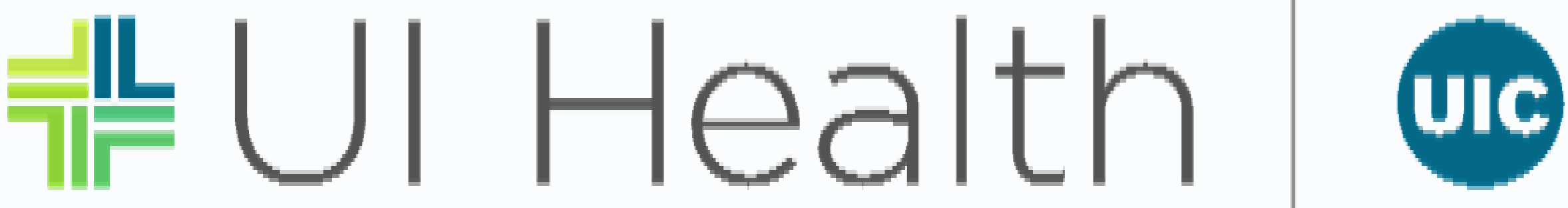


Anesthetic Management of Intravenous and Intracardiac Leiomyomatosis

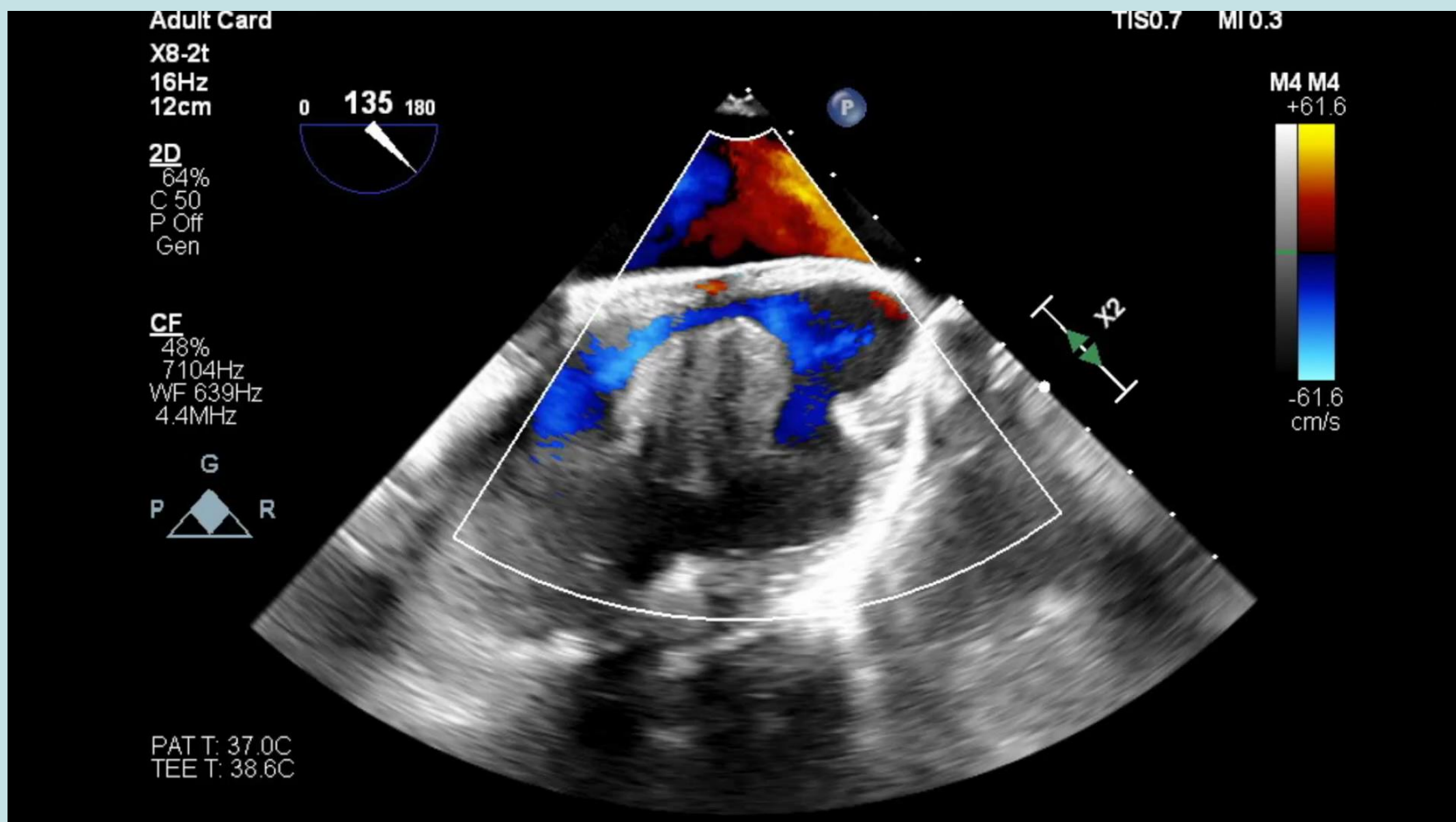
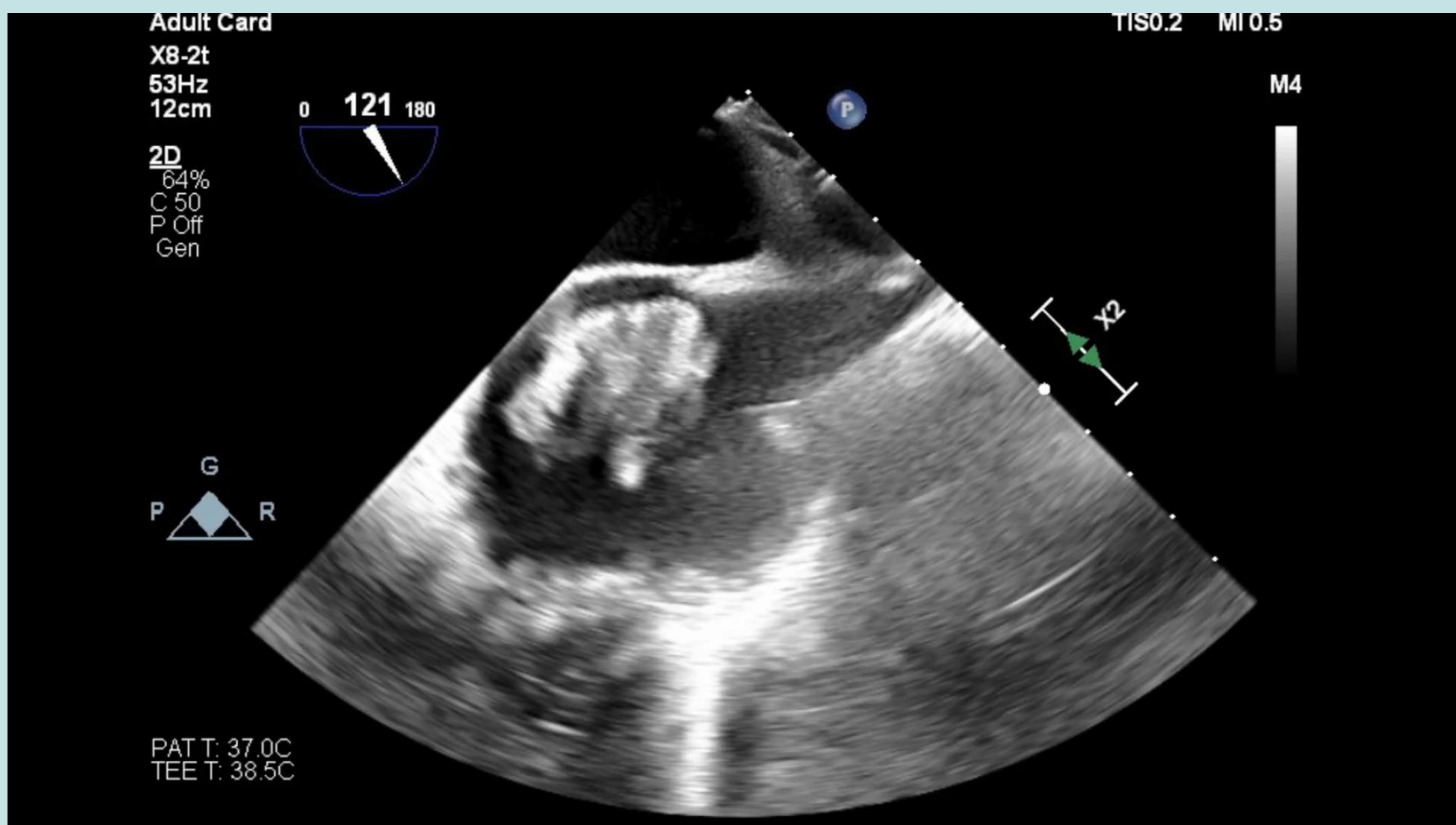
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Introduction

Intravenous Leiomyomatosis

- Smooth muscle cell tumor from uterine fibroids that slowly penetrates ovarian/iliac veins and can extend up the inferior vena cava, through the right heart, and to the pulmonary trunk
 - RA involvement can cause enlargement, arrhythmias, tricuspid stenosis, R heart failure
- Often in women ~44 years old with a history of hysterectomy or uterine fibroids
 - Usually asymptomatic for years until cardiac involvement presents as right heart failure or syncope
- Complete surgical removal is ideal treatment. Recurrence ~30%
- Concern for massive bleeding or fragmentation during surgical manipulation causing pulmonary embolus, systemic embolization



Case Report

56-year-old woman presents with hypotension, vomiting, weakness.

PMH: hypertension, chronic gastritis, fibroids s/p hysterectomy.

Imaging:

8.8cm left pelvic mass

Ddx: extrauterine fibroid, ovarian malignancy, metastatic disease

Extensive / near total occlusive filling defect extending from pelvic mass involving left gonadal, proximal renal, common, external, & internal iliac veins, and inferior vena cava with extension into the right atrium and right ventricle

Ddx: intravascular leiomyoma, tumor thrombus, IVC sarcoma

7.5 x 2.8 x 2.6cm RA mass

Ddx: intravascular leiomyosarcoma, leiomyomatosis

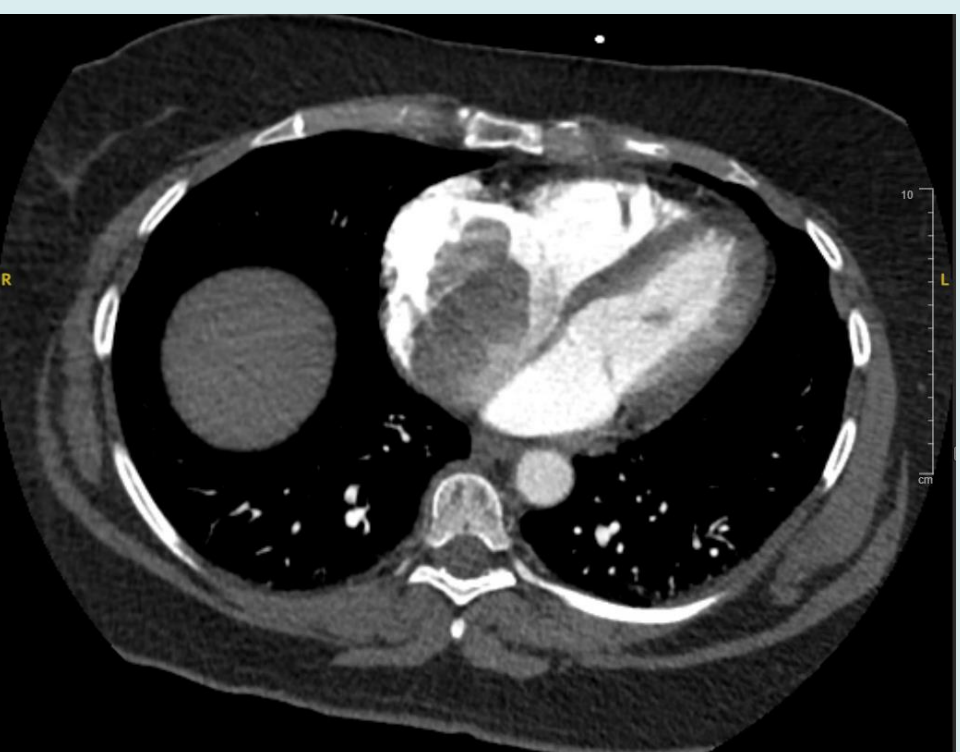
Cardiac MRI: Enhancing complex heterogenous longitudinal 2.5cm-diameter mass filling entire IVC and extending into RA with large, mobile, rounded tip measuring 5.3x3.5x4cm extending forward through tricuspid valve during diastole and falling back into RA during systole

TTE: 55-60% EF with normal LVF, normal RV size and function, no significant valvular disease, large round mobile mass in RA visualized 4x5cm that extends the full visualized 10-12cm length of the IVC in the subcostal window

LHC: proximal and mid RCA 30% stenosis with TIMI flow 3

Intraoperative course:

- Standard ASA monitors, radial a-line prior to induction
- TEE showed RA mass encroaching on tricuspid valve
- RIJ CVC placed, but PA catheter withheld until after mass resection
- CPB achieved via aortic, R femoral vein (instead of usual IVC), SVC cannulas
- RA opened and RA mass (solid, non-friable, non-adherent to cardiac structures) excised along with some of IVC mass
- Difficulty in venous drainage, so additional pRBCs used to facilitate CPB
- 4 pRBCs, 2 FFP, 800ml cell saver transfused
- Transferred to ICU in stable condition, extubated on POD1, d/c POD 5
- Scheduled for future IVC, iliac, and renal vein tumor thrombectomy



Discussion

Multimodal cardiac imaging is key

- Characterizes cardiac involvement
- Optimize surgical approach
- Guide anesthetic management
- TEE especially useful for monitoring hemodynamics, fluid status, CVC placement, embolization prophylaxis

Impact of RA masses

- Maintain preload with adequate intravascular volume
- Minimize myocardial depression with cautious induction drug titration
- Avoid increasing pulmonary vascular resistance with lung-protective ventilation

Goal

To maintain sinus rhythm and stroke volume while avoiding RA pressure increases that could cause RV inflow obstruction or mass dislodgement or embolization

Other strategies, considerations

- Careful with inotropes given possible detrimental chronotropic effects on biventricular filling due to dynamic RV inflow obstruction
- Possible left ventricular outflow track obstruction from augmented basal septal contractility in the setting of underfilled LV
- Defibrillation electrodes to treat arrhythmias
- Immediate median sternotomy for CPB to minimize risk of pulmonary embolism
- Maintaining CPB for auto-transfusion while removing IVC, pelvic mass
- CVC placement besides RIJ

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