Dynamic Chiropractic

CHIROPRACTIC (GENERAL)

Sports Chiropractic for a BMX Shoulder Injury

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Background

BMX bicycle riding or "BMX," a popular form of recreational sport today, requires increasingly demanding athletic performance. BMX has related injuries that may cause significant morbidity and dysfunction; superficial soft-tissue injuries and musculoskeletal trauma are the most common injuries, in addition to overuse injuries that may contribute to a variety of musculoskeletal complaints.

Researchers compared BMX bicycle accidents and those occurring when youths ride other types of bicycles. The injuries sustained were compared to see if the clinical impression that BMX is more dangerous and produces more facial injuries is correct. This impression was found not to be true, as half of the participants involved rode BMX bicycles, and the injuries sustained were similar to those occurring to non-BMX riders.[1]

The major cause of accidents to BMX riders was performing stunts, but overall, poor cycling technique associated with minimal cycling experience were the factors common to 50 percent of accidents. BMX bike injuries differed little from ordinary bike injuries, except a greater proportion of injuries were due to stunts and there was a smaller incidence of head injuries.[2]

Chiropractors treating such patients should consider these factors significant to the BMX sport, and encourage riders to wear protective gear and equipment, and to participate in appropriate training / preparation, in order to avoid overuse injuries. The following case report illustrates presentation, evaluation and treatment of a shoulder separation, diagnosed as ICD-840.0: Acromioclavicular (Joint) Ligament Sprain.

Case History

A 23-year-old BMX rider presented to our chiropractic clinic with a chief complaint of injury to his right anterior shoulder following the performance of a particular high jump that had occurred two months prior during the early-evening hours. He stated that it was the last jump of the day and that while in midair, he had overcorrected his right shoulder after twisting his front wheel to the left, downward and into the landing. In my office, he remarked that he had injured this same shoulder

three weeks prior and had recently increased his training to three times per week, with each training session consisting of a much longer duration.

He presented with pain at the end of the collarbone, a noticeable lump anterior to the AC joint; pain on moving the shoulder, especially when trying to raise the arms above shoulder height; exquisite point tenderness; and asymmetry of the shoulders with a step sign deformity.

Neurologic examination of the axillary and musculocutaneous nerves was performed: the axillary nerve (which is the most commonly injured) by lateral deltoid sensation and deltoid muscle strength, and the musculocutaneous nerve (second most commonly injured) by accessing flexion and sensation over the medial arm and forearm. Neurologically, the patient was intact.

Radiographic examination involved obtaining a true AP; anterior with internal rotation and anterior and posterior AP shoulder views revealed a superior displacement of the clavicle. A sign of traumatic deformity in the anterior and distal clavicle in the area of AC joint, combined with a step sign, should clue you to at least a grade 3 AC separation injury.

Recall that in the shoulder, the two bones are attached by the acromioclavicular (AC) ligament. The coracoclavicular (CC) ligament (divided into conoid and trapezoid sections) joins the clavicle to the coracoid process, another forward-protruding part of the scapula, slightly below and to the inside of the acromion. A third ligament is the coracoacromial ligament, which attaches the acromion process to the coracoid process, although it is rarely involved in this type of injury.

AC joint injuries are graded from 1-6 using the Rockwood scale,[3] which classifies injuries in relation to the extent of ligament damage and the space between the acromion and clavicle. Grade 1 is a simple sprain to the AC joint, grade 2 involves rupture of the AC ligament and grade 3 indicates rupture of both AC and CC ligaments, which often results in a superior displacement.

Higher grades on the scale (4-6) are based on the degree of displacement of the clavicle. Grade 4 involves posterior displacement and grade 5 superior displacement to a greater degree than grade 3, with an increase in coracoclavicular space by 3-5 times the norm. A step deformity may be apparent with grade 3-5 injuries. Grade 6 involves full rupture of both the AC and CC ligaments, with the clavicle being displaced inferiorly.

Treatment

In our athlete, his initial passive range in motion was so painful that adjustments of the shoulder were felt to be contraindicated, such as in the acute shoulder injury (particularly true of a rotator-cuff injury). A good rule of thumb to follow with an acute shoulder injury is that if any passive endpoint play in range of motion produces pain, do not adjust.

Strains, fractures and dislocations are common and are usually readily identified by deformity, swelling, pain, bruising or lack of function, and may require imaging studies and further management. Further evaluate and obtain MRI or orthopedic co-management if necessary. The athlete can come back to you for rehabilitation. Examination determined that our athlete had suffered at least a grade 3 AC separation; a recovery care plan (outlined below) was completed within 6-8 weeks following initial evaluation.

- Acute: Rest and apply ice in the early stage. Immobilize the shoulder in a sling, Tape the joint

into the correct position to assist with healing for 2-3 weeks. Various forms of tape are available, either elastic or inelastic. In general, elastic tape is more often used with non-contractile tissue injuries to take the place of a ligament in reinforcing a joint.[4]
- Apply ultrasound for minor injuries, or TENS for pain relief in more severe cases.
- Advise on anti-inflammatories (ibuprofen or natural *Boswellia*) to reduce pain and inflammation.
- Advise on rehabilitation exercises consisting of two phases: restoration of pain-free motion and shoulder re-strengthening .
- Referral for surgery if required (usually grades 4-6 only).

The chiropractic athlete must have correct biomechanical function of the shoulder joint, whether participating in BMX cycling or various other sports. This is easily lost if the athlete has suffered an injury of the shoulder for any length of time. In particular, the shoulder blade (scapula) and upper arm bone (humerus) should move together. In the injured athlete, this bounce or rhythm is often lost. After a period of icing and immobilization for grade 1 and 2 injuries, mobility exercises can be undertaken, but only once shoulder movement is pain free (normally 7-14 days for grades 1 and 2). Then re-strengthening shoulder exercises may be initiated.

Today, grade 3 AC shoulder separation injuries are more frequently being treated with conservative chiropractic management, rather than surgery.

References

1. Worrell J. BMX bicycles: accident comparison with other models. *Arch Emerg Med*, 1985 Dec;2(4):209-13.
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