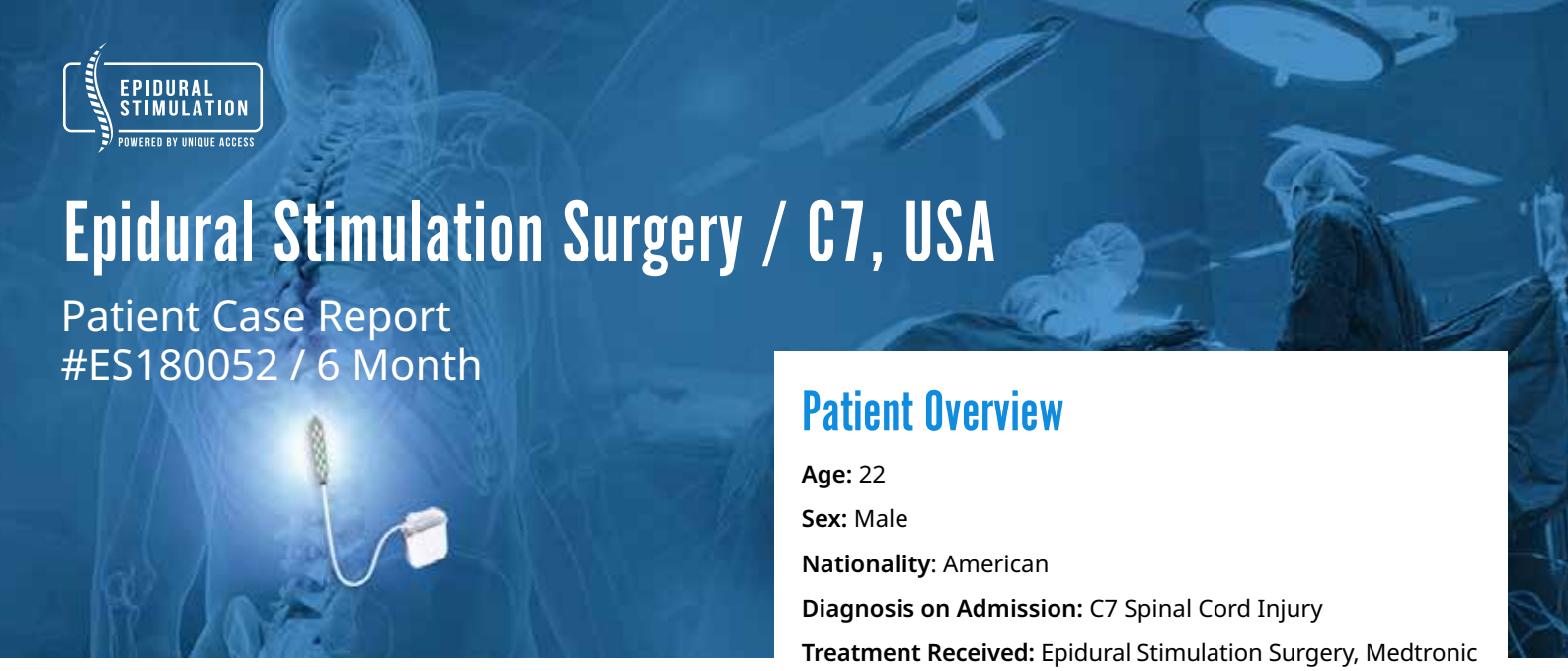
EPIDURAL STIMULATION
POWERED BY UNIQUE ACCESS

Epidural Stimulation Surgery / C7, USA

Patient Case Report
#ES180052 / 6 Month



Patient Overview

Age: 22

Sex: Male

Nationality: American

Diagnosis on Admission: C7 Spinal Cord Injury

Treatment Received: Epidural Stimulation Surgery, Medtronic Restore Advance 16-electrode MRI Compatible Device. 100 million hAFSC.

Date of Admission: 31/08/2018

Date of Discharge: 05/10/2018

Patient's Condition on Admission

Patient sustained a C7 fracture-dislocation with subsequent spinal cord myelomalacia on November 2, 2016. He has minimal motor or sensory function below the injury level and suffers from neurogenic bowel and bladder. Patient does not suffer severe spasticity but does suffer moderate to severe neuropathic pain, particularly in the upper extremities, which is managed by high doses of Gabapentin (600 mg, 4 times a day). Patient is able to move his upper limbs and is independent in his daily activities.

Previous Therapies and Treatments

Patient received cytotherapy in 2017, as well as physical and occupational therapy before coming to Unique Access Medical.

Treatment Received

After a Spinal MRI scan and comprehensive blood work, patient underwent Laminectomy and implantation of the Epidural stimulation device on September 2, 2018. The surgery was completed without significant adverse effects and the surgical wound healed normally. No serious complications were reported during the hospital stay.

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

Post-Surgical Care	Total Sessions	Sessions Per Week	Time (Hr) Per Session
Mapping	90	22	1
Physical Therapy	30	7	1
Occupational Therapy	-	-	-

Cytotherapy

Type	Quantity	Delivery Method	Number of Applications
hAFSCs	30 Million	IV Injection	1
hAFSCs	70 Million	Lumbar Puncture Injection	2

EPIDURAL STIMULATION
POWERED BY UNIQUE ACCESS

Cytotherapy (7 Months After)

Type	Quantity	Delivery Method	Number of Applications
hAFSCs	30 Million	IV Injection	1
hAFSCs	70 Million	Lumbar Puncture Injection	2

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	Yes
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

UNIQUE ACCESS
MEDICAL

EPIDURAL STIMULATION
POWERED BY UNIQUE ACCESS

Results Interpretation

In this patient, Fine Motor Skills were normal, therefore 14 areas instead of 15 were targeted. Motor function improved in 10 out of 10 targeted areas when the Epidural Stimulation device was switched on. There was no change in neuropathic pain. Patient has not noticed any changes in Sensory Function areas, and more feedback will be collected after 3 months to note any improvements made by cytotherapy. Overall, improvements were recorded in 10 out of 14 targeted Motor and Sensory Function areas.

Treatment Summary

After the Epidural Stimulation surgery, the patient received 90 Mapping sessions and 30 Physical Therapy sessions. Patient also received 100 million hAFSCs through two lumbar puncture injections and one IV injection. All three applications went well without adverse effects and no short-term or acute complications have been reported.

Patient is able to stand with support at a parallel bar when the Epidural Stimulation device is switched on. He is able to lock his left knee better than right knee. He has good upper trunk control, but limited lower trunk control. Patient is able to lock his hips which allows him to stand. While standing, patient applies more weight to his right leg than the left leg. Patient is able to take steps with the walking frame, no hoist required, and is able to lift both feet when taking steps. He is able to lock his left knee consistently, but right knee only sometimes. Patient has very good coordination between the left and right foot when taking steps. When taking short steps, patient does not require assistance in foot placement but does when taking longer steps.

Patient's Gross Motor Skills have improved significantly, including ankle, hip and knee flexion, and knee extension (kicking out) when Epidural Stimulation device is switched on. Patient has good static sitting balance and no support is needed. However, during dynamic sitting, balance is poor due to weak lower trunk muscles. Static standing balance is good at the parallel bar. Spasms and spasticity are lessened when Epidural Stimulation device is switched on.

There was no noticeable change in bladder and bowel functions. Patient is still taking the same dose of Gabapentin (600 mg, 4 times a day), therefore no change was visible in neuropathic pain. After 35 days, patient was discharged and will continue his physiotherapy back home.

Three and Six-Month Follow-Up Assessment

Ability	Improvement Assessment 3 Month After Discharge from UAM	Improvement Assessment 6 Month After Discharge from UAM
	Motor Functions	Motor Functions
Standing with support	Moderate Improvement	Significant Improvement
Stepping with support	Moderate Improvement	Significant Improvement
Gross motor Skills	No change	Moderate Improvement
Fine Motor skills	Not Applicable	Not Applicable
Balance	Small Improvement	Moderate Improvement

UNIQUE ACCESS MEDICAL

Ability	Improvement Assessment 3 Month After Discharge from UAM	Improvement Assessment 6 Month After Discharge from UAM
	Motor Functions	**Motor Functions**
Coordination	Small Improvement	Significant Improvement
Muscle Mass	No change	Moderate Improvement
Fatigue	No change	No change
Stamina	No change	No change
Spasms	Mild improvement	Worse than before
Spasticity	Mild improvement	Worse than before
	Sensory Functions	**Sensory Functions**
Neuropathic pain	No change	Mild Improvement
Bladder Function	No change	Mild Improvement
Bowel Function	No change	No change
Sweating Ability	No change	No change

Three-Month Follow-Up Summary

Three months after discharge, the patient completes 15 hours of therapy per week. Patient has not experienced much change in motor and sensory function since discharge, but has not experienced any increase in spasms, spasticity, or neuropathic pain. In fact, he has noticed minor improvements in spasms when the Epidural Stimulation device is switched on. Patient's neuropathic pain has also remained stable and he is still taking Gabapentin (600 mg, 4 times a day).

Patient noticed moderate improvement during stepping exercises. Patient is able to lift both feet up very well while taking steps, however, still requires assistance in foot placement. He is able to lock his left knee, but not his right knee, and his coordination is improved in both legs. When standing with support, he is able to lock his hips well.

No visible changes were seen in muscle mass or stamina. However, the patient noticed the strengthening of core muscles in the abdominal area, which does help the patient with emptying his bowel faster.

Overall, the patient is very satisfied with his outcomes after the Epidural Stimulation surgery. He will continue his physical therapy and another follow-up call will be made in three months time.

Six-Month Follow-Up Summary

Six months after discharge, the patient completes 15 to 20 hours of physical therapy per week. The patient has returned to UAM for more mapping sessions seven months after receiving the Epidural Stimulation device, and for cytotherapy as well. He received 100 million hAFSCs through two lumbar puncture injections and one IV injection.

Patient's gross motor functions have improved moderately, all programs on his device are still working. The patient is able to flex his ankle, hip, and knees, as well as perform knee extensions -- both kicking and pushing out. Patient's dynamic standing balance has improved moderately as well. The patient has noticed an increase in muscle mass in legs since the Epidural Stimulation device was implanted.

The patient has noticed significant improvement during standing and stepping exercises. The patient is still able to stand up straight, has good static standing balance, and improved trunk control. Patient is still able to lock his hips and bears weight equally on both legs, however, patient is still not able to lock his knees completely and requires assistance in keeping his knees locked.

During stepping exercises, the patient is still able to lift his feet and set them down by himself without any assistance. Significant improvement was noticed in the patient's foot coordination while taking steps. Patient is able to lock his left knee the majority of the time, however, requires assistance in locking his right knee. Patient also reports improvement in strength and stamina, his core muscles have become stronger.

Patient noticed an increase of spasm and spasticity after receiving Cytotherapy this time. Patient reports that he is not able to switch on the overnight program on the Epidural Stimulation device due to the sensation of the electrical current, which does not allow him to sleep. When the stimulator is on, the patient does not experience spasms, but sometimes does when it is off.

The patient has reported mild improvement in his Neuropathic Pain. Patient is now taking 300mg of Gabapentin per dose instead of 600mg. Patient has not noticed any improvement in bowel functions and sweating ability, however mild improvement is noticed in his bladder functions. Patient has also regained his sexual functions. Patient noticed an increase in sensation when his bladder is full and before he has to go to the bathroom.

For more information please contact:

UNIQUE ACCESS MEDICAL

Thailand office:

111 Naradhiwas Rajanagarindra 7 Alley,
Khwaeng Thung Maha Mek, Khet Sathon,
Krung Thep Maha Nakhon 10120,
Bangkok, Thailand

Telephone:

+66 (0) 2 287 2056 TH
+1 888-557-5988 Toll Free USA
+61 2 8310 7389 AUS
+44 20 3868 1498 UK

E-Mail:

info@epiduralstimulationnow.com

https://uniqueaccess.com
https://epiduralstimulationnow.com

epiduralstimulationnow

@SCIbreakthrough