Topic of Poster: Research Activity

Title: Reduced Percutaneous Coronary Intervention In-hospital Risk Adjusted Rate of Mortality And Bleeding Events via Radial Access: NCDR® Findings


Affiliations: Care Institute of Medical Sciences (CIMS), Ahmedabad, India

Background: In the hands of experienced operators and high-volume catheterization centers, trans radial coronary interventions offer improved patient comfort, decreased access-site complications, and decreased costs without compromising procedural success or long-term outcomes. Patients with Body Mass Index (BMI) >25, with ST-Elevation Myocardial Infarction (STEMI), in particular, benefit from a transradial approach coronary intervention. Bleeding complications after coronary intervention are associated with prolonged hospitalization, increased hospital costs, patient dissatisfaction, morbidity and one year mortality.

Methods: Although transradial percutaneous coronary intervention (PCI) was practiced since 2004 at Care Institute of Medical Sciences (CIMS), data collection became a part of the quality improvement drive following participation in National Cardiovascular Database Registry (NCDR®), CathPCI registry® in 2014. NCDR CathPCI® data collection proforma v 4.4 of the only Indian center with a well-established radial lounge was analyzed for radial PCI. A total of 12102 patients underwent cardiac coronary angiography/intervention from Oct. 2014 to Jun. 2017, of which 11788 (97.40%) were right radial angiography/intervention and 4093 PCI’s. Concentrated efforts at tabulating and evaluating bleeding events prospectively in angioplasty patients was the first step in understanding true rates of bleeding complications.

Results: Of these total patients 3370 (82.33%) were males and 723 (17.67%) were females. Prevalence of obesity was as high as 62.07% (overweight, BMI>25; 1732 (43.35%); obese, BMI>30; 693 (17.35%); morbidly obese: BMI>40: 55 (1.37%); diabetes: 1382 (33.76%); STEMI: 1165 (28.46%); age>75 years: 238 (5.81%). Median fluoro time: 7 min; radiation exposure for diagnostic catheterization: 500-1000milligray; for PCI: 2500-3000milligray. With adequate anticoagulation (unfractionated heparin); sheath size (5F and 6F); and proper removal of hemostasis band and manual compression incidence of radial artery occlusion was <8%; in-house bleeding less than 0.31% (Fig 1) and patients with STEMI in-hospital risk adjusted mortality rate 3.19% (Fig 2). Analysis of NCDR Cath PCI data following participation and comparison with US percentiles indicated area of improvement (Figure 1 & 2). Use of diltiazam and nitrates reduced incidence of artery spasm. With 76% patients without insurance coverage, diagnostic angiography length of hospital stay (LOS) averaged 6-7 hours, with an average procedural total cost of USD $167. PCI LOS averaged to 1.5-2.0 days with cost depending on stent type which ranged between USD $1900-3500.

Conclusion: NCDR CathPCI registry® helped establish that at a high volume center with an established radial procedure lounge, trained staff; patient comfort, mobility and cost effectiveness has increased with radial artery catheterization with reduced hospital stay and reducing mortality rate and bleeding events from 1.5% to 0.31 in 2014 to 0.31% and mortality rate in 2017 (80% improvement ,p<0.05).

Figure 1: PCI in-hospital Risk Adjusted Rate of Bleeding Events
Figure 2: PCI in-hospital Risk Adjusted Rate of mortality (patients with STEMI)

PCI in-hospital risk adjusted mortality (patients with STEMI)