

CSI NIC Mid Term Meet: NIC 2024

NOVEL STENT DESIGN AND TECHNIQUE FOR SINUS VENOSUS DEFECT WITH SHORT ANCHOR

Dr Pramod Sagar, Chennai

- Transcatheter sinus venosus defect closure is a well-accepted procedure now.
- Shorter anchor due to additional PV and short superior vena cava (SVC) had relatively higher complication rates with the old technique.
- New hybrid stents with distal uncovered portions can avoid the need for two overlapping stents. A novel technique involves use of additional wire in additional PV or left innominate vein.
- Mounting the stent on a guide and balloon allows precise deployment of stent.
- The risk of caudal migration will be completely eliminated by this strategy.

A 'RIGHT' WAY TO DO CRT

Dr Priya Shanmukhan, Thiruvananthapuram

- The left SVC usually drains to the coronary sinus.
- The prevalence of left SVC is 0.1%-0.5%. In left SVC patients, it is better to proceed via the right subclavian vein.
- Cannulation of coronary sinus and lateral vein (due to unfavorable angulation) may be cumbersome. Prevalence is the key.
- Proper pre-cath evaluation is very important in picking up small anatomical variations prior to the actual procedure.

A CASE OF LAD OSTIAL CTO

Dr Anand Manjunath, Chennai

Chronic total occlusion (CTO) is a challenging condition that can be particularly difficult for interventional cardiologists to manage. In some cases, CTO lesions and bifurcation lesions with severe curvature and stenosis prevent the introduction of wires into the main artery, though wiring into the side branch (SB) remains possible. Ostial left anterior descending (LAD) artery lesions are crucial for coronary stenting due to their location, which affects a large area of the myocardium and presents additional technical challenges.

Despite advancements in percutaneous coronary intervention (PCI) devices and operator expertise, CTO remains a significant challenge. This case underscores the importance of effectively addressing CTO in coronary stenting.

Here a case study was discussed, which involved a 44-year-old male with type 2 diabetes mellitus, chronic stable angina class III, a positive treadmill test, and obesity, but with normal liver function, presented with complex coronary artery disease. His CT coronary angiography (conducted on 14/7/2023) showed 70%-90% stenosis in the proximal LAD, 50%-70% in the diagonal branch, and 50%-70% in the mid RCA. Additionally, the coronary angiography revealed 99% stenosis in the distal right coronary artery (RCA), 70% in the left circumflex artery (LCx), and 80% in the RAMUS, with a CTO in the ostial LAD.

The patient was advised to undergo coronary artery bypass grafting (CABG) but declined. Consequently, a multivessel PCI was planned in two stages, utilizing an antegrade approach. The study concluded the following:

- Addressing all non-CTO lesions before attempting CTO PCI is crucial.
- If the initial strategy fails, promptly transitioning to an alternative crossing technique enhances the chances of success.
- In this case, the approach involved IVUS-guided antegrade wire escalation, along with retrograde wire escalation, antegrade wire escalation, and antegrade dissection and re-entry.
- Pre-stenting imaging proved to be essential.

CTO PCI TOOLBOX 2024: 7 STEPS TO LEARNING CTO PCI SKILLS

Dr Arun Kalyanasundaram, Chennai

- Become familiar with the basics.
- Start watching CTO cases, live or otherwise.
- Connect with teachers through colleagues, vendors, etc.
- Connect with fellow learners.
- Start using your new found skills in non-CTO settings.

- Travel to labs that do CTOs and do them.
- Start doing CTOs in your lab or labs that do them.

ACHIEVING OPTIMAL LDL-C LEVELS IN ASCVD: THE SYNERGY OF INCLISIRAN AND STATINS

Dr Amit B Kinare, Madhya Pradesh

From the decades, statins are the gold standard for lipid management but their underutilization in real-world practice poses significant challenges. Many patients discontinue or avoid statin therapy due to concerns about side effects, lack of understanding of their benefits, or insufficient guidance from health care providers. This underutilization hampers the ability to achieve guideline-directed lipid targets, particularly the low-density lipoprotein cholesterol (LDL-C) level of <70 mg/dL, which is critical for reducing the risk of recurrent cardiovascular events in patients with established atherosclerotic cardiovascular disease (ASCVD).

Inclisiran emerges as a highly effective add-on therapy in cases where statins alone fail to achieve the desired LDL-C reduction. Its novel mechanism, utilizing RNA interference to inhibit PCSK9, enables a substantial and sustained lowering of LDL-C. About 60% reduction in LDL-C from baseline were reported in VICTORION-INITIATE Study with only biannual dosing.

For patients struggling to meet their lipid targets with statins alone, Inclisiran provides a promising solution to achieve and maintain the recommended LDL-C levels, thereby enhancing cardiovascular outcomes and reducing the burden of ASCVD.

NIGHTMARES IN CATH LAB: ALL-IN-ONE

Dr SK Malani, Pune

- Complex PCI requires anticipation of possible complications.
- Acute complications like abrupt vessel closure should be identified at the earliest and addressed immediately. Imaging should be done whenever available. Help from colleagues and cardiothoracic and vascular surgery should be sought immediately.
- A sustained effort and teamwork is required to salvage the situation.

ZERO CONTRAST PCI IN A CASE OF ACS WITH CKD

Dr Ashwin Tumkur, Hyderabad

Contrast-induced nephropathy is a common complication after diagnostic and therapeutic coronary

procedure especially when the patient has chronic kidney disease/acute kidney injury, left ventricular (LV) dysfunction. The only potent preventative strategy involves aggressive fluid administration and reduction of contrast volume.

Contrast limiting techniques: First, during both angiography and PCI, we need to seek anatomical landmarks (particularly calcifications) to navigate our interventions without contrast usage. Second, small injections with small syringes as well as evacuation of unused contrast from catheters must be standard. Finally, wider use of intravascular imaging techniques, especially intravascular ultrasound (IVUS), should decrease contrast volume and improve PCI results.

THE POWER OF INCLISIRAN IN FAMILIAL HYPERCHOLESTEROLEMIA MANAGEMENT

Dr Praveen Chandra, Gurugram

Lowering LDL-C levels is pivotal in reducing cardiovascular (CV) risk, a fact underscored by extensive evidence supporting the efficacy of lipid-lowering therapies (LLT) over the long-term. Despite these advancements, a significant number of patients still need to achieve and maintain target LDL-C levels with existing treatments, highlighting the need for innovative approaches in lipid management.

Administered twice yearly via subcutaneous injection, inclisiran has emerged as a game-changer in LDL-C reduction strategies. Clinical trials, including the ORION-3 study, have demonstrated that inclisiran can achieve approximately 50% reduction in LDL-C levels when combined with maximal oral LLT across diverse patient populations, including those with familial hypercholesterolemia and high CV-risk individuals.

Approved as the first small interfering RNA therapy for hypercholesterolemia, inclisiran's safety and tolerability profile has also been extensively studied. Pooled data from pivotal Phase 3 trials (ORION-9, -10, and -11) involving over 1,800 patients showed that inclisiran was well-tolerated over 18 months, with adverse events comparable to placebo. Injection site reactions, the most common side effect, were typically mild and transient, underscoring inclisiran's favorable safety profile in clinical use.

Long-term safety assessments are ongoing, evaluating Inclisiran's safety beyond the initial trials with the aim of providing clinicians and patients with comprehensive insights into Inclisiran's durability and safety over extended treatment periods.

As research continues, inclisiran stands poised to redefine standards in lipid management, potentially reducing the burden of cardiovascular disease worldwide. This potential impact of inclisiran serves as a powerful motivator, inspiring health care professionals to continue their efforts in the fight against cardiovascular disease.

Wright RS, Koenig W, Landmesser U, et al. Safety and tolerability of inclisiran for treatment of hypercholesterolemia in 7 clinical trials. *J Am Coll Cardiol.* 2023;82(24):2251-61.

THE FUTURE OF ADULT CONGENITAL HEART INTERVENTIONS IN INDIA

Dr Bharat Dalvi, Mumbai

Congenital heart disease (CHD) is the most common disorder and the leading cause of mortality in India. Interestingly, more adults live with CHD than children.

In India, the cardiovascular disease epidemic is marked by a higher relative risk, earlier onset, greater case fatality, and higher rates of premature death.

Key Points

- Fewer cases of de novo CHDs in adulthood.
- An increase in patients with postoperative or post-interventional issues.
- Valve repair and replacement are primarily handled by interventionalists.
- Procedures such as sinus venosus atrial septal defect repairs and Fontan completions are increasingly performed in the catheterization lab rather than the operating room.

OPTICAL COHERENCE TOMOGRAPHY: FUTURE PROSPECTS

Dr Takashi Akasaka, Japan

- Artificial intelligence for optical coherence tomography (OCT) might be focused on the automated analysis of the images to assess coronary artery structure, plaques, stents, and so on, including measurements of lumen and vessel diameter, plaque volume, stent apposition and expansion with 3D reconstruction, etc.
- Development of automated analysis of the OCT images allows us to assess plaque characteristics and coronary structures, including stents, for improving the patient's prognosis by accurate diagnosis, better PCI results, and predicting future events.
- Hybrid intracoronary imaging systems with OCT may develop rapidly to demonstrate much more precise information to predict future events and to improve patient prognosis.

- Further development could be expected in the field of coronary imaging, especially in OCT.

SEEING IS BELIEVING

Dr Pankaj Manoria, Bhopal

- In cases of in-stent restenosis, imaging helps in doing precision angioplasty without any guess work.
- It helps identify the mechanism of restenosis, planning the strategy and optimizing the result post-procedure.

CURRENT IVUS TRIALS

Dr Sajan Narayanan, Kochi

Clinical trials validate IVUS's efficacy and safety, providing evidence on improved patient outcomes, guiding best practices, and supporting advanced IVUS technologies in interventional cardiology.

Learning from the IVUS Trials

- IVUS-guided PCI improves major adverse cardiac events in complex lesion interventions.
- IVUS guidance has compelling evidence supporting its use in left main coronary artery (LMCA) interventions.
- Target minimal stent areas for crush stenting are recommended to be: 7(LCx)-9(LAD)-12(LM).
- IVUS-optimized PCI is feasible in acute coronary syndrome (ACS) and significantly improves outcomes.

NIGHTMARE WITH A RAY OF HOPE

Dr P Krishnananth, Tirunelveli

Coronary angiography (CAG) and PCI constitute effective treatments for coronary heart disease. CAG enables percutaneous transluminal coronary angioplasty (PTCA) by offering detailed images of coronary arteries, aiding interventional cardiologists in identifying blockages and evaluating disease severity.

This diagnostic capability guides treatment decisions during PTCA, determining the optimal balloon angioplasty, and stent placement strategy. Real-time visualization provided by CAG enhances blood flow and contributes to potentially life-saving outcomes.

A case study exemplified successful treatment using CAG and PCI in a 38-year-old male with a history of chronic smoking, alcohol use, and angina chest pain.

CONFERENCE PROCEEDINGS

The study also stated that the Wait and Watch Approach can be beneficial in some cases, provided the patient's vitals remain stable.

OSTIAL LCx ACUTE THROMBOSIS HANGING STENT STRUTS ACROSS LCx OSTIUM

Dr Mohajit Arneja, Nagpur

- Ostial left LCx is the Achilles heel; always tricky and difficult to treat.
- Crowded hanging stent struts across LCx ostium can act as the nidus for acute thrombus formation leading to acute coronary syndrome-ST-elevation myocardial infarction (ACS-STEMI).
- After understanding the mechanism and imaging the vessels, we can consider tackling it without the use of more metal.
- Combining physiology along with imaging can give us more confidence in dealing with these situations without putting additional stents.
- Although data is neutral, opening of LCx struts in LM bifurcation provisional stentings will help prevent the restenosis.

IVUS-GUIDED LEFT MAIN BIFURCATION STENTING WITH COMPLEX MULTIVESSEL PCI

Dr Arpita Katheria, Lucknow

Intravascular ultrasound (IVUS) aids in PCI. A case study of a 69-year-old male diabetic patient with a recent anterior wall myocardial infarction (nonthrombolysed) followed by acute onset of heart failure (AOE II) emphasized that:

- Imaging should be done routinely during complex PCI, particularly for lesions involving the LM. In this case, IVUS helped in: Assessing the severity of LM ostial disease; selecting the size of balloons and stents; identifying and treating distal stent edge dissection.
- Although all guidelines recommend CABG over PCI for LM bifurcation lesions, PCI can still yield good results in selected patients.
- PCI outcomes can be comparable with CABG nowadays in LM diseases with the advent of newer-generation drug-eluting stents and the use of intracoronary imaging.

- The STEP-CRUSH technique can be a simple yet effective way of performing LMCA bifurcation.

FROM INNOVATION TO IMPLEMENTATION: THE JOURNEY TO THE PROMISED LAND OF LEAVING NOTHING BEHIND WITH THIN STRUTS BIORESORBABLE SCAFFOLDS

Col Dr Ajay Joshi, New Delhi

Scaffold thrombosis is a severe complication of PCI, causing adverse cardiovascular events. Bioresorbable scaffolds (BRS) have emerged as a potential solution to avoid adverse reactions caused by permanent metallic implants, allowing a "leave nothing behind" approach. Understanding the constraints is important.

Key Points

- Understand the limitations of the tool and the technology as it is still evolving.
- Select your patients carefully.
- Success depends on thorough planning and assessment.
- Imaging, particularly OCT, aids in evaluating plaque severity and planning the best strategy for PCI.
- Bed preparation is crucial.
- Post-bed preparation imaging is essential before BRS deployment.
- If adequate bed preparation is achieved, even calcified vessels are not an absolute contraindication for BRS, but imaging is necessary before deployment.
- BRS can be easily overlapped in long lesions.
- Post-dilatation is crucial; avoid leaving much for post-dilatation.
- Be prepared to anticipate and manage complications.

THROUGH THE LOOP: UNDERSTANDING THE WIRE EXIT PERFORATION AND SALVAGE TECHNIQUES

Dr Krishna Prasad

- Hydrophilic wires are notorious to cause wire exit perforations.
- First step is to tamponade the feeding vessel.
- Various other ways include cut balloons, autologous fat particles and coils, etc.
- Sometimes multimodality techniques may have to be used.

