

## Endovascular Treatment of Percutaneous Nephrolithotomy Hemorrhagic Complications

**Introduction and Objective:** The percutaneous nephrolithotomy (PCNL) represents a safe and efficient procedure in the surgical management of renal lithiasis. The hemorrhagic complications include: intraoperative bleeding, hematoma, arterio-venous fistula and pseudo-aneurysm. In most of the cases the injuries are self-limited and do not need a surgical intervention. The purpose of this study is to prove the efficacy of the endovascular renal approach with selective/over selective embolisation in the control of severe post-PCNL hemorrhages.

**Materials and Methods:** We retrospectively analyzed 1650 patients who had undergone PCNL for removal of renal calculi between July 2007 and February 2012. A number of 205 hemorrhagic complications were observed but only 19 (1.15%) patients with a mean age of 54.5 years presented severe post PCNL hemorrhage that required angiography and/or embolization for bleeding control. The arterial approach was femoral (five cases) or brachial (fourteen cases). After initial aortography a selective renal arteriography is performed. Rapid filming sequences are necessary to identify arteriovenous fistulas or the origin of pseudoaneurysms. Vascular lesions are embolised using micro-sphere or metallic coils.

**Results:** The mean time between PCNL and moment of angiography was 7.2 days for the hospitalized patients and 16 hours for those with tardive post PCNL bleeding (two cases). Renal arteriography revealed arteriovenous fistula in 4 patients (21%), pseudoaneurysm in 12 (63.5%) and no lesion in 3 patients (15.7%). The hematuria persisted 24 hours after the embolisation in one case and an emergency nephrectomy was necessary. In 15 patients, successful embolization of the offending vessel was achieved. Metallic coils were used in eight patients (1 or 2 spirales), microspheres in five, and coils plus microspheres in three patients. The average of the transfused units was of 2.6 units (between 0 and 5).

**Conclusions:** The incidence of post PCNL severe hemorrhagic complications is low (1.1%) which indicates PCNL as a safe and efficient surgical technique. The gold standard treatment in post PCNL vascular renal lesions is the selective angioembolization. Endovascular treatment of vascular complications is a relatively easy intervention in experienced centers, with high rate of success and immediate benefits.