**Introduction**: Obstructive sleep apnea (OSA) is known to promote myocardial inflammation resulting in atrial fibrosis. However, it is unclear whether new-onset OSA predisposes to atrial scar formation in AF patients. We analyzed the incidence of pre-existent scar in newly diagnosed OSA patients undergoing catheter ablation.

**Methods**: WatchPat device (Itamar Medical) was used to screen for OSA in consecutive patients attending our clinic. Patients were excluded from the current analysis if the OSA was diagnosed earlier or were already on C-PAP therapy. Apnea-hypopnea index (pAHI) was utilized to classify patients into 3 groups; group 1: No/mild OSA: <15, group 2: moderate OSA >15-<30 and group 3: severe OSA >30. Of all screened patients, only those undergoing their first catheter ablation for AF were included in the analysis. Left atrial (LA) scarring was determined by 3-D voltage mapping. Low voltage area was defined as a region with bipolar voltage amplitude <0.5 mV. Degree of scar was described as percentage of the LA area involved; mild <20%, moderate 20-60%, severe >60%.

**Result**: A total of 58 (paroxysmal AF: 27, non-paroxysmal AF: 31) patients receiving their first AF ablation were included (gr 1: n=24, gr 2: n=16, and gr 3: n=18). Mean pAHI was 6.8±4, 22.2±5.4 and 52.7±19.7 in group 1, 2 and 3 respectively. Moderate to severe scar was detected in 4 (14.8%) and 15 (48.4%) patients in the paroxysmal and non-paroxysmal AF population respectively (p=0.007). When stratified by OSA severity, overall scar prevalence was comparable across groups (10/24 (41.7%) vs 7/16 (43.7%) vs 12/18 (66.6%), p=NS). However, moderate or severe scar was detected in significantly higher number of cases in group 3 vs group 2 and 1 (10/18 (55.6%) vs 4/16 (25%) and 5/24 (20.8%), p=0.038).

**Conclusion**: In our series, prevalence of pre-existent moderate to severe left atrial scar was directly correlated with the degree of severity of the newly diagnosed OSA. Our findings suggest the benefits of routine screening of OSA for risk-stratification in potential subjects undergoing AF ablation.