14 Three Tricks for Microvascular Fibular Grafting of Osteonecrosis of the Femoral Head

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14.1 Introduction

In our practice we have performed microvascular fibular grafting for osteonecrosis of the femoral head since 1996. Our indications for the procedure are a symptomatic hip with grade I–II disease and age less than 50 years [3]. In patients younger than 40 years, grade III disease is also considered an indication for microvascular reconstruction. We have followed the technique described by Urbaniak in 1995 [3]. This technique was described in detail again in 2004 [1]. In our practice we

Fig. 14.1. a Femoral head necrosis, grade II on the right side and grade I on the left side, in a 20-year-old woman after massive corticosteroid treatment. The symptomatic right hip was operated on. b Peroperative X-ray to control the removal of the necrotic bone. c Primary peroperative endoscopy through the drill hole. White necrotic bone is seen on top of the drill hole. d Endoscopic view after removing the dead bone. Bleeding bone is seen over all the defect
have developed some modifications to the basic technique which we find to be helpful for the operation. The modifications are described in detail in this article.

14.2 Endoscopically Assisted Removal of the Necrotic Bone

Primarily we remove the necrotic bone under peroperative X-ray control. The MRI images are used as a map in order to localize the dead bone (Fig. 14.1a). However, there has been some uncertainty as to whether all the dead bone is removed properly. This is because the disease itself is not visible on the plain radiographs (Fig. 14.1b). Different techniques such as computer assisted drilling or contrast medium imaging of the defect have been suggested to make the removal of the diseased bone more reliable [1, 2].

In order to make sure that a healthy level of bone is reached, we decided to try endoscopic visualization inside the drill hole. This method is easy with a long straight scope planned for hip arthroscopies. With the endoscope the necrotic bone can be seen from inside the femoral head (Fig. 14.1c). Sufficient removal of the dead bone can be confirmed by the endoscope when the bleeding level of bone is reached (Fig. 14.1d).

14.3 Modified Approach and Donor Vessels

In the original method the ascending branch of the lateral femoral circumflex artery and the concomitant veins are used as donor vessels for microvascular anastomosis. However, these vessels can occasionally be quite small. In addition, when using the ascending branch, cutting of the vastus intermedius muscle is needed to be able to reach the fibular vessels without tension [1].

After getting used to the anterior lateral thigh flap and its pedicle, the descending branch of the same origin, we tried using it as a donor vessel in femoral head reconstruction (Fig. 14.2a, b). The artery of the descending branch and its concomitant vein are normally nearly the same size as the fibular vessels. In addition, we have found harvesting of the descending branch easier. If the descending branch is used, the incision of the skin is done more distally than in the original technique and it can be shorter (Fig. 14.2c). Cutting of the intermedius muscle is not normally needed when the descending branch is used.