



## Winging Scapula Including Fascio-Scapular Humeral Dystrophy (FSHD)

### What is Winging of the Scapula?

The shoulder blade is a mobile structure, which is stabilised against the chest wall by a large number of shoulder muscles (Muscles of the shoulder girdle) working in tandem with each other. If this harmonious interaction between one or more of these muscles is disturbed, it can result in the shoulder blade becoming excessively prominent over the back, which is referred to as 'Winging of the Scapula'



The winging may be the result of simple changes in shoulder mechanics as a result of conditions such as impingement or instability or more complex problems such as nerve or muscle dysfunction resulting in poor control and stability of the shoulder blade.

### Facioscapulohumeral dystrophy:

This is one of the many conditions that can lead to marked winging of the shoulder blade with significant

loss of shoulder function. Facio-scapulo-humeral dystrophy causes muscular weakness of the face, shoulder girdle, and upper arm with selective sparing of the deltoid muscle. This leads to scapular winging and a marked decrease in flexion and abduction of the shoulder. As the muscles stabilizing the scapula become involved, the scapula starts to 'wing'. The deltoid is spared, but its action is wasted because of the unstable scapula. The deltoid contracts and the arm attempts to move in a normal fashion, but because the scapula is no longer stable, it wings and rotates under the forces of the long lever arm of the upper limb and scapula complex.

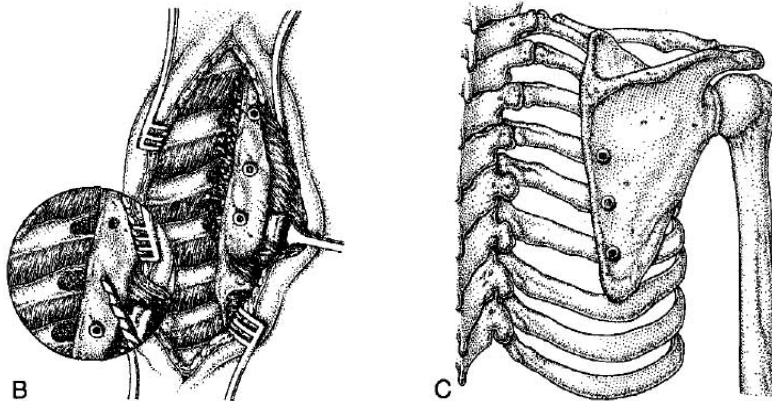
### Thoracoscapular Fusion

Mechanical fixation of the shoulder blade to the chest wall provides a stable fulcrum on which the deltoid can exert its powerful action on the humerus and abduct the arm without rotation of the scapula. Treatment of the patient with muscular dystrophy is best accomplished by a multidisciplinary team from neurology, genetics, psychiatry, orthopaedic surgery, physical and occupational therapy, and medical sociology. Optimal

therapy should be prospective with a thorough approach to total treatment. The majority of orthopaedic intervention is confined to the rare facioscapulohumeral dystrophy, in which shoulder weakness occurs early and can interfere significantly with upper extremity function. At an early stage, facioscapulohumeral dystrophy affects tasks of repetitive use requiring abduction and flexion of the shoulder, even in such simple daily activities as overhead dressing.

## The operation

Mechanical fixation of the shoulder blade to three or four ribs of chest wall is performed using screws and washers and bone graft that is taken from the hip (pelvis) or using Synthetic bone graft substitute.



## Post operatively

Following the Thoracoscaphular Fusion and for the first 3 months the patient MUST wear a brace (similar to the one pictured below) all the time to support the arm weight and protect the fusion until solid bony healing take place.



The type of brace used for 3 months after surgery

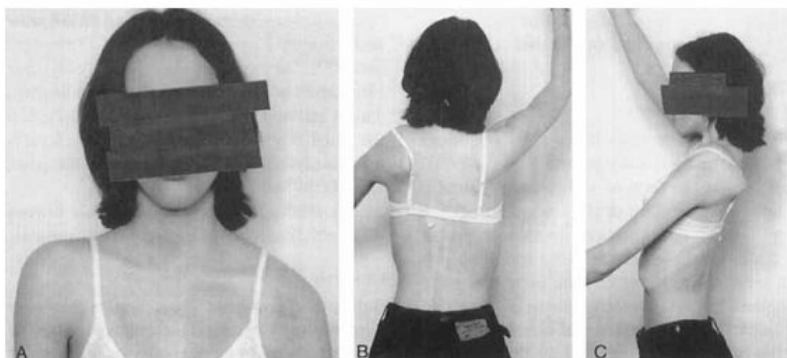


Fig 4A-C. Photographs of Patient 9 taken 16 months after thoracoscaphular fusion of the right shoulder. (A) Square shouldered appearance on the right side after unilateral thoracoscaphular fusion is evident. (B) Range of movement on the side that was surgically treated is shown. (C) Scapula winging and ROM on contralateral side that was not surgically treated can be seen.

## The Shoulder in Patients With Muscular Dystrophy

Shoulder weakness and instability are not usually a major part of the clinical picture of muscular dystrophies. Problems usually do not arise until the patient is wheelchair bound, at which time assistive appliances may be required. The majority of orthopaedic intervention is confined to the



rare fascio-scapulo-humeral dystrophy. Fascio-scapulo-humeral dystrophy causes muscular weakness of the face, shoulder girdle, and upper arm with selective sparing of the deltoid muscle. This leads to scapular winging and a marked decrease in flexion and abduction of the shoulder. As the muscles stabilizing the scapula become involved, the scapula starts to wing. The deltoid is spared, but its action is wasted because of the unstable scapula. The deltoid contracts and the arm attempts to move in a normal fashion, but because the scapula is no longer stable, it wings and rotates under the forces of the long lever arm of the upper limb and scapula complex. Mechanical fixation of the scapula to the thoracic wall provides a stable fulcrum on which the deltoid can exert its powerful action on the humerus and abduct the arm without rotation of the scapula. Twenty thoraco-scapular fusions were performed on 13 patients. Ten patients (14 shoulders) were available for long term follow-up. The long term results showed that this operation is successful in achieving stability of the scapula, while greatly improving function and cosmesis. Although the course of this type of muscular dystrophy is variable, the benefits of surgery have not deteriorated with progression of the disease during a maximum follow-up of 44 years. **CLINICAL ORTHOPAEDICS AND RELATED RESEARCH**; Number 368, pp. 80–91 © 1999 Lippincott Williams & Wilkins, Inc.

### **Medium to Long-Term Outcome of Thoracoscapular Arthrodesis with Screw Fixation for Fascioscapulohumeral Muscular Dystrophy**

**Background:** Shoulder girdle muscle weakness is the most constant feature of fascioscapulohumeral muscular dystrophy and leads to scapular winging. Mechanical fixation of the scapula to the thoracic wall provides a stable fulcrum on which the deltoid muscle can exert its action on the humerus. The aim of this study was to evaluate the medium to longterm outcome of thoracoscapular arthrodesis with screw fixation (the modified Howard-Copeland technique).

**Methods:** All patients with fascioscapulohumeral dystrophy who underwent thoracoscapular arthrodesis with screw fixation and bone-grafting from July 1997 to July 2010 were retrospectively reviewed. Preoperative and postoperative clinical assessment included active shoulder elevation, the Constant score, a patient satisfaction score, and cosmetic satisfaction. Union was determined both clinically and radiographically. **Results:** Thoraco-scapular arthrodesis was performed in thirty-five shoulders in twenty-four patients; eleven patients underwent bilateral procedures. The principal study group consisted of thirty-two shoulders in twenty-one patients with a minimum follow-up of twenty-four months (mean, eighty-eight months; range, twenty-four to 174 months). The mean Constant score increased from 30 (range, 17 to 41) preoperatively to 61 (range, 30 to 90) postoperatively. The mean satisfaction score increased from 1 (range, 0 to 4) to 8.4 (range, 4 to 10). Early complications consisted of one pneumothorax, one superficial wound infection, and four early failures, two of which were associated with noncompliance with the postoperative regimen. Late complications consisted of one post-traumatic fracture resulting in loosening and one painful nonunion; both were treated successfully with revision.

**Conclusions:** Thoraco-scapular arthrodesis with screw fixation prevented scapular winging and improved short-term and long-term shoulder function in patients with fascio-scapulo-humeral dystrophy. **J Bone Joint Surg Am.** 2013;95:1404-8 d <http://dx.doi.org/10.2106/JBJS.L.01097>



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