Arthroscopic-Assisted Core Decompression for Avascular Necrosis of the Femoral Head Demonstrates Favorable Clinical Outcomes: A Systematic Review and Meta-analysis

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INTRODUCTION: Decompression for management of osteonecrosis of the femoral head has commonly been performed percutaneously under fluoroscopic guidance. However, an evolving approach incorporates the use of arthroscopy for more accurate positioning of the decompression. Therefore, this systematic review aims to evaluate patient-reported outcomes (PROs) and survivorship of arthroscopic guided decompression for the management of osteonecrosis of the femoral head.

METHODS: A search following guidelines established by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses was performed in the PubMed, Embase, and Scopus databases for studies reporting outcomes of arthroscopic assisted decompression for femoral head osteonecrosis. Data regarding study characteristics, patient demographics, degree of osteonecrosis, PROs, and survivorship rates were collected. Survivorship was defined in this study as no progression of the osteonecrosis, collapse of the femoral head, or requirement of secondary surgery. A P-value of less than 0.05 was considered to be statistically significant.

RESULTS: Seven studies comprising 432 hips (age range 32.7 to 44.0 years; 71.0% male) were included. Four studies compared outcomes of decompression with versus without the assistance of arthroscopic guidance. Mean preoperative and postoperative modified Harris Hip Score (mHHS) scores ranged from 59.5 to 68.2 and 81.9 to 92.1, respectively. A meta-analysis comparing postoperative mHHS in arthroscopic-guided (190 hips) versus non-arthroscopic-guided (250 hips) decompression groups found that the arthroscopic-guided group had a significantly higher mHHS (Mean Difference: 6.65, 95% Confidence Interval: 5.6-7.7, P < 0.00001). Rates of survivorship ranged from 54.5% to 100.0%. A meta-analysis comparing the risk of collapse following decompression in the arthroscopic-guided (190 hips) versus non-arthroscopic-guided (250 hips) groups found that the arthroscopic-guided group had a significantly lower risk of collapse (Risk Ratio: 0.45, 95% Confidence Interval: 0.28-0.73, P = 0.001).

DISCUSSION AND CONCLUSION: Patients undergoing arthroscopic guided decompression for the management of osteonecrosis of the femoral had excellent PROs and low rates of femoral head collapse. Therefore, the addition of arthroscopic guidance appears to provide enhanced accuracy in positioning the decompression, as demonstrated by excellent patient outcomes.