

Longer and wider tunnels may warrant primary choice of transseptal puncture in percutaneous closure of patent foramen ovale.

*Rito T., Martins J.D., Fiarresga A., Sousa L., Agapito A., Ferreira R., Pinto F.F.
Centro Hospitalar Lisboa Central - Hospital de Santa Marta, Lisboa, Portugal*

INTRODUCTION: Percutaneous closure of patent foramen ovale (PFO) is routinely performed for secondary prevention of stroke. Rarely, transseptal puncture (TSP) has been described to tackle challenging morphologies that may lead to incomplete closure, and is usually used after failure of the standard approach. We report our experience in percutaneous closure of PFO with TSP, and analyze variables that may predict its need as a primary technical approach.

METHODS: We reviewed our institution's cases of percutaneous PFO closure with TSP since January 2011, and compared them with a group of random controls (ratio 2:1) who underwent percutaneous PFO closure with the standard technique. We analyzed relevant anatomic variables of the interatrial septum assessed by transesophageal echocardiography (size and presence of aneurysm; width of primum and secundum septa); PFO anatomy (tunnel length and width, baseline and per-balloon interrogation; spontaneous shunt) and presence of large Eustachian valve.

RESULTS: We report six cases of percutaneous closure of PFO with TSP [mean age 45 (range 31-62) years; 3/6 males] and twelve controls (non-significantly different demographics). All cases with TSP had a previously failed attempt with the standard technique, due to device malposition, residual shunt or technical difficulties. Comparison between the two groups revealed a significantly longer tunnel [(mean 18.5; range 15.5-22.4 vs. mean 9, range 5-14.5mm], $P < 0.01$) and larger baseline width (mean 3.6; range 2.7-5.5 vs. mean 1.5, range 0.5-2.5mm, $P < 0.01$) in the TSP group. All tunnels longer than 15mm or wider than 2.6mm required TSP. Baseline left-to-right shunt was present in 6/6 cases and in 7/12 controls, but failed to achieve statistical significance ($P = 0.06$). No other differences were found between the sample and control groups, namely the size or presence of atrial septal aneurysm, procedural efficacy or complications.

CONCLUSION: In our sample, a larger length and width of the PFO tunnel was associated with the need for percutaneous closure of PFO with TSP. Our study, although limited, suggests that pre-closure transoesophageal evaluation of the anatomy of PFO may warrant selective TSP as a first choice in percutaneous PFO closure.