Evaluation and Treatment of Childhood Musculoskeletal Injury in the Office

Peter J. Apel, MD, PhD[a,*], Andrew Howard, MD, MSc, FRCSC[b,*]

KEYWORDS

• Office • Treatment • Musculoskeletal injury • Children

KEY POINTS

- History and examination should be focused.
- Radiographs should be obtained if the diagnosis is in question.
- Most pediatric injuries can be treated with office-based modalities.
- It is important for primary care providers to be able to distinguish the common stable injuries from those that require urgent orthopedic referral.

INTRODUCTION

Evaluation and treatment of acute musculoskeletal injuries can be rewarding for primary care providers. They are common presenting complaints and, with appropriate management, many patients make a full recovery in a short period of time. This article reviews basic principles of evaluation of acutely injured children, treatment strategies, and common injuries, and gives an overview of similar but more dangerous conditions that require referral.

LOCATION OF EVALUATION: OFFICE OR HOSPITAL?

Many pediatric musculoskeletal injuries are the result of ground-level falls, recreational sports, and other low-energy mechanisms. Most of these injuries can be treated nonoperatively with readily available supplies, especially in young children in whom skeletal growth is still occurring.

In general, low-energy injuries can usually be managed an office setting, whereas moderate-energy or high-energy injuries are more appropriate for hospital-based

[a] Orthopaedics, Guthrie, 130 Center Way, Corning, NY 14830, USA; [b] Division of Orthopedic Surgery, Hospital for Sick Children, 555 University Avenue, Toronto, Ontario M5G1X8, Canada
* Corresponding authors.
E-mail addresses: dr.peter.apel@gmail.com; andrew.howard@sickkids.ca

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evaluation and management. Factors that increase the energy associated with an injury include increasing age, weight, and size of the child. Falls from heights, bicycles, trampolines, and bunk beds are often moderate-energy injuries and occasionally require advanced care. Injuries from motorized vehicles (motorcycle, car, all-terrain vehicle, snowmobile) should be evaluated in a hospital setting.

HISTORY

For children presenting with acute injuries, the history should be focused and not overly broad. The limited history should contain the mechanism of injury, location of pain, and any associated injuries. Injuries occasionally are associated with a pop, snap, or deformity. Details regarding the position of the limb at the time of maximal injury or displacement can reveal the energy imparted during injury. An important aspect of the history is the ability to bear weight after the injury. Inability to bear weight is often an indicator of severe injury, and should have a lower threshold for referral. Patients often do not try to bear weight after the injury. If radiographs are negative for fracture, patients should be encouraged to attempt weight bearing after a short period (2–3 days) of rest. Fractures may be evident as bent or crumpled bones; **Box 1** and **Fig. 1** give examples of plastic deformation.

PHYSICAL EXAMINATION

Much like the history, the physical examination should be focused on the area of injury and not be overly broad. Inspection and palpation are often all that is needed to make an accurate diagnosis.

Begin with inspection for deformity, swelling, and ecchymosis. In order to gain trust with injured children, first ask them to show where they hurt and to show their active range of motion. Carefully palpate for tenderness above and below the point of maximum tenderness. If the patient tolerates it, passive range of motion can be assessed.

As with all injuries, a focused and vascular examination should be performed. Function of the major nerves of the extremities as well as palpation for pulses should be performed. Any neurologic or vascular deficit should immediately be referred to the emergency department for evaluation.

Provocative maneuvers should not be performed in acutely injured patients, because these maneuvers are often painful and can be falsely negative, which is misleading in an acute swollen joint. These maneuvers include the Lachman test, anterior and posterior drawer tests, and stressing of injured joints. If major ligamentous injury is suspected, the patient should receive initial treatment and reexamination in a delayed manner.

RADIOGRAPHS

Radiograph examination of the injured anatomic area is an important aspect of acute injury evaluation. With modern radiographic techniques, the radiation dose is minimal, and every consideration ought to be given to obtaining appropriate radiographs of the affected area. Radiographic diagnosis is often straightforward and there are many clinically indistinguishable injuries that are easily discernible with proper radiographs (eg, a pelvic apophyseal avulsion from a slipped capital femoral epiphysis [SCFE]). Whenever the pelvis or hips are being examined radiographically, bilateral views, including frog laterals, are necessary.

However, some common injuries do not necessitate radiographs either at initial evaluation or at follow-up. Low-risk ankle injuries (which are usually simple sprains) do not require radiographs. A low-risk ankle injury includes an injury with tenderness