OBJECTIVES:
Despite the significantly reduced associated morbidity and mortality, endovascular repair of an abdominal aortic aneurysm (EVAR) is not free of important complications.
The aim of this study is to confirm if the occurrence of high-velocity traumas (HT) during EVAR follow up could facilitate late type 1, type 3 endoleak (EL) and limb occlusion due to migration, disconnection and material fatigue.

Methods
All Patients underwent abdominal aortic procedures in our Department from the 1st January 2011 to the 31 December 2014 were prospectively included in a dedicated database. All patients received a telephonic interview to verify HT occurred during follow-up or, in case of secondary treatment, before the complication diagnosis. We, also, retrospectively analysed all CT images of patients underwent aortic reinterventions for late type 1, type 3 EL or limb occlusion (at least 6 months after primary procedure) due to migration, disconnection or graft material fatigue.

To divide patients according to the risk of developing an EL we identified 8 predisposing factors (PF): more than 10 mm distance between the lower renal artery and the covered graft, less than 10 mm of overlapping graft-aorta in the proximal neck, more than 60° of angulation between sovrarenal fixation stent and infrarenal graft, more than 60° between neck portion of the graft and the distal part, more than 90° between aortic part of the graft and 1 iliac limb, less than 25 mm overlapping in modular grafts, less than 15 mm of distal neck more than 20mm from distal landing zone and iliac bifurcation) at the follow-up Computed Tomography (CT) examination. We divided patients in three groups: group A (low risk for EL, PF≤2), group B (intermediate risk, 3-5 PF), group C (high risk, >5 PF).

Results
During the study period we performed 37 secondary procedures (7 from our institution), 21 Type 1 EL, 9 type 3 EL and 7 limb occlusion (4 multiple endoleaks).
In complicated cases, 3 patients suffered an HT before developing the complication (3/37:8.1%), while in not complicated cases only 1 patient suffered HT (1/234; 0.4%).

The analysis of the preoperative CT examination evidenced that patients with endoleak+HT were 2 in group B (intermediate risk) and 1 in group C (as the patients with no endoleak+ HT), while the other 34 complicated patients were 26 in group A and 8 in group B.

CONCLUSIONS:
HT seem to increase the risk of type 1, type 3 EL and limb occlusion, during EVAR follow-up. A CT angiography should be recommended for patient suffering HT during EVAR follow-up. Larger data are needed to confirm these preliminary findings.