How to Anticipate and Prevent Complications

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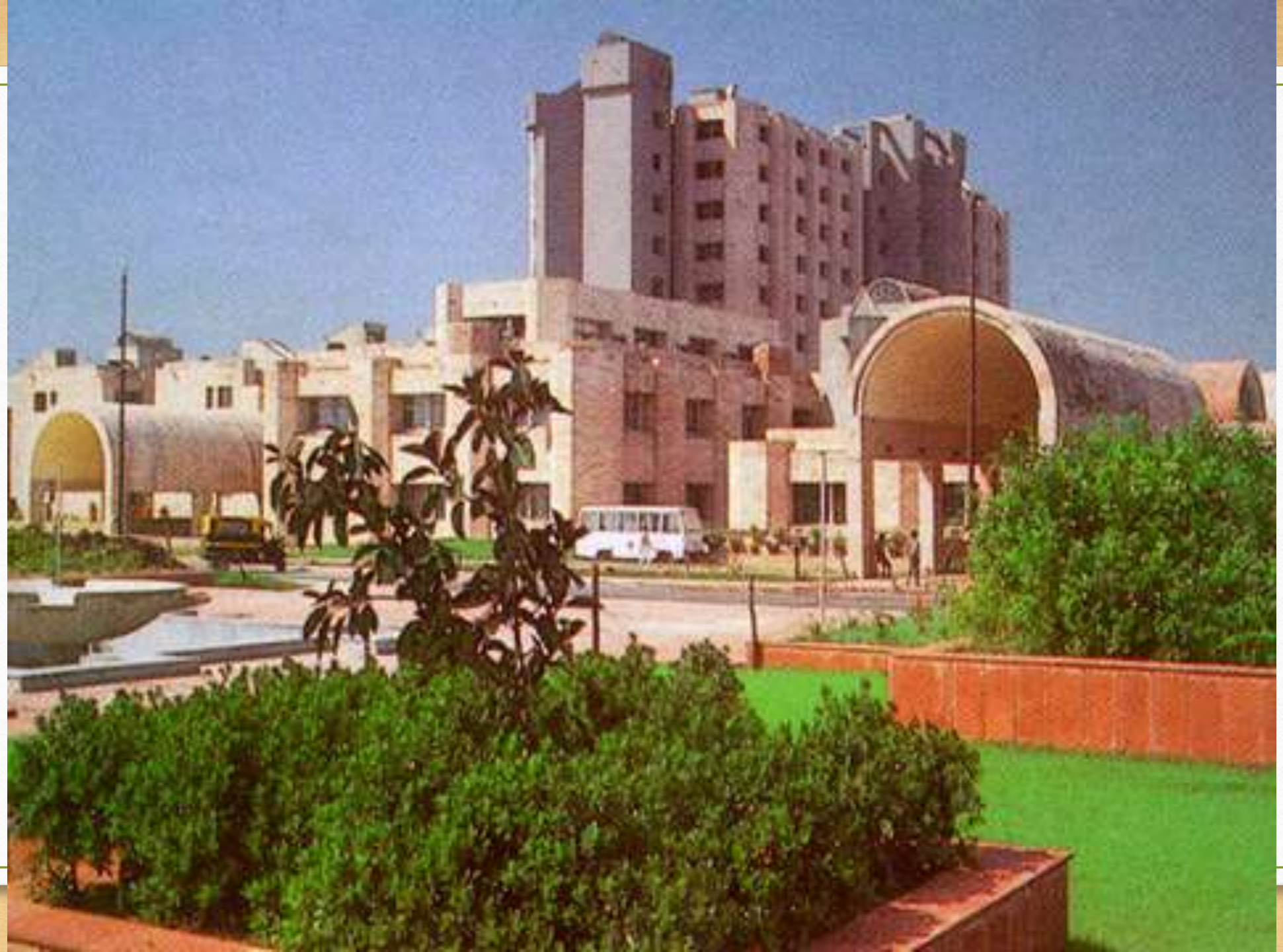

How to avoid Complications in Interventional Cardiology

- Choose the right patient /Know when to do when not to do
- Know how far to go/ When to stop
- Expect problems before they happen rather than getting them as a surprise
- Understand the scopes of different hardwares and their careful handling is important
- Lastly expect the unexpected. It is the so called easy cases that give the biggest surprises

Action before onset / occurrence of event
Pre empting the event

- Atropine on first sign of brady cardia before true Brady cardia and hypotension sets in a not uncommon Vasdo vagal episode during a procedure
- Injectible Lasix before patient goes into frank LVF if increase in respiratory rate noted or LV angio contemplated in an impaired LV setting/
- Think of tamponade on first indication of a decrease/ respiratory variation in inarterial pressure trace in presence of maintained HR in situations like
  - BMV procedure
  - CTO procedures
  - Polymer jacket wires too deep
- Think of possible arterial occlusion and impending cardiac arrest on seeing unexplained low systemic pressures and early ST changes on the ECG

The build up

- Ensure a good clinical assessment of the case
- Ensure the need of doing the intervention
- Understand the angiographic picture well
- Look for hemodynamic stability before u start
- Ensure ACT levels intra procedure

The angiogram

- Understanding anatomy is the basis of success in intervention
- Angiography is the basis of understanding anatomy
- Good angiographic performance is the basis of good angiographic interpretation
- Seeing/ imagining the heart behind the coronaries is the basis of interpreting angiograms
- Visualising one angiograpic run as a collection of 50-70 images and not just one picture is the basis of understanding an angiogram
- Orthogonol viewing (two images 90 deg apart) is the basis of understanding the reality

You See What You Know

Ready to take off

- Coronary intervention is like a flight taking off – everything can be set right before u start but once in procedure/in flight then not easy to handle intra procedure / intra flight difficulties
  - Ensure hemodynamic stability before u start
  - Ensure good guiding Catheter hooking and control before u start wiring etc
  - Have temp wire/ femoral venous sheath in place before hand if u so envisage
  - Have both groins or radial + groin prepared (draping) before hand even if you are going to use only one site
- At times very difficult to handle these minor issues half way through and add up to new issues coming up intra procedure

Handling Catheter Damping

- Rotation in right direction more important than pull back
- Allow natural back bleed rather than active suction
- Action Opposite of selective hooking
  - LAD : Rotate clockwise and pull
  - CX : Rotate anti clock wise
  - RCA : Rotate anti clockwise
- Catheter damping commonest cause for inadvertent air embolism

Small tips in Radial technique

- Ensure a Painless procedure.
- Intradermal Wheal of local anaesthetic
- Single wall Puncture
- Pain is the commonest cause of spasm in radial procedures

Sizing issues

- Over Sizing

  Dissections? Extravastions? Vessel Rupture? Leaks
- Undersizing

  Reocclusions/ Under expanded stents/ Stent thrombosis
- Bifurcation Sizing
  - Proximal/ Main vessel usually 2/3rd of sum diameter of two daughter vessels
  - Size devices by distal MB rather than Proximal

Device Tracking difficulties
Stent slippage or embolisation

- Tortuous vessel/Calcified vessels/ CTO
- Ensure good GC support while pushing devices
- Prepare bed well- ROTA
- Don't push against undue resistance
- Try to understand the cause of resistance (e.g BVS inside BVS)
- Take help of Devices like
  - Tornus
  - Guideliner
  - Mother and Child catheter (Terumo)
  - Buddy wire/Balloon
  - Anchor Balloon (proximal Or Distal)

Managing a Pericardial Leak

- Be watchful of distal wire tip location
- Suspect leak on First evidence of Respiratory variation in systolic pressures before true hypotension
- If cause is evident and can be fixed swiftly do that immediately before setting up pericardial drain etc
- Unless Cause is fixed leak will continue to drain
- Synthetic glue one of the most reliable and predictable tecniques to close a vessel/ leaking site

Catheterization and Cardiovascular Interventions 73:797–800 (2009)

Delayed and Repeated Cardiac Tamponade Following Microleak in RCA Successfully Treated With Intra Arterial Sterile Glue Injection

Pravin K. Goel* MD, DM, FACC

Postinterventional pericardial leaks mostly occur intraprocedure or immediately post-procedure and call for an aggressive management right then. Also, once controlled for 24–48 hr, the leaks usually seal themselves spontaneously. We herein describe an unusual case of delayed and continued pericardial leak over 10 days as a result of micro perforation of RCA from the distal wire tip and which was successfully managed by intracoronary injection of sterile synthetic glue, which to the best of our knowledge is the first report of its kind.

Key words: cardiac tamponade; sterile glue; coronary microleak

Intrapericardial Synthetic Glue Injection — A Last Resort Effort to Salvage Recurrent Cardiac Tamponade Secondary to Coronary Microleak Post PCI

Volume 23 - Issue 12 - December 2011 Posted on: 12/2/11 0 Comments 3685 reads

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ABSTRACT: We report a case of cardiac tamponade caused by a coronary microleak from an unapparent site that was successfully managed by sealing of the pericardial space with intrapericardial injection of sterile synthetic glue which, to the best of our knowledge, is the first report of its kind for post-PCI coronary leaks.

J INVASIVE CARDIOL 2011;23(12):E293-E295

Be swift but not rash

- Keep your cool
- Ensure that management may not create a iatrogenic Complication
  - Puncturing RV in haste of putting a pericardial derain when actually it was a vasovagal
  - Ricochet Leak hitting a second vessel during pericardial tap
  - Traumatic uncontrolled bleed from airway tracts trying emergency intubation for a reversible cause of Cardiac arrest intrprocedure
    - Transient CHB during RCA manipulation
    - Transient VT? VF from Catheter deep throating

Know when not to do/stop

- When not to do
  - Operator Expertise/experience
  - Hardware availabilty
  - Small vessel
- When to Stop
  - Contrast load/ Radiation dose exceeding
  - Operator/ Patient fatigue
  - A distal Dissection which would heal in time

Not succeeding do an elective call off, Come back another day with a fresh mind and new approach, you may succeed

Take home message

- Be proactive to avoid a complication
- If it does occur try introspecting and learning from each complication
- Could it have been avoided
- Where did I go Wrong
- Learning should not stop just because one has large experience

I learn from every case of mine

Thank You