

Background

- Use of left internal mammary artery (LIMA) for grafting left anterior descending artery (LAD) is a Class I recommendation.
- Coronary steal syndrome (CSS) is an uncommon complication (<1% of cases) after bypass with IMA.
 - Pathophysiology: residual flow in side branches from the IMA causing reversible LAD ischemia.
- First line treatment: percutaneous catheterization and coil embolization of the offending branch.
 - In rare cases, this branch may not be accessible by standard percutaneous catheterization, or recanalization may occur.

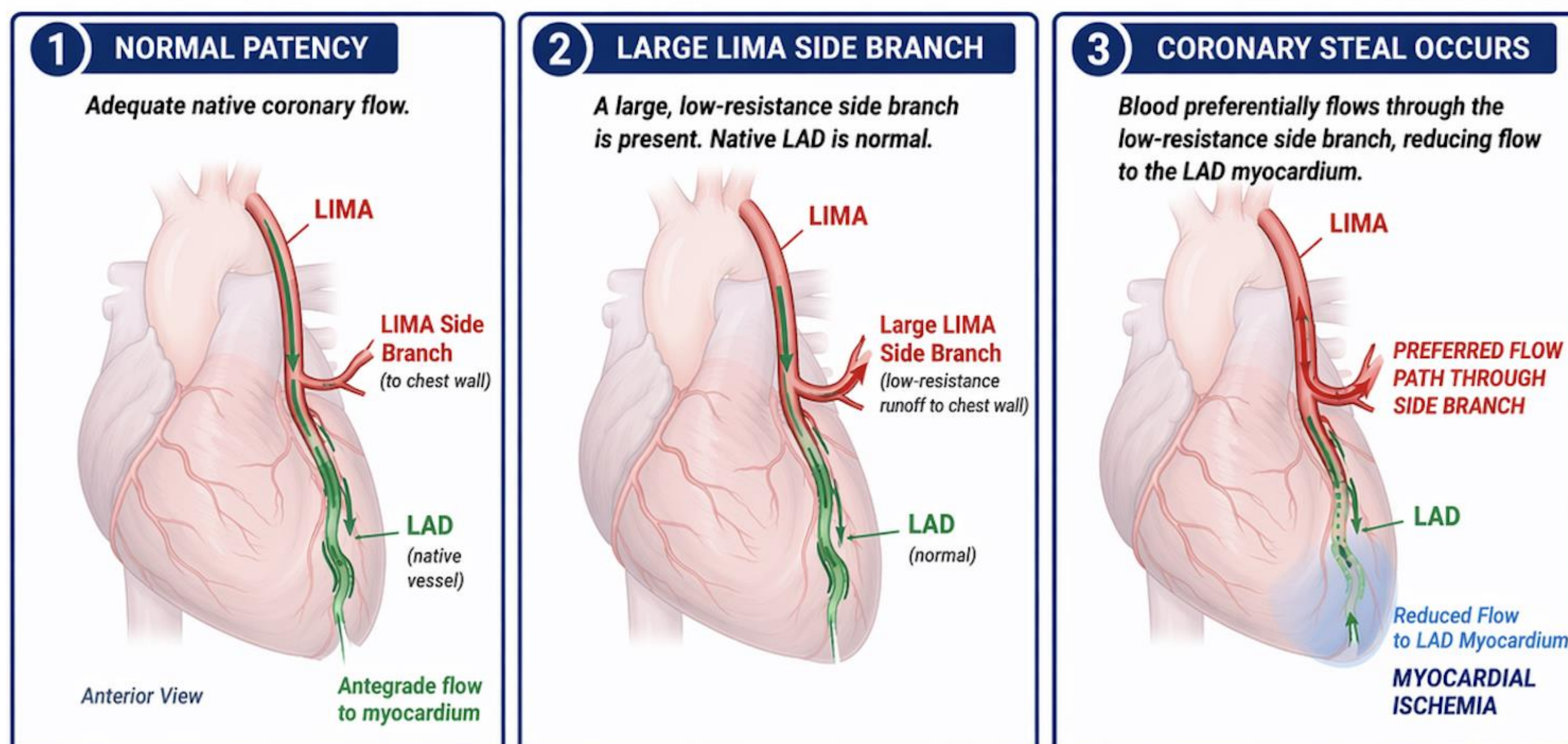


Figure 1. Pathophysiology of coronary steal syndrome.

- Here we present a case of CSS involving a LIMA side branch that was refractory to coil embolization and was ultimately treated with video assisted thoracoscopic ligation.

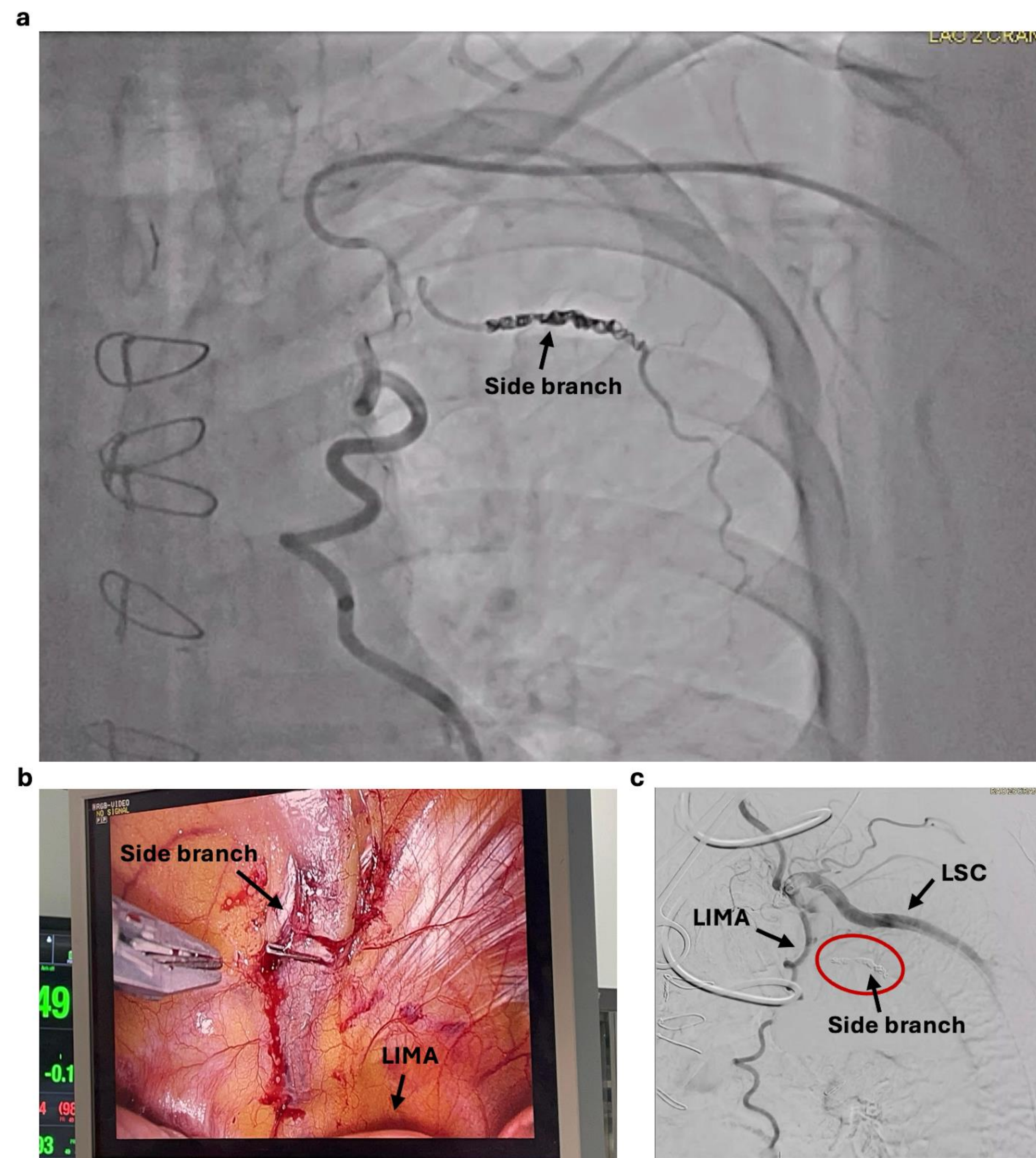


Figure 2. LIMA with side branch pre- and post-ligation. (a) preoperative angiography showing flow through recanalized, previously coiled side branch, (b) intraoperative ligation of side branch, (c) post-ligation angiography showing no residual flow through side branch and robust flow through LIMA-LAD. LIMA-Left internal mammary artery; LSC-Left subclavian

Case Presentation

- 76 y/o male underwent bypass grafting with LIMA to LAD graft. He was initially symptom free before presenting with new onset exertional angina.
- Diagnostic coronary angiography demonstrated patent LIMA-LAD graft and no distal stenosis, with evidence of CSS secondary to a proximal LIMA side branch.
- Patient underwent percutaneous intervention with coil embolization of LIMA side branch with initial complete resolution of symptoms.
- Exertional angina symptoms returned; repeat angiography demonstrated branch recanalization and antegrade flow through side branch. Repeat embolization was unsuccessful with evidence of ongoing steal physiology. Patient was referred to cardiothoracic surgery for surgical intervention.



Outcome

- The patient underwent left video assisted thoracoscopic exploration. The LIMA side branch was visualized on the chest wall and divided between clips.
- Intraoperative post-ligation angiography confirmed cessation of flow to side branch with robust flow through the LIMA-LAD graft (Figure 2).
- Patient was discharged postop day 1 and remained symptom-free at follow up.

Conclusion

- Minimally-invasive thoracoscopic exploration and ligation of the offending vessel should be considered in patients with persistent CSS after first line percutaneous intervention attempts.