CASE REPORTS

Greenstick fracture of the scapular blade; an unusual case of winging of the scapula

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Case report

A 14-year-old boy presented with an isolated injury to his left shoulder following a direct impact onto the posterior aspect of his shoulder after falling off his skateboard. He complained of pain localised to the injury site. He was aware of an apparent scapular deformity. There were no symptoms suggestive of either neurological or cardiorespiratory involvement.

On inspection the left shoulder was held lower than the right and there was winging of the left scapula (Fig. 1), which was very tender to palpation. There was marked limitation of left shoulder movements due to pain. Adequate testing of rotator cuff integrity as well as serratus anterior and deltoid function was not possible due pain inhibition. Neurovascular examination was unremarkable.

Subsequent examination prior to intervention demonstrated intact rotator cuff power, normal deltoid power as well as decreased scapular prominence on active shoulder forward flexion indicating active serratus anterior function. There was active forward flexion of 180°, abduction of 180° but internal and external rotation was limited to 70° due to discomfort.

AP and lateral radiographs of the left the shoulder (Fig. 2) revealed a fractured left scapular blade with apex ventral angulation but no displacement (AO/OTA 09-A). A CT scan was obtained which demonstrated a greenstick fracture of the left scapular blade consisting of an incomplete transverse fracture with intact posterolateral cortex (Fig. 3). There was neither intrathoracic injury nor rib fractures. After obtaining parental consent and patient agreement an operative course of treatment was planned to correct the cosmetic deformity. The patient had manipulation of the left scapula under general anaesthetic guided by image intensifier. This resulted in a satisfactory reduction of the fracture (Fig. 4). There was no neurovascular deficit postoperatively.

Postoperatively the patient’s left arm was placed in a sling and allowed to mobilise as tolerated after 2 weeks. On follow-up assessment 4 weeks postmanipulation there was no reappearance of clinical deformity, no neurovascular deficit, he was pain-free and repeat X-rays confirmed a stable fracture position with evidence of healing (Fig. 5).

Discussion

By far the commonest cause of scapular winging is paralysis of serratus anterior due to long thoracic nerve palsy, but other causes have been described including spinal accessory nerve palsy, dorsal scapular nerve palsy, as well as scapular or thoracic neoplasms. This is only the second reported case in the world literature of a greenstick fracture of the scapula causing a deformity resembling scapular winging. In common with the previously reported case, our patient’s fracture was caused by a low energy injury resulting in an obvious deformity with no significant restriction of the shoulder girdle.
movements. We used CT scan to obtain a more accurate assessment of the anatomical location, type and extend of the fracture as well as exclude intrathoracic injuries. This was an important part of our patient assessment as significant intrathoracic or rib injuries may have been missed with plain X-rays alone, and may have manifested intra-operatively with potentially life-threatening complications.

As there are no available data describing the remodelling potential of the scapula the main concern was a potentially residual unsightly deformity. Due to the risks of open reduc-
tion and internal fixation\textsuperscript{1} we elected to treat this injury closed. In the event of loss of reduction as a result of persistent deforming forces (a recognised phenomenon with greenstick fractures\textsuperscript{4,5,8}) we planned to use a percutaneous screw. This situation though never occurred as the reduced fracture remained in a satisfactory position throughout the course of treatment.

**Conclusion**

We present a case of an angulated greenstick fracture of the scapula causing a deformity resembling scapular winging. It resulted from a low energy injury and had no other associated injuries. This was successfully treated with closed reduction resolving the unsightly deformity.

Based on this case we are in agreement with the recommendations of the authors of the single previously reported similar case\textsuperscript{2} that in treating a significantly angulated greenstick fracture of the scapula closed reduction should be considered as a first line management. We also believe that when treating this type of fracture with closed reduction one should be prepared to use a minimally invasive fixation technique if there is evidence of elastic recoil of the fracture towards its original position.

**References**


Figure 4  Intraoperative radiography with image intensifier before (left) and after manipulation (right).

Figure 5  Plain scapula radiographs 4 weeks post-reduction demonstrating satisfactory and stable fracture position.