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Update of hip fractures and their management -A review

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Abstract
Hip fractures are common injuries, especially seen in older people. Women are more vulnerable than men to osteoporosis; thus they are more likely to suffer from hip fracture. Femoral neck fractures in older people are associated with low-energy falls. About 1.6 million hip fractures occur annually. The patient should have had the most recent trauma in most cases. There is a 6 per cent in-house mortality rate after femoral neck fracture. Patients diagnosed with complete hip arthroplasty or hemiarthroplasty should be postoperatively accepted as being weight-bearing. In Unani System of Medicine (USM) fracturing of the bone (*Azm*) is called "Kasar." Kasar (fracture) is basically an example of *Tafarruq-Wa-Itteshal*. Unani physician described broadly the pathology, manifestation and treatment. Concept of fracture were explained many years ago in Unani text; *Al-Havi Fit Tib, Kamil-Us-Sana, Al-Qanoon Fit Tib, ZakheeraKhvarazm Shahi* for bone-healing activity after applying of Harjor, Kushta Sadaf, Shilajeet, Khamirah Marvareed in human is effective.

Keywords: Fracture*; kasar*; hip fracture; *tafarruq-wa-itteshal*; unani medicine

Introduction
In Unani System of Medicine bone fracture is described in terms of "*Kasar*" [1]. Kasar broadly classified into two types' viz; single fracture (*Kasar mufrad*) and compound fracture (*Kasar Murakkab*) [2]. "*Kasar*" is basically an example of a *tafarruq-wa-Itteshal* [3]. Kasar may occur in any part of the bone or in whole bone [4]. A bone *fracture* is a medical condition where the continuity of the bone is broken [5]. While typically caused by trauma, a fracture can result from an acquired bone disease, such as osteoporosis, or from irregular bone formation in a congenital bone disease, such as osteogenesis imperfecta [6]. It is often followed by damage to soft tissue of varying degrees; broken arteries, damaged muscles, lacerated periosteum and contused nerves occur [7]. Often internal organs are damaged and skin lacerated [8]. The soft tissue damage must always be considered and is sometimes vitally more critical than the fracture itself [9]. The healing biology of fractures is a dynamic biological mechanism following common regenerative patterns and involving changes in the expression of several thousand genes [10]. The healing of fractures may occur primary or secondary [11]. Radio-ulnar fracture is a type of fracture where fracture occurs between radius and ulna [12].

Hip fractures are a significant concern of the elderly population in health care. Hip fractures actually affect 18 percent of women and 6 percent of men worldwide [13]. Hip fractures in elderly people are one of the big fractures in quality of life, health outcomes and medical costs.[14] Since mortality and morbidity are high, hip fractures directly affect public health and are one of the major causes of disability [15]. Increases in the age-adjusted incidence of falls with corresponding deterioration in age-adjusted bone quality can explain the reason for osteoporotic hip fractures among older people [16]. Epidemiological studies have shown that the frequency of hip fractures rose from 1986 to 1995, but then decreased gradually through 2012. The decline is possibly due to changes in osteoporosis diagnosis and medical care [17, 18]. This is also necessary to note that hip fractures carry significant social and personal economic burdens. Although hip fractures account for just 14 percent of all fragility fractures, these injuries represent a major expense with an approximate cost of up to US$ 15 billion per year [19]. Hip fracture therapy was also ranked 13th most costly among Medicare diagnoses in 2011 [20]. Furthermore, an economic study found that while a hip fracture was

expected to pay approximately US$ 10 000 for initial hospitalization, the total 1-year health and social costs are approximately US$ 43 000 and are possibly due to the increased need for extra treatment and monitoring after surgery [21].

Anatomy of hip fracture

Awareness of the hip's musculoskeletal anatomy is crucial to understanding how normal joint reactive forces around the hip affect the healing of fractures and emphasize the importance of restoring normal anatomy [22]. The hip joint is a synovial joint formed by the femoral head and spine [23]. The femoral head is inferolaterally attached to the shaft via the femoral collar, which lies between the bigger and the smaller trochanter [24]. [Stover M] The angle created by the femoral neck and the femoral shaft's medial dimension is around 127 °, with a maximum of 120 ° to 140 °. [25] Femoral variant is shaped from the angle of axis between the femoral neck and the femoral transcondylar axis. An significant structure, known as the calcar femorale, is a dense cancellous strut which extends from the rear aspects of the femoral neck to the proximal femoral shaf posteromedial [26]. The compressive and tensile trabeculae forming the Ward triangle, which is superiorly bound by tensile trabeculae and compressive trabeculae inferomedially and represents a area of low bone density [27]. Recent studies have shown that trabeculae degeneration was directly linked to the incidence of femoral neck fractures, and Ward triangle enlargement was linked to intertrochanteric fractures [28]. Knowledge of the proximal femur's muscular anatomy is important for understanding the deforming forces on fracture fragments and for surgical approaches [29]. The gluteus minimus and medius attach respectively on the anterolateral and lateral sides of the larger trochanter and together act as the principal abductors of the shoulder [30]. Femoral head and neck vascular anatomy is critical for assessing the potential risk of avascular necrosis after proximal femur fractures [31]. The major vascular supply to the femoral head and neck is the medial femoral circumflex and more recently the inferior gluteal artery was highlighted [32]. The medial femoral circumflex artery originates from the deep femoral artery and common femoral artery, and from the muscles of the piriformis and iliopsoas [33]. The deep branch runs between the quadratus femoris and the obturator externus to the femoral head and reaches the posterior part of the hip capsule.[34] When intra-articular, the artery divides into the superior nutrient arteries, which constitute the most important source of blood to the femoral head and neck [35]. More recent studies investigating the lower gluteal artery have shown that it provides substantial blood supply to the femoral head, and this artery provides the dominant blood supply to the femoral head in some anatomical variants [36]. The obturator nerve transverses between the anteromedial hip capsule and the femoral nerve. The superior gluteal nerve is parallel to the hip capsule's posterior aspects [37]. The sciatic nerve is lower than the piriformis muscle and is later than the hip's external rotators [38]. The lateral femoral cutaneous nerve is another nerve that can be potentially damaged during open approaches to the hip [39]. This nerve exits about 2 cm of the anterior upper iliac spine and then divides into 2 branches which cross the anterior margin of the tensor fascia lata [40].

Classification of hip fractures

The classification of hip fractures can be based on their relationship with the hip capsule [41]. Fractures may either be intracapsular, such as fractures in the femoral neck or extracapsular fractures such as intertrochanteric and subtrochanteric fractures [42].

Intracapsular hip fractures

Femoral neck fractures may be defined in a descriptive way based on the position of the fracture within the femoral neck or categorized using the classification Garden, AO / OTA or Pauwels [43]. A femoral neck fracture at the junction of the femoral head and neck is therefore known to be a subcapital fracture, while a transcervical fracture occurs in the center of the femoral neck [44]. At the base of the femoral neck lies a basicervical fracture [45]. The Garden classification is the most commonly used classification for older hip fractures and is based on the fracture displacement measured using the hip's anteroposterior (AP) radiograph [46]. The traditional Garden classification is divided into 4 types [47]. Type 1 fractures are incomplete and valgus impacted, while type 2 fractures are complete [48]. Type 3 fractures are partially displaced, and type 4 fractures are completely displaced [49]. A Garden classification change clearly separates femoral neck fractures into neither displaced nor displaced neck fractures [50]. The modified Garden classification scheme shows greater reliability of interobservers and is more commonly used [51]. It was hypothesized that the Pauwels classification could predict the risk of nonunion or loss of reduction as increased fracture angle leads to increased shear forces across the fracture site [52].

Extracapsular fractures

Intertrochanteric hip fractures are classified as splits between the femoral neck and the lower trochanter [53]. The Evans classification of intertrochanteric fractures is based on the fracture position and direction as well as its stability [54]. The most important classification method for an intertrochanteric fracture, however, is whether the fracture pattern is stable or unstable as this affects the choice of implants [55]. Determining the stability of an intertrochanteric fracture is dependent on the integrity of the femoral calcar or the proximal fémur posteromedial cortex [56].

Diagnostic imaging

Diagnosis of an acute hip fracture is typically clinically suspected [57]. Elderly patients with a history of mild trauma and pain found in the affected hip or ipsilateral groin, loss of weight and clear clinical findings of a shortened and externally twisted lower extremity warrant testing to confirm a hip fracture [58]. Patients with occult hip fractures will complain in their buttocks, knees, thighs, groin or back only of vague pain [59]. They may not have any apparent physical deformity, can hold weight after mild injuries, and may have regular x-rays. Patients with a history of simple dropping, age over 70 years, and female gender are at increased risk of occult fracture; in these demographic groups, a high index of suspicion is required [60]. Most hip fractures are identified by simple x-ray, the initial imaging tool used in the diagnosis of hip fracture, which has a sensitivity ranging from 90% to 95% [61].

Standard x-ray examination of the hip includes an anteroposterior (AP) view of the pelvis and an AP and

cross-table lateral view of the involved hip [62]. Plain x-rays without evidence of fracture do not exclude the diagnosis of hip fracture [63].

Magnetic resonance imaging (MRI) has been the popular imaging technique for diagnosing latent hip fractures which are not observed by radiography [64]. MRI was reliably superior in detecting occult fractures of the hip and pelvis compared to the radiograph, bone scan, and computed tomography (CT) scans [65]. If MRI is not available or contraindicated, then bone scanning or scintigraphy is an alternative. Until MRI was used, bone scans were the diagnostic form of choice when diagnosing occult hip fractures.[66] Bone scans are 93% sensitivity and 95% accurate when detecting occult hip fractures [67].

Management of hip fracture

Hip fracture-dislocation is a true orthopaedic emergency. The first step is to decide between a preservative or surgical approach. Conservative care is rarely used now due to poor outcome and extended stay in hospital. Moderate treatment of an intracapsular displaced fracture leads to a sore, functionless hip [68].

An undisplaced intracapsular fracture can be treated with analgesia, a few days rest, then gentle mobilization, but there is a high risk of subsequent fracture displacement, so internal fixation is preferable [69]. If there are no contraindications (e.g., associated femoral neck fracture), an emerging closed reduction should be attempted as soon as possible, preferably within 6 hours, given the direct correlation between delayed reduction and increased risk of femoral head osteonecrosis [70].

Chirurgical hip fracture is a low risk treatment. Except in the particular cases mentioned below, surgery for diagnostic testing is generally not delayed, as the benefits of early hip fracture repair far outweigh the risks [71].

The aims of comprehensive treatment of femoral head fractures are to achieve structural reduction, achieve and preserve joint integrity, and eliminate any fragments of the interposed bones [72]. This can be done either by nonsurgery or by surgery. In this decision-making process the scale, position, and displacement of the fracture is factors [73]. Most femoral head fractures are treated surgically, despite the propensity for displacement and joint incongruity of these fractures [74]. Multiple implant options were listed, including interfragmented lag screws, headless self-compression screws, or bio-absorbable pins or screws [75].

Conclusion

Hip fractures are a major cause of morbidity and mortality in the elderly, with more than 250,000 hip fractures occurring in the United States per year. When the population of the country continues to age, the number will increase dramatically. Since many of these patients suffer from numerous medical comorbidities, internists play an increasingly important role in both pre-operative risk assessment and perioperative medical treatment of patients suffering from acute hip fractures. New operational exposures, including a updated Smith-Petersen technique with or without anterior dislocation, hip dislocation, and hip arthroscopy, have allowed surgeons to better access and visualize the hip joint.

In order to maximize patient care internists, need to consider the challenges found in this population.

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