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Percutaneous surgical management of femur neck metastasis using hollow perforated screws for introducing bone cement in advanced lung cancer patients

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Background: The treatment of choice for femoral neck metastasis is bipolar hemiarthroplasty. However, minimally invasive surgery is needed for patients' with poor general condition to perform major surgery.

Purposes: We introduced new surgical method using percutaneous hollow perforated screws (HPS) and cementoplasty in femoral neck metastasis with impending fracture and compared its usefulness with bipolar hemiarthroplasty in advanced lung cancer patients.

Methods: Total 33 lung cancer patients who performed percutaneous HPS and cementoplasty (mean cement amount = 24.3 ± 13.0 ml) for the femoral neck metastasis were finally included (mean age = 64.0 ± 8.7 yr). As a control, 16 lung cancer patients who did bipolar hemiarthroplasty for the femoral neck metastasis were included and compared the results. Anesthesia, operative (op.) time, red blood cell (RBC) transfusion, pain killer use, pain score change, hospitalization, post-op. complication and ambulation status were assessed.

Tumor progression was evaluated using F-18-FDG positron emission tomography (PET)/computed tomography (CT) and/or bone scintigraphy (BS) in 12 patients.

Results: In percutaneous HPS and cementoplasty patients, more incidence of spinal anesthesia (p=0.014), less op. time (p<0.001), less RBC transfusion (p=0.040), less pain killer use (p=0.001), early post-op. pain improvement (p=0.013), short hospitalization (p<0.001) was found than bipolar hemiarthroplasty with significance. Post-op. complication and ambulation status showed no significant results. Tumor suppression effect of percutaneous HPS and cementoplasty showed no statistical difference than bipolar hemiarthropathy. **Conclusions:** Percutaneous HPS and cementoplasty for femoral neck metastasis demonstrated less invasiveness, early pain relief, immediate reliable stabilization and durable local tumor suppression in comparison with bipolar hemiarthroplasty. This minimally invasive surgical technique seems to be useful in advanced cancer patients who have hazards of open surgery for the femoral neck metastasis.



Figures 1A-1D.