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CASE REPORT

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Surgical Correction of Sprengel Deformity of the Shoulder by Wood Ward's Technique – A Case Report

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Abstract

The most typical congenital defect of the shoulder girdle is called Sprengel deformity (SD), also known as congenital high scapula or congenital undescended scapula. It is distinguished by a protrusion at the scapula's upper medial border and a restriction of shoulder abduction. 7-year-old female child was brought to the hospital with complaints of difficulty to perform overhead abduction and their parents complained of cosmetic defect noted over the right upper back i.e., asymmetry of upper back. On examination, the child was able to per- form overhead abduction from 0-100deg at gleno humeral joint after which scapula-thoracic motion takes place. X ray revealed a high or undescended scapula. CT scan was performed as a pre-operative planning proto- col to rule out the presence of omovertebra. No omovertebrae noted and deformity was graded as Cavendish grade III. Patient was taken up for proposed surgery. Postoperatively patient was put in shoulder arm pouch for 4 weeks and gradually started on shoulder range of motion exercises. At final follow up, wound healed completely and patient was able to abduct the shoulder for 0-14'0deg. We conclude that treating sprengel deformity with the Woodward method correctly combined with post-operative therapy yields out- standing functional and aesthetic benefits.

Keywords: Sprengel deformity; Sprengel shoulder; Woodward's technique; Surgical repair of sprengel shoulder

Introduction

The most typical congenital defect of the shoulder girdle is called Sprengel deformity (SD), also known as congenital high scapula or congenital undescended scapula.[1] It is distinguished by a protrusion at the scapula's upper medial border and a restriction of shoulder abduction. The scapula is rotated medially and adducted in addition to its elevated localization, which is particularly noticeable on the superior medial border.[1,2]

As a result, the inclination of the glenoid articular surface changes to downward. In one-third to 65% of people with SD, omovertebra is seen. As a result, patients with SD frequently exhibit either cosmetic issues, functional limitations, or both.[3]

Case Report: 1

7-year-old female child was brought to the hospital with complaints of difficulty to perform overhead abduction and their parents complained of cosmetic defect noted over the upper back i.e., asymmetry of upper back. On examination, the child was able to perform overhead abduction from 0-100deg at gleno humeral joint after which scapula-thoracic motion takes place. X ray revealed a high or undescended scapula. CT scan was performed as a pre-operative planning protocol to rule out the presence of omovertebrae. No omovertebrae noted and deformity was graded as Cavendish grade III. By using the Woodward technique, the patient chose to have corrective surgery. Anesthesia was used during the procedure. On the surgical table, the young patient was positioned with the affected side uppermost in a semi-prone position. The operating field freed the back from the neck until the iliac spines, the two shoulders, and the high part of the arms. Incisions and osseous prominences were initially drawn with a marker. From the fourth cervical vertebra to the tenth thoracic vertebra, a vertical skin incision of size approximately 10 cm was created in- side the medial scapular border. Following subcutaneous dissection, the small and big rhomboid muscles, as well as the origin of the trapezius muscle, were removed extraperiosteally. After the spinal nerve was separated and identified, the levator scapulae muscle was divided upward. Superomedial scapular border is osteotomised due to its prominence. Then, the scapula was lowered by moving the trapezius muscle's origin to the lower levels and suturing it over the spinous processes. The inferior pole of left scapula was sutured to latissimus dorsi muscle. Wound closed in layers and sterile dressing applied. Patient was put in shoulder arm pouch for 4 weeks and gradually started on shoulder range of motion exercises. At final follow up, wound healed completely and patient was able to abduct the shoulder for 0-140deg.

Discussion

With the secondary benefit of improving cosmesis, surgical therapy of SD has mostly focused on shoulder ROM improvement in patients with restrict- ed abduction. For evaluating cosmesis, the original Cavendish classification is helpful.[4] The patient is rated in full clothing. With 1970s fashion, it was difficult to distinguish between "no deformity" and "very little deformity." However, since the classification was first stated, the wearing style has changed. Over the past ten years, more people have adopted clothing trends that leave their shoul-

Fig 1. Inspection of the patient from behind, there by revealing the deformity

Fig 2. Difficulty in performing overhead abduction compared to the other limb, Note the scapulothoracic motion occurring at the affected limb

Fig 3. Radiograph of chest with bilateral shoulder revealing the deformity and asymmetry of scapula levels

Fig 7. Patient performing overhead abduction of 140deg.after range of motion exercises

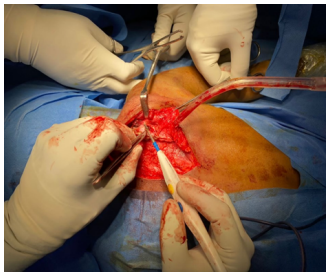

Fig 4. Intraoperative transposition of scapula and lowest levels of the rapezius muscle's origin sutured over the spinous processes

Fig 5. After correction, Wound closure

Fig 6. Postoperative wound healed and deformity appears to be cosmetically better

ders bare. Over the past few decades, cosmesis has increasingly in- creased in significance in society, particularly with the rise of social media. Surgery was not necessary if a patient had good shoulder abduction, regardless of how bad their deformity was.[5] Patients who have good shoulder abduction recently applied to clinics asking for cosmesis improvement. Some parents or patients might still ask for surgery to improve their appearance.

Conclusion

The modified Woodward method is an effective alternative for surgically treating SD since it leaves only moderate scarring, has a low complication rate, and improves both cosmetic and functional outcomes. Grade 0, in accordance with the modified Cavendish classification, should also be taken into consideration to describe the patients with an exceptional surgical result in situations when the major goal of improvement is cosmesis.

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