

Intracardiac echocardiography validation in improving safety of transseptal puncture

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Background: This is a single center experience and validation of transseptal punctures (TSP) assisted by fluoroscopy and intracardiac echocardiography (ICE).

Methods: 2 operators unexperienced in TSP performed initial 10 TSP each under supervision of experienced operator and with fluoroscopy and ICE guidance. Further 60 TSP were validated in a way that TSP assembly was positioned only under fluoroscopy guidance and after operator felt assembly is at eligible place for performing TSP, the position was checked and corrected if needed according to the ICE image.

Results: 93% of all TSP were made during atrial fibrillation ablation procedure. After typical fluoro markers of good positioning of transseptal sheath had been observed, ICE guided reposition was needed in 7% of the TSP mostly due to the anterior position of TSP assembly. There were no cases in where solely fluoroscopy guided positioning would point the assembly toward aorta (too anteriorly), and there was one case in which where solely fluoro guided TSP would very likely result in cardiac tamponade due to posterior atrial puncture. No complication due to transseptal puncture happened.

Conclusion: ICE guided TSP is safe and easy. ICE usage resulted in TSP assembly repositioning in 7% of the cases in which typical fluoro markers of ideal position were observed. Thus ICE usage helped avoid too anterior punctions that would make catheter navigation throughout AF ablation procedure more difficult and helped avoid too posterior puncture that would likely result in cardiac tamponade. There were no cases where the danger to puncture aorta was caused.

KEYWORDS: intracardiac echocardiography, transseptal puncture, atrial fibrillation ablation.

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