Bony Injuries to the Hip Joint

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Because of the nature of collision and endurance sports, fractures to the femur and pelvis have occurred in them, perhaps as the result of direct trauma or via repetitive stress to the weaker aspect of the osseous structures. Most hip-joint fractures affect the acetabulum, femoral head, femoral neck, and femoral shaft. Though vastly different in their geographical location, signs and symptoms for each are somewhat similar, and the treatment intervention for each is initially limited to conservative rest and palliative care, with the time frame for beginning rehabilitation of the surrounding structures depending on the severity of the injury.

Stress Fractures

Stress fractures develop as a result of the weakening and subsequent failure of a bone. In the hip, individuals who progressively increase the duration of repetitive-impact loading to the lower limb are most susceptible. Oftentimes stress fractures are difficult to diagnose, as an athlete will complain of pain deep in the joint area that might mimic other pathologies. Trochanteric bursitis and general groin pain that can be referred from many locations, including the low back, can present stress-fracture-like symptoms. Korpelainen et al. have identified individuals with high longitudinal arches, leg-length inequalities, excessive forefoot varus, and menstrual irregularities as being at high risk for developing a stress fracture. Recurrent stress fractures have also been identified in runners with high-mileage weekly training regimens. A bone scan is typically the image of choice for physicians when determining when localized stresses have been induced on osseous structures (Figure 1). Surgical intervention is often not necessary because the surrounding osseous structures are able to withstand dispersed forces and nearly eliminate the unlikely chances of a displaced femoral fracture. Treatment intervention should include a gradual and tolerable return to full weight bearing accompanied by progressive resistive exercises. The underlying physiologic nature of the healing tissue and the age of

Key Points

- Fractures of the hip joint often present clinically with similar signs and symptoms, regardless of the specific bone involved.
- Stress fractures to the hip are more commonly seen with overuse-type conditions and are more predominant in adolescents and young adults.
- Hip fractures are treated initially with a non-weight-bearing phase followed by strengthening the surrounding musculature.
- Rehabilitation for hip fractures should emphasize reducing loading of the joint and implementing cardiovascular conditioning throughout the treatment process.
- Unexplained hip pain warrants a complete medical assessment to rule out orthopedic and nonorthopedic pathology.
- Key Words: fracture, osteochondral, acetabular, avulsion

Figure 1 Bone scan revealing evidence of a femoral stress fracture.
the athlete must be considered because they will play a crucial role in the length of time for return to full weight bearing and, ultimately, activity. Kirkwood et al.⁶ have proposed walking as a return to functional activity when accompanied by weights wrapped around the waist. Their work revealed an increased osteogenic effect with such exercises.

Femoral midshaft stress fractures can lead to complete fractures and ultimately malunion, requiring surgical intervention. Care should be taken during postoperative rehabilitation to prevent lower extremity edema and hematomas from forming. Weight bearing can progress from partial to full from Weeks 2 through 6, and gentle range of motion for both the hip and the knee joint should begin immediately after surgery to reduce adaptive shortening of the quadriceps and hamstring muscle groups.

**Osteochondral Lesions**

Osteochondral lesions of the femoral head have been reported in young, high-level athletes and might present as persistent hip or groin pain. Weaver⁷ recommends magnetic-resonance imaging to detect these focal lesions as early as possible so that appropriate treatment can be implemented to prevent late degenerative sequela. Fractures to the femoral neck, lesser trochanter, and intertrochanteric region are not as common as those to the femoral head, shaft, or greater trochanter.

Fractures of the intertrochanteric and subtrochanteric areas occur as a result of trauma oftentimes seen with alpine and cross-country skiers.⁸ These fractures are commonly referred to as skier’s hip and seem to be associated with both the high speed of the activity and the potential contact forces placed on these smaller areas of the femur (Figure 2). Fractures of this nature require a standard open reduction and internal fixation followed by a lengthy rehabilitation period of progressive range-of-motion and strengthening exercises for the surrounding musculature.

**Acetabular Fractures**

In all athletic participants, regardless of age, there appears to be a higher than normal incidence of fractures to the acetabulum as compared with other regions of the hip.⁹,¹² Stilger et al.¹² described a traumatic acetabular fracture occurring in an intercollegiate football player in which the mechanism of injury was a flexed and internally rotated hip with a fully extended knee while distal compressive forces were applied to the foot from the playing surface. This is a classic mechanism of injury for a posterior hip dislocation but oftentimes presents with no obvious deformity or increased accessory motion on examination.¹⁰,¹¹ Athletes who suffer acetabular fractures might be able to bear weight with accompanied diffuse pain. Frank et al.¹⁰ suggest that the appearance of a leg-length discrepancy not previously found on an individual, accompanied by a shortened and internally rotated limb on the affected side, should raise suspicion for an acetabular fracture. Others have reported a large scrotal hematoma after an acute acetabular fracture, known as a “Destot sign,” raising the importance of a full evaluation after trauma to the hip.¹³ Other general screenings to rule out fractures to the acetabulum should include a thorough lower extremity neurological assessment, localized palpation, and pressure applied to the iliac crest in a posterior direction to create a compressive force on the acetabulum.¹²,¹³

Treatment of acetabular fractures depends on the stability of the bone itself. Stable fractures might respond well to conservative rehabilitation with weight-bearing activity eliminated for 6–8 weeks. Unstable fractures require surgical intervention to fixate the structure, allowing for a greater likelihood of healing to occur and lowering the risk of postfracture necrotic developments.¹⁰–¹³

Rehabilitation after an acetabular fracture is no different than that for other regional fractures to the hip in terms of a general and progressive approach.

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Figure 2 Osteochondral lesion formation.