85 Transarterial embolization of hemorrhagic complications after percutaneous nephrolithotomy

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Introduction & Objectives: Percutaneous nephrolithotomy (PCNL) represents one of the minimally invasive therapies that replace complex open surgical procedures, nevertheless is associated with a risk of significant morbidity, bleeding is one of the most common and most important complication of it. The incidence of hemorrhage after PCNL varies between 0.8% and 7.6%, but a renal artery pseudoaneurysm or a arteriovenous fistula can occur also after renal biopsy, percutaneous nephrostomy or partial nephrectomy. The aim of this study is to analyze the severe hemorrhagic complications that appear after PCNL and to evaluate the endovascular coil embolization of the vascular injuries.

Materials & Methods: We retrospectively gather data from over 3000 patients that underwent PCNL between January 2008 and September 2015, in our clinic. 256 had hemorrhagic complications but only 31 patients had important bleeding that required angiography and embolization. Hemogram, coagulation profile, serum creatinine levels, serum electrolyte, glucose, urinalysis, urine culture, ultrasonography, intravenous urography and, in some cases C.T. scan, were performed before the patients underwent PCNL. We recorded the type of lesions, the result of the embolization, renal function and hemoglobin concentration prior and after embolization.

Results: Of the 31 patients, 21 males and 10 females, that required super-selective renal angiography due to severe vascular lesions after PCNL, from the right (19 cases) or the left kidney (12 cases). 9 cases had staghorn lithiasis, 15 multiple and the stone burden was single in 7 cases. Only 6 cases required multiple tracts, and over 90% of all the cases had a history of previous renal surgery, ESWL and UTI. In the first 24h hours after PCNL, 5 patients had important hematuria that required embolization, 18 cases had hemorrhagic complication in the early postoperative period (in the first 2 weeks) and 8 cases presented with persistent hematuria after 14 days postoperatively. The mean hemoglobin drop was 5±1.1 (g/dl) and mean blood units transfused during postoperative period was 2.55±1.2 (U). Renal angiography revealed pseudoaneurysm in 20 patients, arteriovenous fistula in 8, and arterial laceration in 3 patients. Fibered coils were used for super selective vascular occlusion, as near as possible to the lesion, and in 9 cases, in whom the lesion could not be superselectively catheterized microparticles were applied. A combine of coils and microparticles was necessary in 7 cases

Conclusions: During the PCNL procedure, bleeding may occur when renal puncture is performed, Amplatz tract dilation, manipulation of the nephroscope or in the postoperative period. Venous bleeding can usually be managed conservatively, while arterial complications of PCNL, requires selective endovascular embolization.