SCIENTIFIC ARTICLE

Intermediate-Term to Long-Term Outcome of Surgically and Nonsurgically Treated Congenital, Isolated Radial Head Dislocation

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Purpose Adolescent patients with congenital radial head dislocation presenting with pain and limitation in motion might benefit from radial head excision. We report objective and patient-rated data for patients treated with radial head excision and those followed nonsurgically. We hypothesized that surgery would improve pain and motion and that outcomes and the need for additional surgery would be similar between the 2 groups.

Methods We reviewed our surgical logs and identified 16 patients (10 treated surgically and 6 treated nonsurgically) for participation. At a mean of 10 years for the surgical group and 16 years after initial office visit for the nonsurgical group, we collected patient-rated and objective data, including range of motion, strength, and pain at the wrist or elbow.

Results Eight of 16 patients had bilateral dislocations. Preoperative and postoperative elbow flexion (137° versus 135°) and extension (27° versus 23°) were unchanged in surgically treated patients. Forearm rotation was improved after surgery (100° versus 119°). Carrying angle was similar between surgical (17°) and nonsurgical (13°) elbows, but surgically treated elbows had significantly different ulnar variance at +4.9 mm compared to −0.4 mm for the nonsurgically treated patients. Surgically treated patients had significant improvement in elbow pain following radial head excision. Final Quick Disabilities of the Arm, Shoulder, and Hand scores were similar between groups, although there were lower mean scores among nonsurgically treated patients.

Conclusions Radial head excision in patients with symptomatic, isolated, congenital radial head dislocations resulted in substantial pain relief and patient satisfaction but modest improvement in forearm rotation and no improvement in elbow flexion-extension. Furthermore, more than 25% of the surgically treated limbs developed wrist pain and needed additional surgery. The nonsurgical group did not lose motion, develop pain, or need surgery. This information might help make the decision whether to excise the radial head in patients with symptomatic, congenital radial head dislocation. *(J Hand Surg 2012;37A:2495–2501.*

Type of study/level of evidence Therapeutic III.

Key words Congenital, isolated, nonsurgical, radial head dislocation, surgical.

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Congenital radial head dislocation, although rare, is often cited as the most common congenital condition of the elbow, with an estimated incidence of 0.06 to 0.16%.[1–3] Although congenital radial head dislocation can occur in isolation,[4] it is often associated with congenital radioulnar synostosis and can be part of a congenital syndrome such as nail patella.[5,6] There is also a question whether an isolated congenital radial head dislocation exists as a unilateral phenomenon.[1,4]

Patients with an isolated, congenitally dislocated radial head might present to the physician in early childhood secondary to a loss of elbow motion or related to prominence of the radial head. However, most patients remain asymptomatic until adolescence, when elbow pain or motion limitations can become problematic. It is unknown why certain patients develop symptoms while others do not. The traditional treatment for symptomatic, isolated, congenital radial head dislocation has been radial head excision.[6–8] However, published outcome series following radial head excision are sparse, and validated outcome tools have not been used in these assessments, including reports by Bell et al and Campbell et al.[7,8]

The purpose of this investigation was to assess the long-term outcomes of surgically treated, symptomatic patients, including the need for additional surgery and to assess them in relation to a group of asymptomatic patients managed nonsurgically. We hypothesized that surgery would alleviate elbow pain and improve motion. We also believed that outcomes and the need for additional surgery would be similar between the groups.

MATERIALS AND METHODS

After institutional review board approval, we performed a medical record search for patients with a diagnosis of radial head dislocation and a surgical log search for patients with a radial head excision at our pediatric orthopedic hospital for the years 1955 to 2010. A total of 169 patients were identified with either a diagnosis of radial head dislocation or a procedure code for radial head excision. Chart review was used to exclude those patients with radioulnar synostosis, musculoskeletal or neurologic disorders or syndromes associated with congenital radial head dislocation, or a history of elbow trauma. Based on these criteria, 23 patients treated surgically and 11 followed without surgery were identified with an isolated, congenital radial head dislocation.

A comprehensive search was performed to locate all 34 patients. We used all available demographic chart data and Internet search tools. Twelve patients could not be located (9 surgically and 3 nonsurgically treated patients). Six patients (4 surgically and 2 nonsurgically treated patients) were contacted but either refused participation or failed to respond to multiple requests for participation. Ten surgically treated patients and 6 nonsurgically treated patients agreed to participate and comprised the study group. Pain was the primary indication for surgery. Patients treated without surgery did not have a primary complaint of pain; rather, these patients were seen in clinic mainly for decreased motion and deformity. There were 5 male patients (5/10) in the surgical group and 3 male patients (3/6) in the nonsurgical group. In the surgical group, 7 patients were affected bilaterally and 3 were affected on the right side alone. Five of the 7 patients affected bilaterally had radial head excisions on both sides. In the nonsurgical group, 3 patients were affected on the left side, 2 on the right side, and 1 bilaterally.

Three of the nonsurgical patients and 1 surgical patient could not return for clinical evaluation but had comprehensive chart data and participated in patient-rated outcomes assessment by telephone. Clinical assessment data were contributed for a total of 9 elbows without surgery and 15 elbows with surgery.

A comprehensive chart review provided demographic data including age at presentation, sex, hand dominance, involved extremity, and the direction of radial head dislocation. We obtained several key data points during chart review, including subjective complaints and objective findings including pain location, elbow flexion and extension values, and forearm pronation and supination values.

In addition, we reviewed initial radiographs for each patient. All patients met previously established radiographic criteria for isolated, congenital dislocation of the radial head.[1,6] There were 3 anterior dislocations, one in a nonsurgical patient and 2 in surgical patients; all 3 of these patients were affected unilaterally. All other elbows (21/24) were dislocated in a posterior direction.

Clinical evaluation

A single examiner (M.B.) clinically assessed all patients at follow-up. In a standardized fashion, a goniometer was used to clinically assess range of motion with the patient in a seated posture and the arm adducted to the side. We measured bilateral elbow flexion and extension, forearm pronation and supination (with elbows at 90° of flexion), and wrist flexion and extension. We also measured bilateral grip strength using a pinch gauge at setting 2 (Jamar Dynamometer; Lafayette Instrument Company, Lafayette, IN) and key pinch