Experience shows that repair of fractures of the pelvis is rapid, so that beyond the 21st day there are problems imposed by fairly advanced union, the fracture lines becoming obscured by abundant callus which fixes the fragments in malposition. Perfect cleaning of the fracture surfaces, an absolute requirement for anatomical reduction, is much more difficult. In practice, until the 14th post-accident day operative intervention is generally straightforward, but it becomes progressively less so during the 3rd week, at the end of which healing is generally fairly advanced.

21.1 Pre-operative Care

With regard to the fractured acetabulum itself, leaving aside aspects of treatment of other injuries and general resuscitation, pre-operative care and preparation comprise:

(a) Local care of the injured limb. If a posterior dislocation has been reduced and is stable, simple maintenance of the limb in slight abduction and slight external rotation prevents redislocation. While waiting for operation, in our view, traction is unnecessary whatever the type of dislocation.

(b) Skin preparation is similar to that for all orthopaedic operative procedures but it must be emphasised again that when an ilio-inguinal approach is anticipated, 24–48 h should be allocated for scrupulous preparation by shaving, repeated washing and application of iodine, and antibiotics.

(c) Radiographic study. During the period of preparation of the injured person, the study of the four standard views must not be rushed. Poor films must be repeated, the surgeon contributing in the radiology department if difficulty is encountered in positioning the patient. CT scanning should now be regarded as indispensable. Only through the discipline of joint study of the plain radiographs and the CT sections will an exact anatomical diagnosis be possible; 3-D reconstructions are very helpful here.

(d) Prophylactic antibiotic treatment covering the widest possible spectrum of micro-organisms is begun at least 24 h prior to surgery, earlier if there are skin wounds or a Morel-Lavallée lesion, or if a urinary catheter has been placed as an emergency procedure, which is very frequent. Anticoagulation therapy is begun pre-operatively if the operation is delayed, i.e. in our practice in nearly all cases, as most of our patients are referred. The type of anticoagulant chosen depends on the patient’s condition (Sect. 21.5.3).

(e) Indomethacin treatment to prevent ectopic ossification (if a Kocher-Langenbeck or an extended ilio-femoral approach is scheduled) is begun the day before surgery.

21.2 Choice of Surgical Approach

This is a fundamental issue and the errors of approach which we have committed have been repeated reminders of the care that is necessary. The aim is to choose a surgical approach which permits the complete repair of the acetabulum, or at least, to choose that which will give the best chance of achieving this aim. Sometimes the ideal cannot be achieved, and, as stated in the preceding chapter, when we choose either the Kocher-Langenbeck or the ilio-inguinal approach, which lead electively to one column of the acetabulum, it is not possible to be certain that the whole osteosynthesis can be performed through the one incision: a second operation may be necessary, preferably immediately but sometimes delayed. Today when a double approach is very likely to be
necessary we prefer to choose the extended ilio-femoral approach.

The right choice of approach depends on four factors:

- the anatomical type of the fracture. It is here that a knowledge of the classification is indispensable;
- the age of the fracture. The fast callus formation increases the operative difficulties with time: all the callus needs to be removed to allow a perfect reduction;
- the extent of access to the innominate bone offered by each surgical approach;
- the rate of ectopic bone formation following the different approaches, which seems to be independent of the fracture type.

For five varieties of fractures there is a clear best approach; the other five entail making a choice.

### 21.2.1 Kocher-Langenbeck Approach

This is suitable for:

- all varieties of fractures of the posterior wall of the acetabulum;
- all fractures of the posterior column;
- associated fractures of the posterior column and the posterior wall.

### 21.2.2 Ilio-femoral Approach

This may be used for high fractures of the anterior column involving one separated fragment. These can in fact be treated just as well through the ilio-inguinal approach, but the ilio-femoral approach is used if it is certain from the radiological diagnosis that an easy reduction is possible through this easier approach.

### 21.2.3 Ilio-inguinal Approach

This is suitable for:

- anterior wall fractures;
- anterior column fractures of all types;
- associated anterior column and anterior wall fractures, which we have included in the anterior wall fractures group, as they just add to the latter a fracture of the ischio-pubic ramus that we do not fix.

### 21.2.4 Fracture Types for Which There is a Choice of Approach

#### 21.2.4.1 Transverse, T-Shaped and Associated Transverse and Posterior Wall Fractures

These three fracture types have in common a transverse fracture component. The reduction of this transverse fracture is critical, and the higher it is situated on the acetabular sphere the more exact its reduction has to be: a fault in reduction in an infra-tectal transverse fracture is much less important than the same thing happening in a trans-tectal transverse fracture involving the weight-bearing area. To perfectly reduce a transverse fracture we have to have as easy control as possible of both extremities of the fracture line, and the choice of approach depends to a great extent on this. Consequently, for these three varieties of fractures we currently advise using:

- the extended ilio-femoral approach if the transverse fracture component is trans-tectal, as this is the only approach which will allow complete and perfect intra-articular control of the fracture line;
- the Kocher-Langenbeck approach if the transverse component is juxta-tectal or infra-tectal and the patient is being operated on no more than 15 days after injury. After this date we advise the extended ilio-femoral approach.

In associated transverse and posterior wall fractures in which the transverse and the posterior wall component must be repositioned, only these two approaches can be used.

However, in cases of transverse or T-shaped fractures, in addition to these two approaches, which are the most often used, the ilio-inguinal approach has some uncommon indications. In these kinds of fractures it sometimes happens that the displacement of the transverse fracture line is absent or only slight posteriorly, while the displacement at the level of the pelvic brim is significant: this is the situation where rotation of the ischio-pubic fragment or fragments has occurred around a roughly horizontal axis. In these latter instances it is plainly logical to choose the ilio-inguinal approach.

In T-shaped fractures, if we choose the Kocher-Langenbeck or the ilio-inguinal approach and perfect reduction of the segment of the column opposite to the approach cannot be achieved, we then perform the other approach.