A Case Report

Correction of a Malunited Vertical Shear Fracture

Staged Sliding Osteotomy of the Pelvic Ring

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Summary

The authors describe a posterior and anterior osteotomy of the pelvis for correction of a posttraumatic deformity in a 22-year-old female patient. As a shortening of the leg of 4 cm had occurred, surgery was performed in 2 stages. Between these 2 operations skeletal traction was employed. Main indications for this type of surgery included shortening of the leg, gait difficulties and poor posture while sitting. However, poor general health is considered to be a contraindication for such a risky surgery. During the surgical procedure all soft tissues preventing an proper correction have to be dissected or detached, particularly the sacrospinal and sacrotuberal ligaments. Screw fixation guarantees the correction. Exercises can be started as soon as the fragments become stable. Injuries to vessels and nerves are the most frequently encountered complications.

The patient was symptom-free after 1 year postoperatively, mobility of both hips and her gait were normal. The author could observe a complete remodelling of the osteotomies after 1 year.

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Zweizeitige Osteotomie des Beckenringes zur Korrektur einer schlecht geheilten vertikalen Fraktur

Zusammenfassung


Ein Jahr nach der Operation war die Patientin beschwerdefrei, die Beweglichkeit beider Hüften frei und der Gang normal. Es konnte eine vollständige Remodellierung der Osteotomien beobachtet werden.
Introductory Remarks
Twenty-two-year-old woman who fell from a height of 17 meters and presented 6 months later with a malunion of a vertical shear fracture of the pelvis Type C1.3 AO classification (Tile 1991 [5]). She had in addition a fracture of the ipsilateral femur that had been treated by open reduction and internal fixation with plate and screws and healed satisfactorily.

She presents with a major standing postural imbalance as shown by a significant pelvic obliquity with compensatory lumbar scoliosis during bipedal stance.

Limb length discrepancy: 4 cm. Unaided walk but with a severe limp. No nerve damage or neurological deficit in the lower limbs. No significant pain in the sacroiliac joint. No urinary problems. Normal range of motion of hips, knees and ankles.

Surgical Principles
Correction of posttraumatic deformities of the pelvic ring requires anterior and posterior osteotomies.  
A vertical posterior iliac sliding osteotomy can be used to lengthen the whole limb and at the same time provide adequate contact surfaces between the osteotomy fragments for stable internal fixation.
Release of pertinent muscle and ligament insertions to the pelvic bony framework plays an important role in the process of mobilization of the osteotomized hemipelvis. The structure of the sacrospinous and sacrotuberous ligaments being altered by previous injury must be recognized since these ligaments may resist secondary pelvic displacement. The sacrotuberous ligament functions as a primary restraint against vertical displacement while the sacrospinous ligament functions as a primary restraint against rotational displacement (Tile 1987 [2]).

If the desired amount of lengthening exceeds 2.5 cm it is safer to perform the surgical procedure in 2 stages (Tile 1987 [4]).

Advantages
Correction of gait and stance.
Equalization of leg length.
Correction of sitting postural deformity.
Correction of functional scoliosis.

Disadvantages
The operation is technically demanding.
Two-stage operation.

Indications
Malunion of pelvic fracture resulting in:
Gait disorder.
Sitting postural deformity.
Major limb length discrepancy.

Contraindications
An associated disability precluding major surgery.

Leg length discrepancy inferior or equal to 2.5 cm without significant rotational deformity of the pelvis is a relative contraindication to pelvic reconstruction.

Patient Information
Two-stage operation with an interval recumbency period with skeletal traction.
Possibility of intraoperative complications: Haemorrhage from the gluteal vessels. Sciatic nerve injury.
The need for blood transfusion.
Possibility of sciatic nerve paresis during the period of traction which may necessitate interruption of traction and therefore result in only partial correction of limb length discrepancy.
Crutch walking for 3 months.