THE SNAPPING SCAPULA AND SUBSCAPULAR EXOSTOSES

T. A. PARSONS, STOKE-ON-TRENT, ENGLAND

Snapping scapula is an unusual condition in which the patient, usually a young adult, complains of an audible, and often palpable, grating and snapping sound on shoulder girdle movements. Scapular movements are uncomfortable, and the noise can often be localised by the examiner to a specific part of the scapulo-thoracic "joint".

The condition was first described by Boinet in 1867 when he presented a young man of nineteen with discomfort on scapular movements and "une crépitation rude qui rappelle assez bien celle de l'arthrite sèche". Demarquay, at the same meeting, described the necropsy finding of an exostosis arising from the deep surface of the scapula.

Mauclaire in 1905 attempted to evaluate the significance of the various noises to be heard: a gentle friction sound was considered physiological but louder sounds were always pathological. In the early part of this century further accounts appeared in the European literature and one account appeared in America (McWilliams 1914). In 1933 Milch and Burman reviewed the literature and described as one cause of the condition a forward curve of the superior angle of the scapula, which gave symptoms by its articulation with the thoracic wall. Later, Milch (1950) ascribed the snapping to "some anomalous condition existing between the thoracic wall and the undersurface of the scapula".

Under normal circumstances the scapula slides over the thoracic wall, cushioned from the undulating surface of the ribs by the serratus anterior and subscapularis muscles. Its superior and inferior angles, and its medial border, are relatively poorly cushioned, and it is here that small projections or angles may cause friction effects. An exostosis in this situation would produce friction while relatively small, whereas exostoses arising elsewhere on the deep surface would be well protected by subscapularis and serratus anterior. In the latter case the exostosis would have to penetrate or produce pressure atrophy of the muscles before symptoms occurred.

Milch (1950) described four cases of snapping scapula, one of which, in a girl of thirteen years, was caused by a subscapular exostosis articulating with the thoracic wall. Scapular movements were said to cause a "thumping" sound and discomfort; complete relief followed excision of the exostosis.

In addition to scapular exostoses and the abnormal forward curve described by Milch and Burman (1933), the crepitus and discomfort of this condition have been attributed to rib exostoses and abnormal angles and to the tubercle of Luschka. This tubercle is a fibrocartilaginous or bony exocrescence, which occasionally enlarges the anterior aspect of the superior angle of the scapula and may articulate with the thoracic wall, causing symptoms.

Exostoses or osteochondromata are probably the commonest tumours found in the scapula (Samilson, Morris and Thompson 1967). When the lesion arises from the deep surface of the scapula it may give rise to crepitus, discomfort, and occasionally "winging" in adolescence or early adulthood. If the exostosis is small there may be only the "tactile acoustic" phenomenon to give a clue to the diagnosis; but as Milch (1950) pointed out, the site of the noise can be located clinically with a surprising degree of accuracy.

Milch (1950) noticed winging of the scapula in his thirteen-year-old patient, but earlier he and Burman (1933) quoted a case described by Zaphiriadès (1903) in which winging of the scapula was accompanied by a gentle friction sound. Milch commented that it was surprising that such noises could arise in the presence of paralysis of serratus anterior, this muscle primarily being responsible for apposition of the scapula to the thoracic wall. Nevertheless, Cases 3, 4 and 5 in this series demonstrate the possibility of an exostosis arising...
from the deep surface of the scapula, causing "winging" with a neurologically intact serratus anterior.

Antero-posterior views of the scapula may reveal the exostosis, but on other occasions it is seen only in the oblique view. Similarly, oblique views are necessary to demonstrate the tubercle of Luschka, rib angles and exostoses.

FIG. 1
Case 1—Antero-posterior radiograph of the right scapula showing the exostosis.

FIG. 2  FIG. 3
Case 2—Antero-posterior (Fig. 2) and oblique (Fig. 3) radiographs of the scapula showing the exostosis and the considerable elevation of the scapula from the thoracic wall.

CASE REPORTS
Case 1—A youth aged nineteen complained that his right shoulder stuck out when he used it and that it frequently “jumped out of place”. On examination, movements of the scapula
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gave rise to a definite click between the scapula and the thoracic wall. An antero-posterior radiograph showed a large exostosis (Fig. 1). The patient declined operation.

Case 2—A man aged twenty complained of a loud click in his shoulder when he reached down, for instance to pick up something from the floor. Radiographs (Figs. 2 and 3) showed a large subscapular exostosis, with slight flattening of the thoracic wall. The exostosis was

FIG. 4
Case 3—Antero-posterior view of the scapula showing an exostosis lying between the fourth and fifth ribs in this view.

FIG. 5
Case 4. Figure 5—Antero-posterior radiograph of the scapula in which the exostosis is not well shown.

FIG. 6
Figure 6—The oblique view shows the large exostosis very clearly.

excised, together with a large fluid-filled bursa which lay between the exostosis and the underlying ribs. Five weeks after operation the patient had an almost full range of scapular movements and was free from symptoms.

Case 3—A boy aged seven years complained of slight discomfort on shoulder girdle movements. Clinically, the medial border of the scapula was elevated by a small exostosis (Fig. 4). It was decided that neither the exostosis nor the symptoms needed treatment, but three years later
the boy returned with increasing discomfort and winging of the scapula. The exostosis was excised. Three weeks later the child was free from symptoms and had regained normal scapular movements.

**Case 4**—A man aged twenty-four gave a two months' history of swelling, aching and grating around the right scapula. On examination, the scapula was held away from the thoracic wall by a large exostosis which was not well shown in the antero-posterior radiograph (Fig. 5) but which was seen clearly in an oblique radiograph (Fig. 6). The mass was excised, and within two months the patient was fully relieved, with normal scapular movements. This case shows the somewhat surprising difficulty of demonstrating even a large exostosis by the routine antero-posterior view of the scapula.
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Case 5—A boy aged fifteen had noticed increasing winging of the right scapula. On examination, the winging was obvious (Fig. 7), and slight crepitation was present, although the patient did not complain of discomfort. Antero-posterior and oblique views of the scapula showed a large exostosis (Figs. 8 and 9). The exostosis was excised, with cosmetic improvement. Two years later the patient was free from symptoms and had normal scapular movements.

"Exostosis bursata"—The bursa noted in Case 2 is of interest. Exostosis bursata was first described by Orlow in 1891. It was again discussed, with a case report, by McWilliams in 1914, and in 1964 Smithuis reported a case and described the histology of the bursa. The presence of a bursa in the plane of motion between an exostosis and overlying soft tissue is hardly surprising. However, it occurred in only one case in this series, and the patient’s symptoms were of short duration.

SUMMARY

1. Five cases are reported in which snapping of the scapula was caused by subcapular exostosis. In the four cases in which the exostosis was excised, symptoms were relieved without loss of scapular movement.
2. Antero-posterior views of the scapula do not always show the exostosis, and oblique views are recommended.
3. Winging of the scapula may be caused by a subcapular mass, with a neurologically intact subscapularis muscle.
4. Apart from subscapular exostoses, snapping of the scapula may be caused by exostoses or abnormal angles on the ribs, by Luschka’s tubercle, or by an abnormal forward curve of the superior angle of the scapula.

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REFERENCES

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