Right Brachial Plexus Avulsion of a 19 Year Old Male Collegiate Football Player
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Background: A 19-year-old male football player was involved in a football tackling drill during a spring practice on March 29 2010, when an opposing player’s helmet collided with the athlete’s shoulder. The patient’s neck was forced into lateral flexion and his right shoulder was depressed. The patient reported paresthesia and loss of motor function in his right arm during the initial on-field assessment. EMS was activated and the patient was spine boarded and taken to the local emergency room. He was diagnosed with a right shoulder tendon rupture and was discharged. Several hours after injury the patient returned to the hospital with extreme pain, a burning sensation and loss of motor function. The team’s physician was present and determined the patient needed more advanced care. The patient was transported to the Hospital of the University of Pennsylvania. Once at the trauma center an evaluation and diagnostic testing, including MRI, were performed over a week’s time. The patient was diagnosed with a brachial plexus avulsion of nerve roots C5, C6, and C7 on his right side. Following this diagnosis, surgery was recommended to repair the damaged nerves; the musculocutaneous nerve and the supraclavicular nerve were too damaged to fuse back together without nerve grafts. The patient has a previous medical history of brachial plexopathies, the most recent occurring 20 minutes prior on the same side as the nerve root avulsion. Differential Diagnosis: Brachial plexus avulsion, brachial plexopathy, disc herniation, nerve root compression, spinal cord injury. Treatment: Two nerve grafts were used to repair the damaged nerve roots. Nerve roots C5, C6, and C7 were unreparable. The patient’s sural nerve was harvested and one portion was used to connect the phrenic nerve to the musculocutaneous nerve. A second portion was used to connect the accessory nerve to the supraclavicular nerve for reinnervation. The goal of the surgery was to regain function at the patient’s right arm. The patient was immobilized for 3 weeks, with a shoulder sling and soft cervical collar. Patient started therapy on May 10, 2010. Patient’s manual muscle tests were trace to fair plus on the right side, with the majority of the strength in the wrist and fingers. Therapy included moist heat for pain management; soft tissue massage; strength and range of motion exercises at the fingers, wrist, and shoulder and passive stretching to prevent adhesive capsulitis at the shoulder. The patient was instructed to use the affected arm as much as possible with activities of daily living to promote reinnervation. After four months of therapy, manual muscle tests had improved in all but the biceps and triceps, which were still 0 or trace. After eight months of rehabilitation the patient’s manual muscle test have improved to fair plus or good in all but the biceps (0/5), triceps (0/5) and external rotators (2⁺/5). Uniqueness: Full avulsions of multiple nerve roots at the brachial plexus are extremely rare in athletics. These injuries most often occur in motor vehicle accidents (1-3). In athletics, avulsions typically take place in a game, but this injury occurred in a practice. Also this injury was correctly diagnosed and immediately treated with surgery. Previous reported cases were initially misdiagnosed for weeks and treated conservatively prior to surgery. Conclusions: Brachial plexus avulsions are extremely rare in athletics and typically result in lifelong functional defects. Athletic Trainers must be aware of this injury and must know how to prevent, treat, and rehabilitate it quickly. Even with rapid diagnosis and treatment the outcome is frequently poor and life altering. Word Count: 580