Guest editorial

Pelvic osteotomy for acetabular dysplasia

Pelvic osteotomy for acetabular dysplasia has been introduced to improve acetabular coverage of the femoral head and reduce the risk of secondary osteoarthrosis. Several surgical methods for reorientation of the acetabulum have been described. Single, double, triple, spherical and periacetabular osteotomies have been proposed for this purpose by reorientation of the acetabulum (Leunig et al. 2001).

The present issue of Acta Orthopaedica Scandinavica includes three papers on pelvic osteotomies (Pajarinen and Hirvensalo 2003, Sen et al. 2003, Trousdale and Cabanela 2003). The paper by Sen et al. (2003) describes the polygonal triple osteotomy reported by Kotz in 1992. This technique permits substantial reorientation of the acetabulum because it avoids the sacropelvic ligaments, which normally reduce the degree of reorientation of the osteotomized acetabular fragment. Its disadvantage is less stability of the osteotomy, since the posterior column is not kept intact. Therefore, in many cases, more stability must be provided—e.g., by a plate or a cast.

The periacetabular osteotomy as described in the two other papers (Pajarinen and Hirvensalo 2003, Trousdale and Cabanela 2003) differs from the triple osteotomy because the posterior column remains intact. This stabilizes the osteotomized reoriented acetabulum, permits minimum fixation and early mobilization of the patient (Ganz et al. 1988, Siebenrock et al. 2001). 2 screws are usually sufficient for fixation and these allow 40 kg weight bearing immediately after surgery. Midterm results after periacetabular osteotomy have been encouraging.

An important aspect of pelvic osteotomy is, of course, to make the cuts in the bone correctly (Søballe 2001). Since they are very close to the acetabulum, there is a risk of performing an intra-arcticular osteotomy. Therefore, fluoroscopy should be used to visualize the ischial osteotomy and posterior iliac osteotomy. For the latter, an oblique view is recommended to ensure that the cut is extra-articular and does not penetrate the posterior column of the acetabulum. I use an image intensifier, exactly as described in the paper by Trousdale and Cabanela (2003).

All three papers emphasize the need for proper correction of the osteotomized acetabular fragment. This is the most difficult part of the operation, one which the surgeon must pay attention to. According to the results of Sen et al. (2003) and Pajarinen and Hirvensalo (2003) overcorrection has been common. A CE angle of 40 degrees or more is too much and may cause a negative Tönnis (acetabular index) angle which can lead to impingement laterally, bring the fovea into the weightbearing surface and even result in failure of the hip. This angle must not be negative after correction and one should not aim to obtain a normal CE angle, which is usually not possible due to the global deficiency of the acetabulum. It is also important not to overcorrect anteriorly, which causes impingement on flexion of the hip. In our department, we have developed a non-commercial measuring device to determine the Tönnis and CE angles peroperatively, using the fluoroscope. This device has been helpful and reliable for obtaining the correct reorientation of the acetabulum.

Another important issue is to select the correct patients for pelvic osteotomy. First of all, the degree of osteoarthrosis should not exceed grade II with the Tönnis' classification. It is also important that the hip is congruent on the AP radiograph of the pelvis with 25 degrees of abduction of the hip. The patient's age is also important. As regards patients above 50 years of age, we need more information about indications and prognosis after pelvic osteotomy.

A new approach using a two-incision technique is described in the paper by Pajarinen and Hirvensalo (2003). Their technique does not seem to increase the risk of complications. Its disadvantage is that fixation is maintained by plates and screws, which increases the duration of the operation and may also increase the number of hardware removals later on.

The commonest approach for pelvic osteotomy is iliofemoral and ilioinguinal, which is elegant since the entire operation can be performed through one insertion.

Another interesting issue to discuss is the number of operations performed by a surgeon/year. In the two papers by Sen et al. (2003) and Pajarinen and Hirvensalo (2003), very few operations have been performed (5/year and 7/year, respectively). This is too few, which is indicated by the relatively long duration of the operation and a substantial loss of blood (mean 1.7 L) in the paper by Pajarinen and Hirvensalo (2003). More experience obtained by more operations each year would definitely reduce the length of the operation to about 1 hour and 15 minutes and the blood loss to about 400 mL, according to data from my own department, where we perform 3–4 periacetabular osteotomies a week.

I recommend that the national orthopedic societies should decide where and who should perform this kind of operation in order to keep the number per surgeon as high as possible. This would reduce the number of complications, the operating time and loss of blood. As pointed out by Trousdale and Cabanela (2003), the learning curve for periacetabular osteotomy is long.

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