

Quadrilateral Plate Fractures

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Quadrilateral plate is a crucial structure of medial acetabulum with special morphology and important function. These fractures are hard to expose and reduce because it has difficult access. At the same time, the bone in the quadrilateral plate is not easy to fix for thinning bones and adjacent to the articular cavity. Acetabular fracture involving quadrilateral plate represents a challenge to the surgeon because of its deep location and a very thin bone, especially in elderly individuals which are often combined with comminution and osteoporosis. To achieve anatomic reduction of the fracture, a stable fixation, and preventing protrusion of the femoral head is imperative for optimal outcome.

Currently, a variety of implants are available for displaced quadrilateral plate fractures, including the cerclage wire-plate composite, pelvic brim long screws, various combinations of spring plates T-shaped plate, L-shaped plate, infrapectineal plate etc. These devices are not entirely without any limitation, such as requiring great surgical skills and experience, a high risk of joint penetration, or inadequate fixation of the comminuted segments, particularly in fractures with osteoporotic bones, which may be associated with inadequate reduction and instability of fixation leading to joint incongruity and early arthritis.

There have been use of modified stoppa approach to have direct access to the quadrilateral plate. Using this approach, plates can directly be applied over the reduced fracture fragments. This fixation is biomechanically superior.

The number of acetabular fractures in the geriatric population requiring open reduction and internal fixation is increasing. Fractures with medial or anterior displacement are the most frequent types, and via the ilio-inguinal approach buttress plates have proved helpful to maintain the quadrilateral surface or medial acetabular wall. Seven to ten hole 3.5 mm reconstruction plates may be used as buttress plates, placed underneath the usual pelvic brim plate.

This treatment option should be considered in the surgeon's armamentarium when fixing these challenging cases.