

Multicenter Off-label use of Nit-Occlud coil in percutaneous closure of small Patent Ductus Arteriosus

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Introduction

The Nit-Occlud coil (NOC) is a nitinol coil-type patent ductus arteriosus (PDA) occluder with a reverse cone configuration, which is implanted antegrade using a controlled delivery system. Off-label retrograde approach of NOC has never been reported.

This study aims to assess the efficacy and safety of the NOC to close small PDAs using the retrograde approach. The need for such modification is justified by the low cost of NOC and the non-availability of other retrograde-approach devices.

Methods

Between Jan/2013-Dec/2015, forty-two patients with small PDAs less than 3 mm from two centers underwent attempts of retrograde closure of small PDAs by PFM-NOC.

The duct was crossed retrograde and the coil was delivered through the PFM end-hole catheter in 20 cases from the first center (51%). In the remaining 19 cases from the second center, the coil was delivered direct through the Judkins catheter to decrease fluoroscopy and procedure times. We released 1-2 coil loops in PA and the rest in the duct or aorta. The mean follow up time was 15.1 +/- 14 months

Results

The study included 25 (59.5%) females and 17 (40.5%) males with a median age of 1.5 years and a median weight 9.75 kg. PDA was type A, C, D and E in 19, 13, 4 and 6 patients respectively. The mean sizes of pulmonary and aortic ends were 1.22 and 2.9 mm respectively. NOC size 5x4 was used in majority of patients (66.7%) and size 6x5 was the second common (23.8%). The mean procedure and fluoroscopy times were 51.6 and 8.9 minutes respectively.

The procedure was successful in Thirty-nine cases (93%). Complete closure in the same or following day was achieved in 38 patients (97%). There were no deaths or serious adverse events. Three patients failed (7%), two due to embolization and coarctation of the Aorta and were retrieved and removed, while one was due to failure to cross the PDA.

Conclusion

Retrograde closure of small PDAs using PFM Nit Occlude coils is safe, effective and feasible. It offers a cheap alternative to conventional retrograde designed devices.