Background and aim
To increase FNA performance several techniques and needles have been proposed. The aim of this study was to assess the utility of the macroscopic on-site evaluation (MOSE) of the smeared slides in predicting FNA adequacy. The study was approved by the Ethical Committee of our hospital. FNA accuracy was not evaluated as an outcome of the study as it depends also on the pathologist's skill, thus being a less specific measure of the sampling performance.

Material and methods
From our prospectively maintained database we analyzed the FNA procedures effected from 2013 to 2020 by one endosonographer of our team who started to apply the MOSE technique since 2013, after he had attended a formal training by the pathologists of our hospital to become familiar with the technique of smearing and gross evaluation of the cytological specimens. MOSE was applied to FNA specimens from solid lesions of different organs, when 22G/25G cytology needles and alcohol-fixed smears were used. After each needle pass the endosonographer passed the echoendoscope to a nurse, he smeared the specimen onto a slide and he macroscopically assessed it with oblique white light. The endoscopic procedure was carried on till five slides showed an opaque thin granular or thread-like whitish material, and blood was poor or absent; these selected slides were finally fixed in alcohol. The final microscopic adequacy rate was calculated.

Results
A total of 382 patients entered the study (224 male, 158 female, mean age 68.4 years); after a mean of 3.5 needle passes FNA was adequate in 360 cases (94.2%). In detail, adequacy was 95.9% (212/221 pts) for pancreatic masses, 94.4% (84/89 pts) for enlarged lymph nodes, 95.0% (38/40 pts) for liver-gallbladder-common bile duct lesions, 81.3% (26/32 pts) for other sites. The comparison between 22G and 25G needles showed an equivalent performance. No adverse events occurred.

Conclusions
MOSE, when performed by a trained endosonographer, can get an adequacy rate as high as 95% for pancreatic, lymph nodal, hepatic or biliary lesions, giving a substantial improvement as compared to the standard blind technique of slides preparation (83% in our series). Thus, to increase the adequacy of EUS-guided tissue acquisition, MOSE could represent an interesting alternative to ROSE, which is expensive and time consuming.