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Title: The role of nerve transplantation in the management of symptomatic diaphragm paralysis

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Body: Diaphragm paralysis may cause symptomatic respiratory disturbances, and often occurs as a result of iatrogenic or traumatic phrenic nerve injury. Treatment options have been limited to plication of the diaphragm, however it is likely that most patients receive no therapeutic intervention regardless of the severity of symptoms. Although nerve transplantation is efficacious for various peripheral nerve injuries, it has only begun to be established for analogous conditions involving the phrenic nerve. Thirty consecutive patients presenting with chronic, symptomatic phrenic nerve injuries following surgery, chiropractic manipulation, trauma or anesthetic blocks underwent a comprehensive evaluation, including radiographic and electrophysiologic assessments. Inclusion criteria consisted of patients who failed to improve during six months of conservative management, in whom a clear etiology for phrenic nerve injury could be elicited and confirmed with pre-operative evaluation. Measures of post-operative improvement included: pulmonary function testing, chest fluoroscopy, and a standardized quality-of-life survey. Reversal of diaphragm paralysis was clearly demonstrated in 77% of patients (23/30) following nerve transplantation. In four patients (13%) there was no clinical or radiographic evidence of diaphragm function after 18 months, whereas in the remaining three patients (10%) it was too early to determine if surgical intervention was successful. There were no pulmonary or cardiac complications. Nerve transplantation may reverse phrenic nerve injury and should be considered as an effective treatment option in the management of symptomatic diaphragm paralysis.