LM PCI in NSTEMI, Cardiogenic shock and Ventilated patient treated by inverted Culotte technique

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Potential conflicts of interest

Speaker's name: Mohamed Zahran.

☑️ I do not have any potential conflict of interest
Clinical profile

History:

- **78 years old female.**
- **DM** (For 35 years on insulin), **HTN** (For 30 years on Atenolol and Ramipril).
- **3 cerebrovascular strokes** with residual right LL weakness and dysphagia with occasional attacks of aspiration.
- **Renal impairment** with baseline creatinine 3.5 mg/dl, Cr clearance 30 ml/min/m2.

Presentation:

She was referred by an ambulance from another city (140km away) to the ICU by an attack of retrosternal agonizing chest pain, compresseing in character and referring to the left side of her neck and jaw that has started 6 hours prior to transferral.
• She has been complaining of typical anginal attacks over the past five years despite being on full medical therapy.
• She was admitted to the **CCU by ACS 3 years before** and performed a coronary angiography that mentioned: a critical 99% distal LM stenosis with a critical ostial and proximal LAD and LCX stenosis for urgent CABG.
• She was referred to the cardiosurgeon but the anesthesiologist demanded a high risk consent prior to operation as she had 3 cerebrovascular strokes and was morbidly obese (wt: 135 kg, ht: 1.6 m, BMI: 52.7 Kg/m2), and this was refused by the patient and her family, so she **continued on medical treatment**
Upon arrival:

- The patient was distressed.
- ABP=70/40
- Pulse 110 bpm, regular, equal on both sides with poorly felt peripheral pulsations.
- Her chest auscultation revealed pulmonary crackles rising to the mid thorax.
- Cardiac auscultation revealed the murmur of moderate MR.
- Her ECG showed ST depression in all the chest leads ranging from 3-5 mm with ST segment elevation in aVR.
- Bed side Troponin was positive.

Immediate management:

- Immediate infusion of inotropes were started.
- 120 mg of IV furosemide were administered.

Few minutes later, she was gasping, so immediate intubation and ventilation was performed.
Bedside Echo:

- LV EF 25-30%.
- Mildly dilated LVIDs (LVEDD 61 mm and LVESD 42 mm).
- Moderate MR.
- RSWMA in the form of severe hypokinesia of all the walls and sparing the inferior wall.

NO mechanical complications.

Heart Team:

- We met with the cardiosurgeon to discuss the situation and he advised to try to revascularize her interventionally as the surgical risk in this case is at its maximum.
- Discussion with her family → they agreed to intervene after signing a high risk consent that may include mortality.
- Anesthesiologist on site to adjust the ventilator parameters, inotropes doses and narcotic infusions during the procedure.
Diagnostic angiography
Difficulty to wire LAD proper due to distal LM calcification (BMW wires)
Wiring of LCX and first diagonal by pilot 50 wires
2.75x12 NC balloon to crush calcium at LM and LAD ostium
3.0x33mm EES to LM-LCX
Wire broken at LAD ostium during rewiring
Fielder FC used to rewire LAD through stent struts
2.0x12 mm balloon to open struts at LAD ostium
3x28mm EES at LM-LAD
Wire exchange and ballooning at LCX ostium
Adjusting NC balloons for FKI 3X20 AND 3X15 mm
Difficulties:
• Shocked patient.
• Long LM.
• Calcification, and wiring (BMW, PT2, Fielder).
• The broken wire.
• The sizes of LM, LAD and LCX only suit Cullotte while the angle only suits TAP but the calcium plus the protruded strut will make LAD stent impossible to pass if TAP.
• 350 cc of non ionic contrast was used.

Outcomes:
• The patient was weaned off inotropes with ABP of 110/70 mmHg, during the procedure.
• The patient was extubated next day.
• She was ambulant in her room 2 days later and underwent 3 sessions of hemodialysis.
• Echo 3 days later showed improved EF to 48% and MR to grade 1 with remaining hypokinesia in LAD and RCA territories.
• In performing revascularization for bifurcation lesion by Culotte technique, we should start by the more “difficult” technically, but in this case, it was so difficult to wire the LAD initially due to the calcification although it was less angulated, it was easier to direct the wire through the LM-LCX stent after displacing the calcium and within the stent struts to the LAD, hence the term “inverted Culotte” was used.
Thank You