



Advances in the Treatment of Pelvic Fractures

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Two articles on the subject of pelvic fractures appear in this issue of *IMAJ*. One article represents the experience of the Rabin Medical Center (Beilinson Campus), summarizing 78 patients admitted to the hospital between 1998 and 2001 [1]. The second, from the Hadassah University Hospital, reflects the experience of the orthopedic department during the period 1987–1999 with a total number of 808 patients [2].

Both articles, despite reviewing different numbers of patients treated in each institution, also show significant similarities. Both articles emphasize the severity of pelvic fractures, the high mortality rate, and the high association of additional injuries that may accompany pelvic fractures. Neither of these articles provides details regarding what treatment should be given to a patient with a certain fracture. Rather, the aim of these papers is to emphasize the severity of these injuries and the high mortality and morbidity associated with such injuries, as well as the complexity of the treatment.

Generally speaking and without going into specific classification of pelvic fractures, one can divide them into low and high energy trauma. Low energy pelvic fractures occur mostly in the elderly population with minor trauma that causes an isolated fracture of one of the pelvic bones, or fractures of the pubic rami. The fractures do not extend into other joints around the pelvis, such as the hip or the sacroiliac joints. These fractures are associated with pain and temporary morbidity. They are not associated with mortality. Once they are healed there is no permanent damage.

In contrast, high energy pelvic trauma is usually the result of car accidents, a fall from a height, or high velocity gunshot wounds. Due to a rich blood supply to the pelvic bones and their proximity to major blood vessels, this type of trauma to the pelvis is associated with high mortality. The trauma surgeons know the dangers related to these injuries and have developed an algorithm of immediate treatment to control bleeding. By using modern methods of immediate stabilization, angiographic evaluation and obliteration of major bleeders, mortality has been reduced from 20–25% to about 10%. These major injuries are frequently linked to additional trauma, as elaborated in the articles in this issue of the journal. The morbidity in high energy pelvic fractures involves complica-

tions related to the fracture – extending to major joints such as the sacroiliac or the hip joint. Urogenital complications can also occur either by injuring the bladder or the urethra or, on rare occasions, with fractures extending into the rectum. High energy pelvic trauma is frequently related to other injuries – the worst triad being head trauma, chest trauma and pelvic trauma.

The authors did not elaborate on the surgical treatment of pelvic trauma, but one should be aware that these injuries require experienced surgeons, a large amount of equipment, and most recently, a navigation system for computerized assisted surgery. Only surgery performed accurately by an experienced surgeon reduces the morbidity of these injuries. This may explain the number of patients transferred to other facilities. Barzilay et al. [1] state in the article from the Level I trauma center that 30% of the patients were referred from other trauma centers.

The relationship between hospital volume and the outcome of surgical treatment became a major issue in all the surgical specialties. Katz and team [3] published an article on this subject as it relates to total hip replacements in the United States. They evaluated primary total hip replacements among Medicare patients, a total of 58,521 primary procedures and 12,936 revision operations, all performed between July 1995 and June 1996. Their conclusions were clear cut: “Patients treated at hospitals and by surgeons with higher annual case loads of primary and revision total hip replacements had lower rates of mortality and less complications.” This article is not the only one evaluating the association between volume and outcome of orthopedic procedures. Hervey et al. [4] published similar conclusions when they looked at total knee arthroplasties in association with patient load. They reviewed a target population of 277,550 patients and their conclusion was that surgeons with higher patient volume have better outcome, lower mortality, shorter hospital stay and lower postoperative complications. They concluded that the volume could decrease patient mortality. A recent article published in March 2004 [5] evaluated the relationship between hospital volume and the outcome of shoulder arthroplasty, and reached similar conclusions. The surgeon who operated more had better results. The relationship between surgical volume

and outcome is true also in other surgical subspecialties. Looking at the outcome of carotid endarterectomies, the authors suggest that health policies should focus on reducing the number of low volume surgeons [6]. In a retrospective study of 18,913 patients who had coronary surgery in England during the years 1997–2003 the authors investigated the relationship between mortality rate and surgeon's experience. These operations were performed by a group of 15 surgeons. They evaluated the results and complications of newly appointed consultant surgeons versus those of the more established consultants. They found a 50% reduction in mortality over the subsequent 4 years among the newly appointed surgeons [7] as their surgical experience improved. The effect of outcome in high volume hospitals at academic medical centers was also evaluated in relation to gastric bypass in morbidly obese patients. The comparison of high volume, medium volume and low volume hospitals in these academic centers led to the same conclusion as the others. In the high volume hospitals there was a significantly lower rate of mortality, fewer complications and shorter hospital stay among patients who underwent this surgery.

In many countries, the high volume hospitals do not always reflect a similar high volume load for the individual surgeons. However, in Israel, there is a direct link between high volume hospitals and high volume surgical experience — the best combination. The more surgery performed by the institution and the individual surgeon, the better the outcome.

The issue of experience and volume is highly related to the outcome of pelvic trauma. Being one of the most complicated surgical procedures in the field of Orthopedics, pelvic trauma should be referred to hospitals that have the ability and know-how to treat these patients best. Obviously, resuscitation has to be performed at the local institutions, but the definitive surgery

should be postponed and referred to a high volume medical and trauma center.

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