

Which Surgical Approach Provides Maximum Visualization and Access for Open Reduction and Internal Fixation (ORIF) of Femoral Neck Fractures?

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Purpose: We sought to objectively identify which surgical approach provides the maximal exposure for subcapital, transcervical, and basicervical femoral neck fracture ORIF. Our hypothesis is that the Hueter approach provides maximum exposure.

Methods: 15 fresh-frozen cadaveric hips were utilized to compare 4 different surgical approaches to the femoral neck (n = 5 hips / approach): Watson-Jones, Smith-Petersen (with and without rectus release), and Hueter approach. Data were captured before and after rectus release for the Smith-Petersen approach to make the fourth group. After surgical exposure, standardized and calibrated digital images were captured and analyzed using a computer software program to determine the % area visualized. Three trained investigators separately assessed each specimen to determine visualization and ability of the surgeon to physically outline the subcapital and basicervical anatomical femoral neck regions and included the superior, inferior, and anterior halves. If the subcapital and basicervical components could be visualized and palpated, the transcervical region could be accessed. Data were analyzed for significant ($P < 0.05$) differences using analysis of variance and Fisher exact tests.

Results: Femoral neck visualization (digital camera evaluation and direct visualization) for all regions was significantly higher ($P < 0.029$) for Smith-Petersen without rectus release. The ability to outline the femoral neck with a Freer elevator was significantly better ($P < 0.049$) with Smith-Petersen without rectus release and Heuter compared to Smith-Petersen with rectus release. There was no significant difference compared to Watson-Jones.

Conclusion: When comparing common surgical exposures utilized for femoral neck fracture ORIF, including the Hueter approach used for anterior total hip arthroplasty, the Smith-Petersen approach without rectus release provides the best visualization for the entire femoral neck. Furthermore, when considering femoral neck regions that are accessible with palpation, Smith-Petersen without rectus release and Heuter approaches provide the greatest access.