Accuracy comparison of the new and previous kodex occlusion tool software versions to assess pulmonary vein occlusion in atrial fibrillation cryoablation.

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Background. Atrial fibrillation (AF) is the most frequent sustained arrhythmia worldwide and Cryoballoon ablation (CB) has become a consolidated alternative to the radiofrequency pulmonary vein (PV) isolation. However, CB requires fluoroscopy and dye injections to verify the occlusion grade. The accuracy of the earlier version of the Kodex Occlusion Tool software has been studied.

Purpose. The purpose of this study was to verify the accuracy of the second generation Kodex Occlusion Tool Software of a new dielectric system imaging compared to its first generation to detect PV occlusion during CB ablation in patients with AF.

Methods. 15 consecutive patients with paroxysmal AF were enrolled in the study and underwent the procedure with the guidance of the first generation version (1.4.6) of the Kodex Occlusion Tool software. The Kodex recorded procedural data were used to replay the case using the Kodex second generation version (1.4.7) of the Occlusion Tool software when clinically available. After transseptal access, a detailed image reconstruction of left atrium and PVs was achieved with an octa-polar circular mapping catheter, PV occlusion was assessed with the Occlusion Tool Software and compared with standard dye injection and angiography, the cryoablation was then performed with a cryoballoon catheter.

Results. A total of 72 PVs CB occlusions were tested. The old version showed 90.7% sensitivity and 76.5% specificity in assessing a complete PV occlusion verified with contrast medium injection. The positive predictive value was 80.3%, and the negative predictive value was 88.6%. The new version showed 94.8% sensitivity and 93.7% specificity in assessing a complete PV occlusion verified with same contrast medium injection data. The positive predictive value was 98.2%, and the negative predictive value was 93.7%. Acute isolation was achieved in all PVs and no 30-day complication was observed.

Conclusion. This study demonstrates an increased accuracy of new Occlusion Tool software of the Kodex dielectric imaging system to assess the degree of PV occlusion during a CB ablation.

Abstract Figure. Occlusion tool software 1.4.6 vs 1.4.7