
Alexander Baker, DO; Raymundo Millan, MD; Evan Zeldin, MD

PATIENT PRESENTATION
• A 19-year-old African-American female with no past medical history presented to ECU Health Medical Center after being an unrestrained passenger in a motor vehicle collision
• On admission, she was unable to move her arms and legs
• She was also unable to urinate on her own and required foley catheter placement for bladder decompression

HOSPITAL COURSE
• CT scan revealed a C5-C6 SCI from a vertebral body fracture as well as grade II/III anterolisthesis at C5-C6, resulting in cord compression
• It also showed evidence of anterior and posterior ligamentous injury
• She subsequently underwent posterolateral arthrodesis and fusion of C5-C6
• Post-operatively, mechanical ventilation weaning was difficult as patient had a cervical SCI that affects respiratory function on a neurological level, and thus, a diaphragmatic pacer was placed to assist with weaning
• Patient remained unable to move her arms or legs, and required foley catheter placement with eventual intermittent catheterization once in rehab

MANAGEMENT AND OUTCOMES
• While in rehab, MV was weaned successfully due to the diaphragmatic pacer placement
• Three weeks of diaphragmatic strengthening exercises were required prior to weaning
• This helped improve her functional outcome as working with therapies was less cumbersome because she did not require ventilator support
• She also reacquired the ability to speak more naturally, allowing for better communication and independence

FIGURES
• Figure 1: CT cervical spine showing C5-C6 anterolisthesis with cord compression
• Figure 2: General view of diaphragmatic pacing system

DISCUSSION
• Approximately 50% of spinal cord injury (SCI) patients develop quadriplegia, and of these, 4% require mechanical ventilation (MV) indefinitely as well
• Diaphragmatic pacing is an alternative method for achieving adequate respiratory function in SCI patients
• It is a relatively rare, minimally invasive procedure whereby electrodes are implanted into the nerve endings at the diaphragm, and an external stimulator sends electrical signals to the electrodes, thus, contracting the diaphragm
• PACING allows for better tolerability and adherence to a rehabilitation program as it is less cumbersome than a ventilator, in turn, potentially increasing the patient’s functionality and independence
• Additionally, patients completely independent from MV can usually close their tracheostomy, allowing them to regain their speech, thus, increasing their independence as well.

CONCLUSIONS/TAKE HOME POINTS
• Diaphragmatic pacing is an alternative method to assist SCI patients in achieving adequate respiratory support
• It also allows for an increased quality of life as well as functional independence as it allows a patient to speak and breathe more naturally and increases their mobility on discharge

REFERENCES
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