Treatment of Post-Traumatic Arthritis in a Patient with Obstetric Erb’s Palsy with Reverse Total Shoulder Arthroplasty

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Background:
Obstetric Erb's palsy, resulting from brachial plexus injury, leads to glenohumeral internal rotation, adduction and extension. While Erb's palsy typically resolves spontaneously, it may result in longstanding soft tissue contracture in adulthood, leading to progressive glenohumeral joint deformity and arthritis. Initial management prioritizes nonoperative approaches, while interventions such as tendon transfers are reserved for patients with limited shoulder function and no signs of arthritis. Reverse total shoulder arthroplasty (RSA) is recommended for patients with significant arthritic changes. Post-traumatic arthritis in Erb's plasy patients is a rare and complex condition not previously reported in the literature. It may necessitate shoulder arthroplasty to improve pain symptoms, shoulder function and overall quality of life. However, in this group of patients, shoulder arthroplasty is technically demanding, posing unique challenges for surgeons.

Purpose:
This video overview and case presentation demonstrates the complexities associated with management and treatment of a patient with post-traumatic shoulder arthritis with a history of obstetric Erb's palsy. In addition, it provides recommendation for preoperative evaluations as well as surgical tips and pearls to help surgeons avoid complications and maximize the clinical outcome of this complex condition.

Methods:
The anatomy, pathogenesis, diagnosis, and treatment options for patients with Erb's palsy are reviewed. A case of a 62-year-old male with symptomatic post traumatic glenohumeral arthritis with a history of obstetric Erb's palsy is presented. This injury occurred after a fall causing progressive severe pain and limitation of his shoulder function preventing him from performing his activities of daily living and work. Preoperative workup included nerve conduction studies demonstrating intact deltoid function. After exhausting non-operative treatments, a thorough discussion regarding the risks, potential complications, benefits, and prognosis of surgical intervention was conducted. The patient elected to proceed with RSA to primarily improve his pain symptoms, and possibly shoulder function.

Results:
Post-operative radiographic images showed reverse shoulder prosthesis in good alignment and position. Clinical outcomes showed significant improvement of his pain symptoms and overall improvement of his shoulder function compared to his preoperative status. The patient was satisfied with the surgery and was able to return to his preoperative profession.

Conclusion:
Reverse shoulder arthroplasty is a viable treatment option for patients with post-traumatic arthritis as a result of longstanding underlying Erb's palsy. While dependent on a functioning deltoid, RSA can prove to be very effective in pain control and improvement of quality of life, though it is less predictable in improving shoulder range of motion. A thorough preoperative evaluation as well as familiarity with potential intraoperative challenges is recommended for ensuring an optimal outcome.