For the past two decades, different centers in Europe,1–19 the United States,20–37 and Japan38–40 have been contributing to the development of standardized techniques and specification of indications for arthroscopy of the hip joint (HA), with most authors advocating the use of traction.6,22,25,41 The technique of hip arthroscopy without traction, however, has been disregarded. Only a few investigators have presented their experiences using this procedure.9,11,13,34,35,42–44

More recent reports have proposed different advantages of the nontraction technique. Klapper et al. also emphasized the low complication rate of this procedure.34 Although traction is required for inspection of the direct weight-bearing cartilage, the acetabular fossa and the ligamentum teres, arthroscopy without traction is ideally situated for evaluation of the hip joint periphery.13,43

Based on the classification of the arthroscopic compartments of the hip joint, the following review presents detailed steps on performing this technique. A systematic mapping of that part of the joint that can be inspected without traction is included. Indications and contraindications are then specified and illustrated with selected case examples.

ARTHROSCOPIC COMPARTMENTS OF THE HIP JOINT

Placement of portals and maneuverability of the arthroscope and instruments within the hip joint are more difficult than in other joints. This difficulty is related to various anatomic features: a thick soft tissue mantle, close proximity of two major neurovascular bundles, a strong articular capsule, a relatively small intraarticular volume, permanent contact of the articular surfaces, and the sealing of the deep, central part of the joint by the acetabular labrum. Thus, if no traction is applied to the hip, only a small film of synovial fluid separates the articular surface of the femoral head from the lunate cartilage and acetabular labrum (artificial space).

The anatomy of the acetabular labrum must be considered when accessing the hip joint. The labrum seals the joint space between the lunate cartilage and the femoral head. Even under complete muscle relaxation during anesthesia, the labrum maintains a vacuum force of about 120 to 200 N, which keeps the femoral head within the socket.35–47 To overcome the vacuum force and passive resistance of the soft tissues, traction is needed to separate the head from the socket, to elevate the labrum from the head, and to allow the arthroscope and other instruments access to the narrow artificial space between the weight-bearing cartilage of the femoral head and acetabulum. However, if traction is applied, the joint capsule with the iliofemoral, ischiofemoral, and pubofemoral ligaments is tensioned and the joint space peripheral to the acetabular labrum decreases. Thus, to maintain the space of the peripheral hip joint cavity for better visibility and maneuverability during arthroscopy, traction should be avoided.

In consequence, Dorfmann and Boyer11,13 divided the hip arthroscopically into two compartments separated by the labrum (Figure 11.1). The first is the central compartment, comprising the lunate cartilage, the acetabular fossa, the ligamentum teres, and the loaded articular surface of the femoral head. This part of the joint can be visualized almost exclusively with traction. The second is the peripheral compartment, consisting of the unloaded cartilage of the femoral head, the femoral neck with the medial, anterior, and lateral synovial folds (Weitbrecht’s ligaments), and the articular capsule with its intrinsic ligaments including the zona orbicularis. This area can be seen without traction and is described subsequently here.43

OPERATIVE TECHNIQUE

Operating Room Setup

The placement of personnel and equipment for HA without traction does not differ from the general HA setup (Figure 11.2). Surgeon, assistant, and scrub nurse...
with instrument table are on the ipsilateral side. The image intensifier is placed on the opposite side. The arthroscopy unit with video monitor and image intensifier with monitor are placed toward the foot.

**Positioning, Distension, and Portals**

Hip arthroscopy with and without traction can be performed in the lateral\textsuperscript{20,22} or supine position.\textsuperscript{25,39,43} Some authors claim that there are advantages to the lateral position, including better access to the posterolateral area\textsuperscript{48,49} and better application of traction in line with the femoral neck.\textsuperscript{50} However, for HA without traction, I favor the supine position.\textsuperscript{13,35,43,51} From my experience, the decision whether to use the supine or lateral position for the traction technique appears to be more a matter of individual training and habit of use. However, the almost exclusive use of the anterolateral portal (as indicated below) during HA without traction makes the supine position preferable for this part of HA.

Cadaver experiments and in vivo experience\textsuperscript{52} have shown that free draping and a good range of movement are important to relax parts of the capsule and increase the intraarticular volume of the area that is inspected (Figure 11.3A,B).\textsuperscript{53} This consideration is important for safe movement of the scope to avoid damage to the cartilage of the femoral head and synovial folds and unwanted sliding of the scope out of the joint. The distending effect of irrigation fluid pressure is of minor importance because the pressure should not be increased over 70 mm Hg to reduce the risk of development of a severe soft tissue edema. Klapper et al.\textsuperscript{34} do not use a pump and prefer to control distension of the capsule and irrigation pressure by adjusting the sus-