12 Fractures of the Pelvis

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12.1 Introduction

In the past two decades, traumatic disruption of the pelvic ring has become a major focus of orthopedic interest, as has the care of polytraumatized patients. This injury forms part of the spectrum of polytrauma and must be considered a potentially lethal injury with mortality rates of 10%–20%. The stabilization of the unstable pelvic ring in the acute resuscitation of multiply injured patients is now conventional wisdom.

With respect to the long-term results of pelvic trauma, conventional orthopedic wisdom held that surviving patients with disruptions of the pelvic ring recovered well clinically from their musculoskeletal injury. However, the literature on pelvic trauma was mostly concerned with life-threatening problems and paid scant attention to the late musculoskeletal problems reported in a handful of articles published prior to 1980. Despite the clinical impressions that most patients do well, some authors have suggested otherwise.

Holdsworth (1948) reported on 50 pelvic fractures and indicated that of the 27 patients with a sacroiliac dislocation, 15 had significant pain and were unable to work, whereas those with a sacral or iliac fracture had more satisfactory results. Pennal and Sutherland (1959), in a large, unpublished study of 359 cases, further suggested that patients with unstable vertical shear injuries had many late complications. Slatis and Huittinen (1972) and Monahan and Taylor (1975) both confirmed the significant percentage of late musculoskeletal problems.

In reading the literature, the case mix for each series must be determined; otherwise the conclusions may be erroneous. Pelvic fractures must be classified according to their degree of instability or severity. If a series contains a large number of stable, inconsequential fractures, the overall results with simple treatment will be excellent, whereas if it contains a high percentage of displaced, unstable pelvic disruptions, the results with simple treatment will be quite different (Fig. 12.1). Therefore, in reading the literature, we must be certain that we are not comparing apples with oranges or chalk with cheese. An understanding of this injury is the key to logical decision making.

12.2 Understanding the Injury

In order to better understand our proposed classification and rationale of management, some knowledge of pelvic biomechanics is essential.

The pelvis is a ring structure made up of two innominate bones and the sacrum. These bones have no inherent stability, and the stability of the pelvic ring is thus due mainly to its surrounding soft tissues.

The stabilizing structures of the pelvic ring are the symphysis pubis, the posterior sacroiliac complex, and the pelvic floor. Although the anterior structures are important, contributing 40% of the stiffness to the ring (Hearn et al. 1991), the integrity of the posterior sacroiliac complex is most important in maintaining pelvic ring stability (see Fig. 12.6).

12.2.1 Ring Structure of the Pelvis

The pelvis is a true ring structure. It is self-evident that if the ring is broken in one area and displaced, then there must be a fracture or dislocation in another portion of the ring. Thus the vast literature describing anterior or posterior pelvic fractures suggesting that they appear in isolation is misleading. Gertzbein and Chenoweth (1977), in a series of patients with undisplaced anterior pelvic fractures, noted that a technetium polyphosphate bone scan of the posterior sacroiliac complex gave a positive reading in every case, indicating the definite presence of a posterior lesion (Fig. 12.2). This was further
Fig. 12.1a–e. Pelvic fracture personality types. The management of a pelvic disruption depends on a clear evaluation of the personality of the fracture. The good personality types as noted in the drawing in a and the radiograph in b which demonstrates a relatively undisplaced stable fracture of the pelvis is different than the bad personality type as noted in the drawing in c and the radiographs in d and e. The anteroposterior radiograph (d) is that of a 21-year-old man who sustained a crush injury to the pelvis. The degree of instability was not recognized, and the patient was treated with bed rest while the extremities were attended. The final results (e) show severe shortening of the right hemipelvis with internal rotation. Note also the extremely high position of the right ischial tuberosity, which made sitting almost impossible (lower arrow). Marked shortening is indicated by the upper arrows above. Comparison of these two cases is like comparing apples to oranges or chalk to cheese.