



## Low Complication Rates Associated With Both Operative and Nonoperative Treatment of Adolescent Clavicle Fractures

Written by Nicola Parry

Benton E. Heyworth, MD, Boston Children's Hospital, Boston, Massachusetts, USA, presented data from a study conducted to review the demographic characteristics, treatment approaches, and complications in a large series of adolescent clavicle fractures receiving operative or nonoperative treatment. The results showed an increase in the incidence of clavicle fractures in recent years, with approximately two-thirds of cases occurring during sports, and an increasing trend toward operative treatment. Overall complication rates were more common following operative treatment.

Clavicle fractures are common, mostly arising in the diaphysis and comprising up to 5% of all fractures in adults and up to 15% in children [van der Meijden OA et al. *J Shoulder Elbow Surg* 2011]. However, the optimal treatment for these displaced fractures, in terms of operative and nonoperative techniques, remains controversial. With this in mind, Dr. Heyworth and colleagues conducted a retrospective study to evaluate a large, consecutive series of adolescent mid-diaphyseal clavicle fractures that were predominantly managed at a single, tertiary-care pediatric center between 2003 and 2012.

The study included adolescents (n=641; 79% male; mean age, 14.6 years; age range, 10 to 18 years) with any clavicle fracture pattern who had undergone any operative (n=117) or nonoperative (n=524) treatment method. Exclusion criteria included patients with underlying neurological and metabolic bone disorders. Demographic data, radiographic features (such as fracture pattern), operative details when applicable, and posttreatment clinical course were analyzed, including the reported time to healing and any known complications.

The mean age was higher in the operative group than in the nonoperative group (15.8 vs 14.3 years;  $p < .001$ ). Of all fractures reviewed, the most common type of injury was an athletic injury (64%), mostly associated with participation in contact sports such as football (25%) and hockey (18%), as well as snowboarding (12%) and skiing (9%). Other common mechanisms of injury were falls occurring during nonathletic activity (19%) and motor vehicle accidents (5%). Similar rates of associated injuries were seen within the operative (5%) and nonoperative (6%) treatment groups.

Between 2003 and 2012, there was an increase in the number of clavicle fractures and an increasing trend towards operative treatment: the majority of patients (82%) were treated nonoperatively, whereas 18% were treated surgically, with an increasing percentage of patients undergoing surgery over this time frame.

Overall, complications were rare following both approaches to management. Fifty-eight complications were documented in 46 patients (7%); these occurred more frequently in the operative group than the nonoperative group (16% vs 5%;  $p < .001$ ), and were more common in older patients ( $p < .001$ ). Delayed union (2% vs 0%;  $p = .54$ ) and nonunion (1% vs 0%;  $p = .56$ ) were uncommon. Whereas re-fracture was more common following nonoperative treatment (2% operative vs 3% nonoperative;  $p = .03$ ), complications occurred more frequently in association with operative management, the most common of which was from symptomatic implants (13% vs 0%;  $p < .001$ ).

Dr. Heyworth concluded that complications are rare following both approaches, but may be more common in patients whose treatment is delayed. However, he stressed that although these data and the rates of complications with both types of treatment may be helpful for orthopedic surgeons and families of patients with clavicle fractures, the two populations are not directly comparable, given that the operative group was older and more likely to have more complex fractures. There is a growing need for improved prospective, comparative research to more directly investigate which treatment option may be optimal for which adolescent patients.

## Good Success Rate at 6 Years Following Meniscal Repair With ACLR

Written by Maria Vinall

Combined injury to the anterior cruciate ligament (ACL) and meniscus is a common sports-related injury. A frequent outcome of this injury is posttraumatic osteoarthritis (PTOA), a devastating condition for young patients [Smith JP III et al. *Am J Sports Med* 2001]. Over the past 3 decades, treatment of this type of injury has focused on meniscus preservation to improve outcomes and possibly prevent PTOA [Stein T et al. *Am J Sports Med* 2010].

Robert W. Westermann, MD, University of Iowa, Iowa City, Iowa, USA, reported an 86% success rate at 6 years