The University of Pennsylvania Orthopaedic Journal
13: 96, 2000

The Treatment of Avascular Necrosis of the Femoral Head—A Commentary

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Avascular necrosis of the femoral head continues to be a vexing problem. This is particularly true, due to our lack of understanding of the etiological process by which this disease develops and our lack of a high quality animal model upon which more effective testing can be done.

In general, treatment for avascular necrosis falls into two very broad categories: prosthetic replacement and femoral head salvage. These two papers review the advantages and disadvantages of two of the alternatives often employed in the femoral head salvage category for avascular necrosis. In general the results of salvage type procedures are indicated at an earlier stage and when the volume of necrotic bone is small. Most experts agree that the results of conservative treatment in individuals with avascular necrosis of the femoral head is quite poor, with the vast majority going on to collapse and requiring prosthetic replacement within two years of diagnosis. Mont et al performed a comprehensive review of the literature which supported this poor outcome in untreated individuals. The data presented in these two articles demonstrate that core decompression and free fibular transplant have some degree of effectiveness in all stages of presentation.

The paper by Steinberg represents a very nice overview of core decompression and grafting including its technique and some of the more notable data that has been presented in the literature. In addition, this represents of an update of the data from his single surgeon series with very nice perspectives on success of the procedure based on stage and degree of head involvement. In addition he has included the rate of conversion to total hip replacement, which for all practical purposes, represents the ultimate failure point. Although his series has been followed prospectively, its major shortcoming is that retrospective controls have been utilized. Dr. Steinberg makes a strong case for the continued use of core decompression in patients with avascular necrosis, with its reasonable rate of effectiveness and extremely low overall complication and morbidity rate of 1.1%. It is difficult to argue that this is anything but a safe and reasonably effective procedure.

The article by Moore has many shortcomings. Although it is quite complete and graphic on the surgical technique, it is particularly light in data. This paper comes from Duke University, where over 1,000 free fibular grafts have been performed over the last two decades. However, the major referral in the article with respect to results of free fibular grafting is to the 1995 paper by Urbaniak, which reported on 103 hips. Dr. Moore is much more gracious with his numbers when reviewing complications and refers to the larger series from his institution. No new data is offered at this time. In any event, Dr. Moore makes a reasonable argument for free vascularized fibular grafting in patients with avascular necrosis of the femoral head. He presents the superior numbers in the literature for results of minimum two-year follow up for all stages of presentation. However, the over twenty fold increase in complications compared to core decompression and grafting, albeit many of these complications are minor, leads one to wonder if the improved results are worth it. In addition, he fails to reconcile some obvious contradictions such as his recommendation for free fibular grafting in patients without subchondral collapse in spite of a 70% success rate in post collapse individuals, which is better than the results reported with core decompression and grafting. In addition, asymptomatic but involved hips are not treated. Once again, this is counter intuitive to the fact that the results are better with this procedure in earlier stages, that the vast majority of lesions eventually progress to symptoms and beyond, that avascular necrosis is bilateral in nearly 80% of cases, and that postoperative treatment requires non weight bearing for a significant period of time. Treatment with free fibular grafting is often delayed in one of the hips in patients with known bilateral disease. This approach gives the delayed hip the opportunity to progress and possibly face an inferior outcome.

Finally, Dr. Moore points out in his summary of an article by Scully, comparing core decompression to free fibular grafting, that in patients with Ficat stages II and III there was a statistically significant difference in favor of free fibular grafting. However, in Stage I, they found essentially equivalent results, yet free fibular grafting remains recommended by their group in all symptomatic individuals without collapse, not just Stage II.

In summary, the treatment for avascular necrosis remains controversial. Free fibularized grafting offers statistically significant better results in all stages of avascular necrosis when compared to core decompression based on the data presented by these two authors. But the free fibular graft in avascular necrosis is a technically demanding procedure which can take several hours in inexperienced hands and with a nearly twenty fold increase in complications, most of which are minor. This raises the question of whether the extra effort and potential for complications of the free vascuarlized fibular graft are worth the improvement in the results? Until a prospective, randomized, multicenter study is conducted, evaluating methods of treatment and their stages we may never know. Currently, both remain viable treatment options for all stages of avascular necrosis at the discretion of the treating surgeon.