Surgery Helpful in Correcting Fractured Clavicle in Adolescents

Physical Therapy in San Jose, Los Gatos, Foster City and Burlingame for Shoulder

Broken collarbones (fractured clavicles) are fairly common among adolescents. They make up about 15 percent of all fractures in this age group. Most of these fractures happen in the midshaft region and about half are displaced, or moved out of place. Most often, clavicle fractures are not treated with surgery, usually because doctors used to feel that it wasn't too much of an issue if the bones didn't heal exactly in place. However, the doctors did not perform studies to follow patients to see if these malunions (not meeting and healing) actually did cause any long-term problems with shoulder movement and use.

Some studies of adults done recently found that this may not be a good approach because there have been higher rates of malunion and nonunion, as well as problems in shoulder strength and endurance. Unfortunately, not a lot of study has been done on adolescents and tthey are usually grouped with children, a group younger than them.

Overall, most doctors agree that clavicle fractures that are still in place do not necessarily need surgery, but disagreement comes when there is displacement - the bone ends have moved. Studies - again among adults - have shown that surgery does not result in higher complication rates and that the surgery could improve patient outcome. The authors of this article aimed to report how long it took for the bone to heal (time to union), complications, how often the bone didn't heal or healed incorrectly, residual symptoms from the fracture, and how long it took to return to pre-fracture activities, comparing those who had surgery and those who didn't.

Researchers identified 42 patients, average age 15.4 years, who had experienced 43 midshaft clavicle fractures. One patient had two fractures. The fractures were caused by sports injuries (24 patients), motor vehicle collisions (10 patients), and all-terrain vehicle accidents (eight patients). Fifteen patients had other injuries in addition to the fractured clavicle, including fractures of the pelvis, spine, and extremities.

Twenty five patients (16 males) were treated without surgery; the patients wore slings or a brace, while the remaining 17 (16 males), with displacements of more than two centimeters, had surgery for repair. Both groups of patients received similar follow-up visits and restrictions during the healing phase. Visits were at two and six weeks, and then six and 12 months after surgery if the fracture healed. If the fracture had not healed after six week, follow-up visits were every two weeks until healed.

The researchers obtained x-rays and measured shortening of the bone before and after treatment. The patients were measured on both sides - the injured and non-injured - for comparison. The fractures were considered delayed union if there was no union at four months after treatment and nonunion if no union at six months. If union has occurred but without alignment and symmetry, this was classified as malunion. Symptomatic malunion occurred when there was shortening, angulation or asymmetry, compared with the noninjured shoulder, as well as complaints from the patient of pain when lifting the arm for use overhead, weakness, tiring of the arm, or neurologic (nerve) symptoms.

Results showed that the patients in the first group (those who did not have surgery) were injured through sports (44 percent) and 14 patients had displacements. In calculating shortening of the area, excluding patients with displacements, the average shortening was 18.8 millimeters. The patients with displaced fractured had the bones joined at about 9.9 weeks and there were no nonunions. On average, patients returned to their pre-fracture activities at around 16 weeks after the injury.

In the surgical group of 17 patients, there were 18 fractures that were repaired. Again, sports was the most common cause of injury, at 58.8 percent of patients. All patients were about 2 centimeters displaced. Union occurred around 7.3 weeks for most patients, compared with 9.9 weeks in the other group. There were no significant complications during or after surgery. Twelve weeks was the average time to return to activity, four weeks earlier than the group that didn't have surgery. There were no nonunions or malunions, but three patients elected to have the hardware removed from the area because they were prominent.

Among the patients who did not have surgery, five who had displaced fractures developed malunions and complained of pain, fatigue in the arm, or drooping shoulder on the side that was injured. For all five patients, the affected side was their dominant side. These symptoms developed anywhere from six months to 24 months after the injury. Upon measuring the length, the researchers found that these patients had an average displacement of 26.6 mm and four patients underwent surgery to correct this.

In conclusion, the authors wrote that surgery to correct mishaft clavicle fractures in adolescents often results in good alignment and healing of the fracture, allowing the patients to return to previous levels of activities earlier than patients with displaced fractures who are treated nonoperatively.

Reference: Kelly L. Vander Have, MD, et al. Operative Versus Nonoperative Treatment of Midshaft Clavicle Fractures in Adolescents. In Journal of Pediatric Orthopaedics. June 2010. Vol. 30. No. 4. Pp. 307-312.