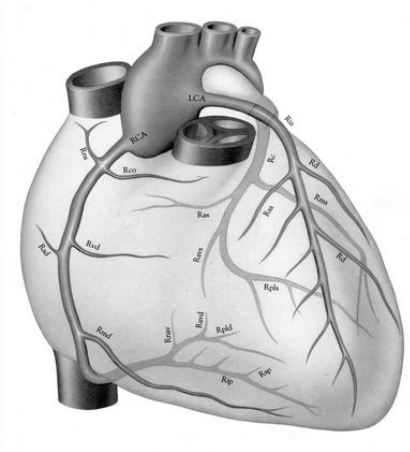
Komplikace STEMI

Ivo Bernat

Kardiologické oddělení, Komplexní kardiovaskulární centrum FN a LF UK Plzeň

Komplikace STEMI



- **Ischemické** - AP, reinfarkt, extenze infarktu
- **Mechanické** - selhání (až šok), mitrální dysfunkce, aneurysma, ruptura
- **Arytmické** - supraventrikulární, komorové, převodní - dysfunkce SA nebo AV uzlu
- **Embolizační** - do periferie včetně CNS
- **Zánětlivé** - perikarditida

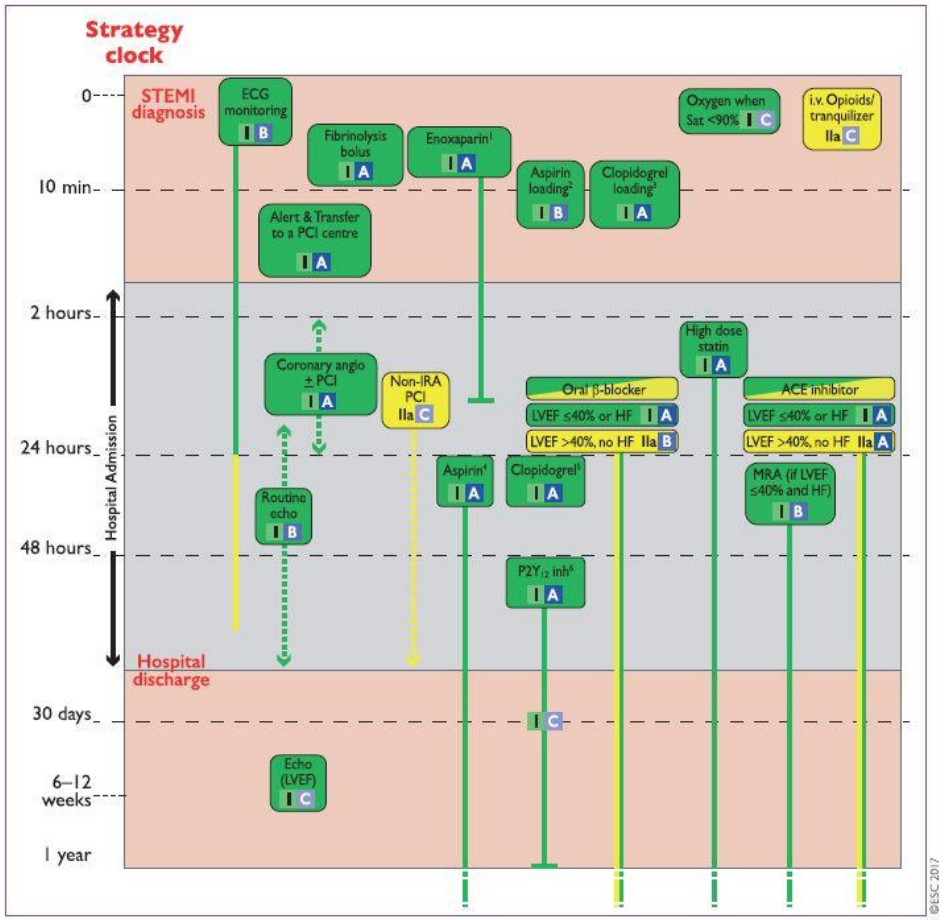
- **v souvislosti s léčbou** - nejčastěji krvácivé (pPCI, medikace, resuscitace…)

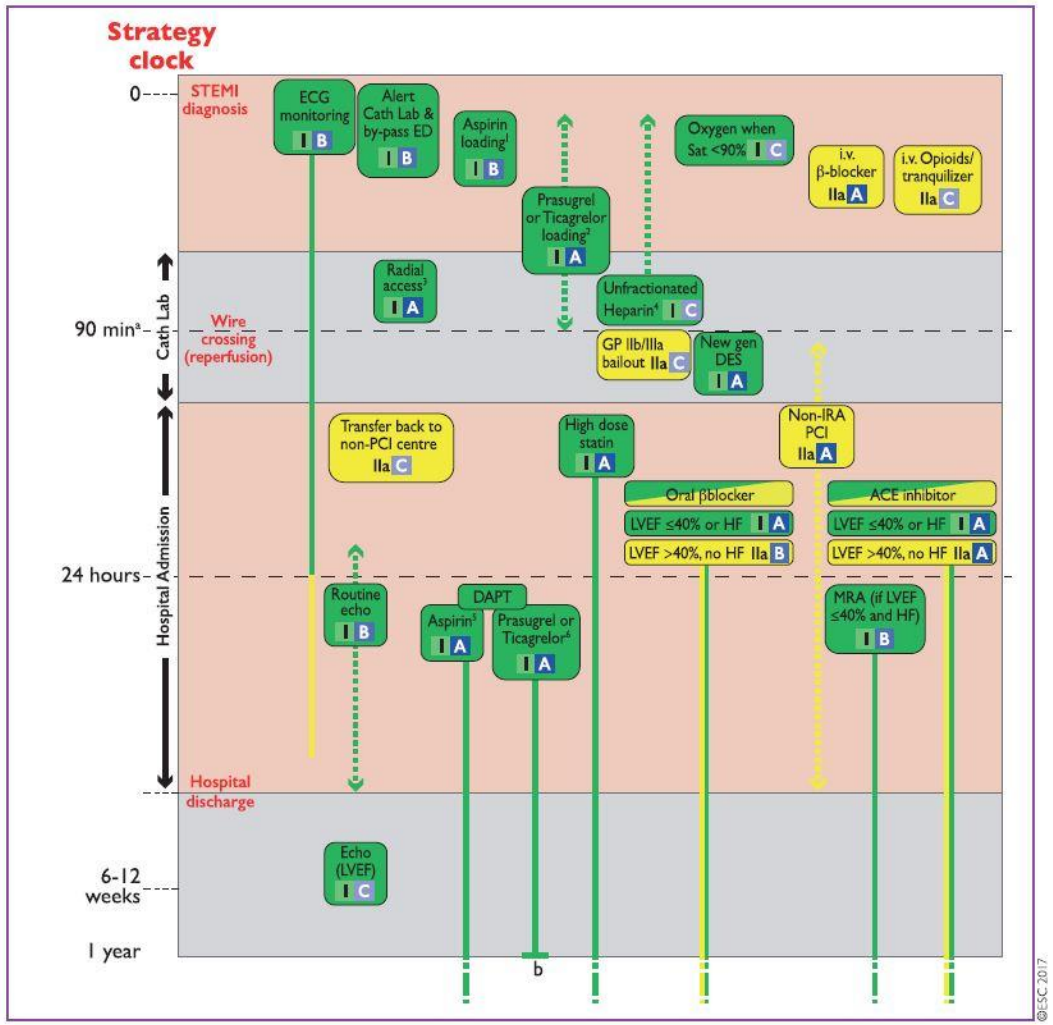
Role časné diagnostiky a správné léčby STEMI –

ESC European Society of Cardiology European Heart Journal (2017) 00, 1–66 doi:10.1093/eurheartj/ehx393

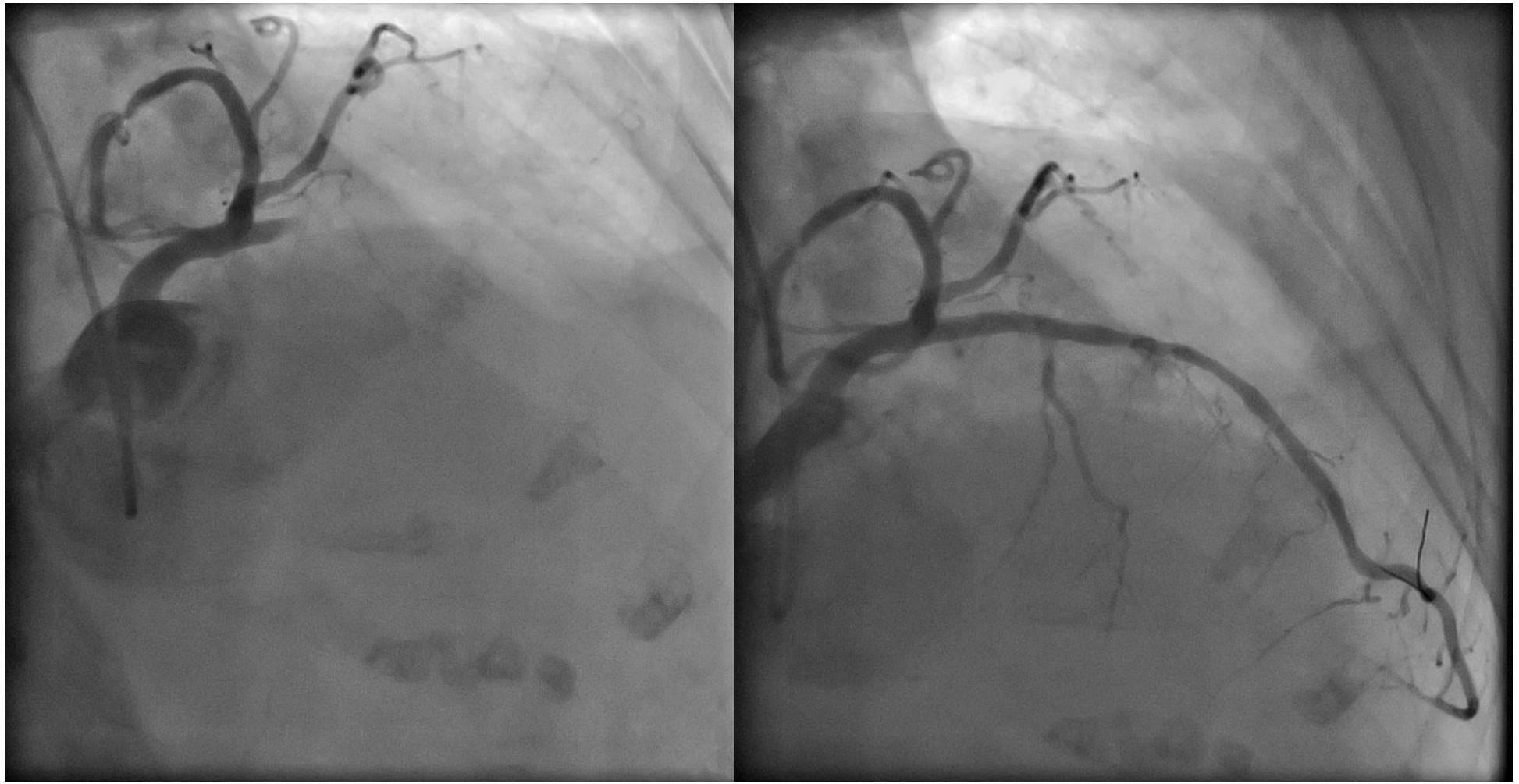
ESC GUIDELINES

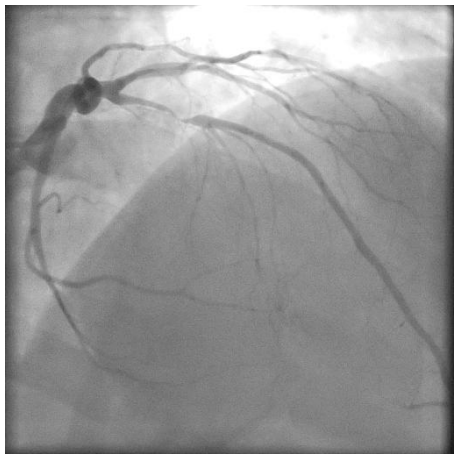
2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

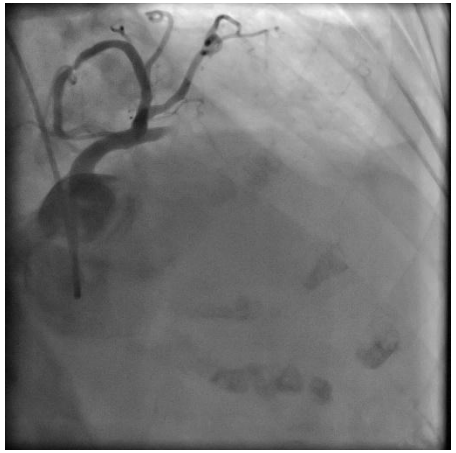




1. Ischemické komplikace u STEMI - AP, reinfarkt, extenze infarktu (pPCI vs TL)

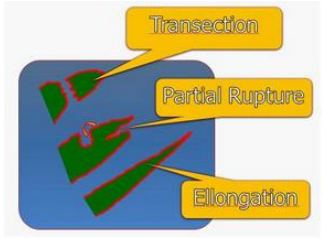




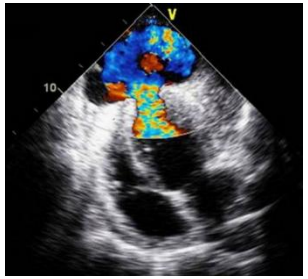


2. Mechanické komplikace

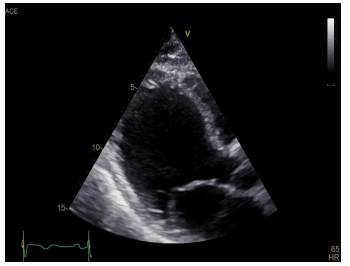
- Mitrální regurgitace



- Defekt septa komor

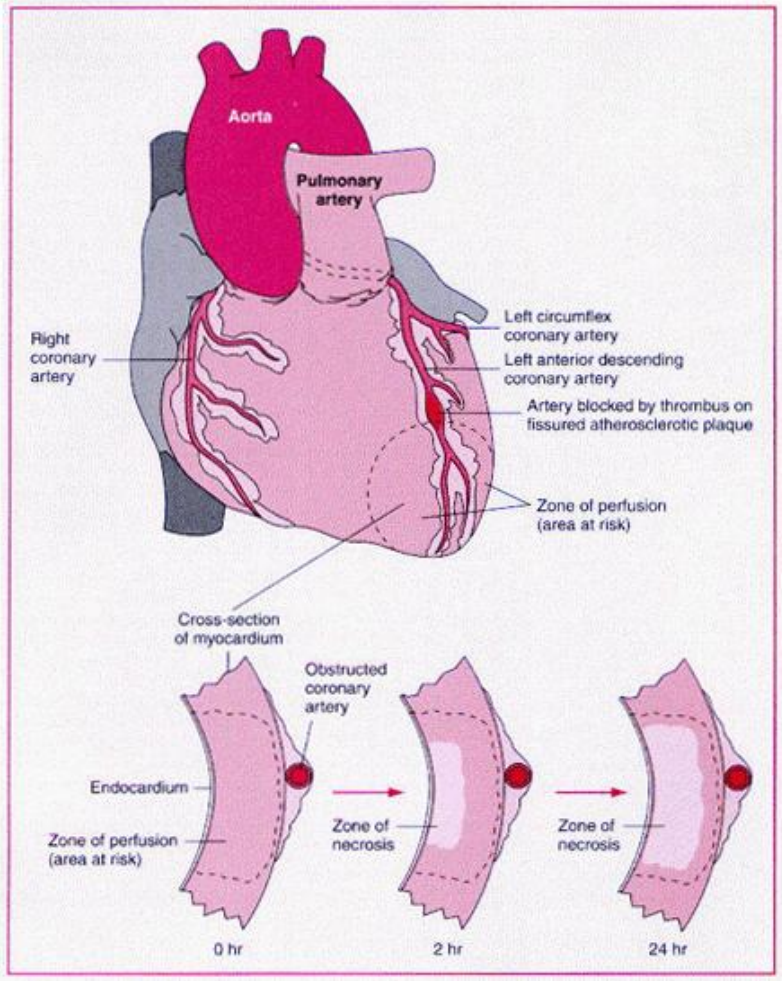


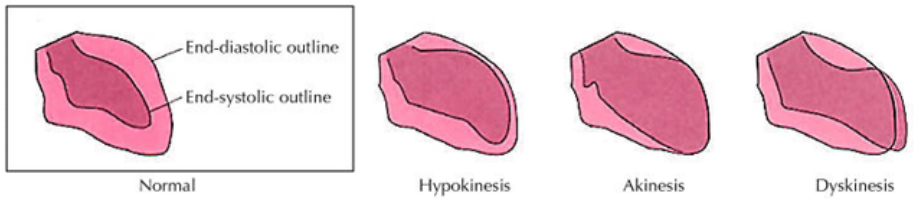
- Ruptura stěny levé komory (volná, krytá)
- Aneurysma levé komory

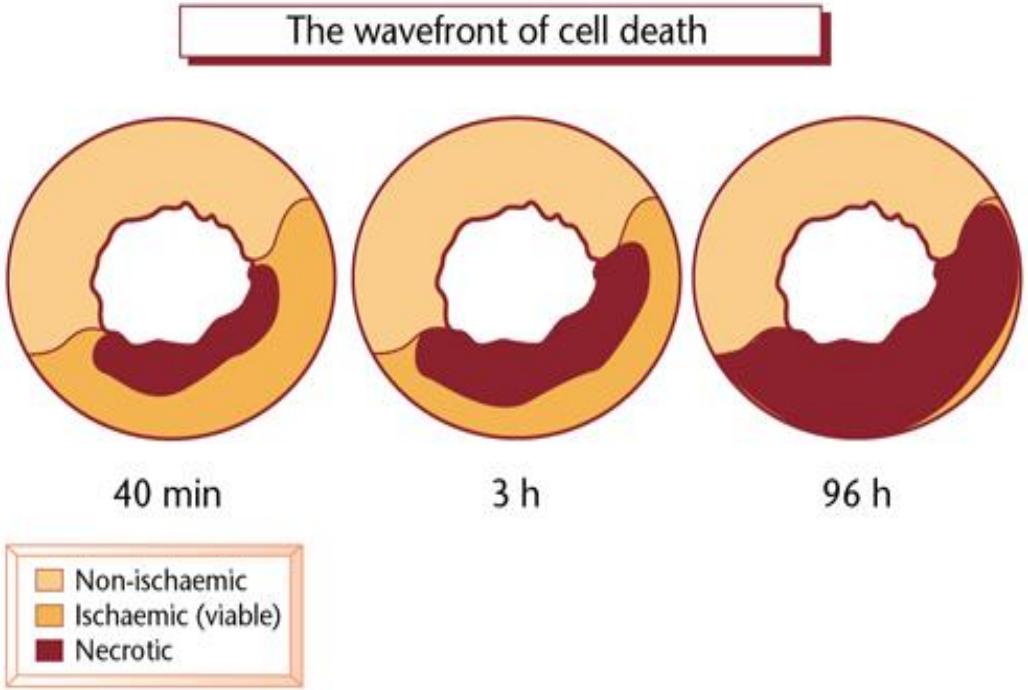


- Těžká dysfunkce levé komory, kardiogenní šok

Mechanické komplikace u STEMI







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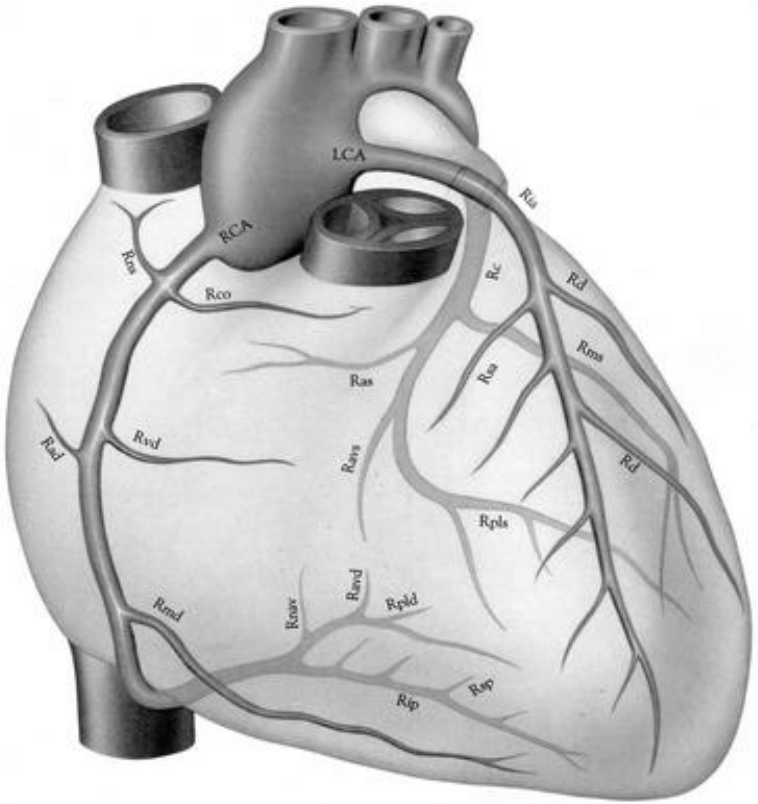
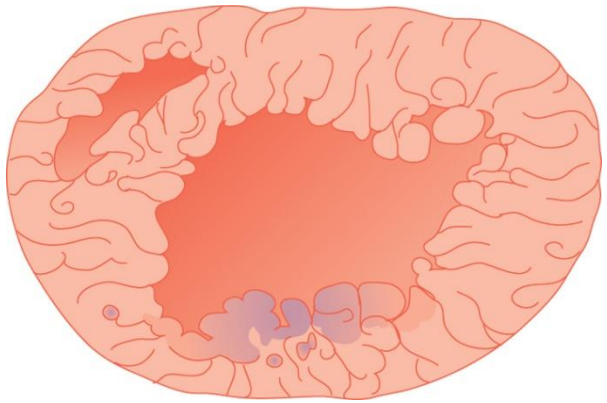
Role echokardiografie u STEMI - dle

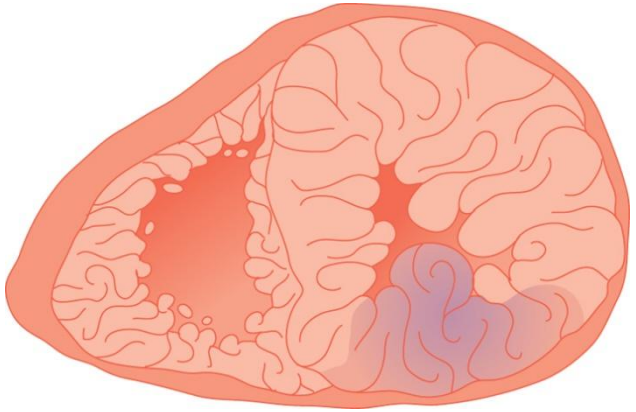
2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

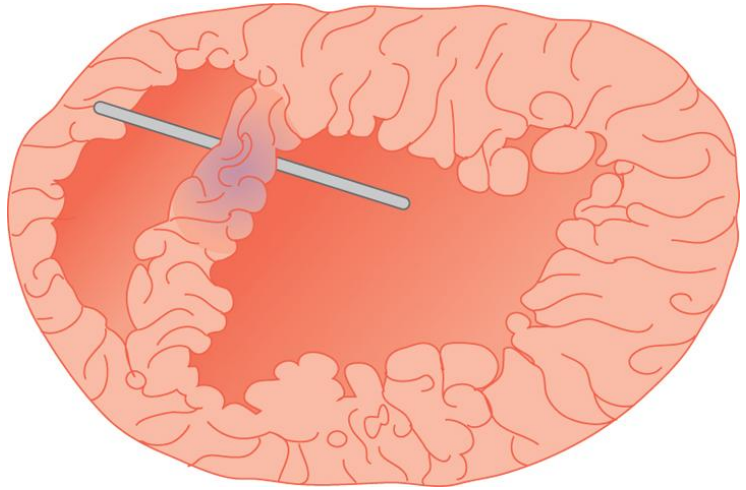


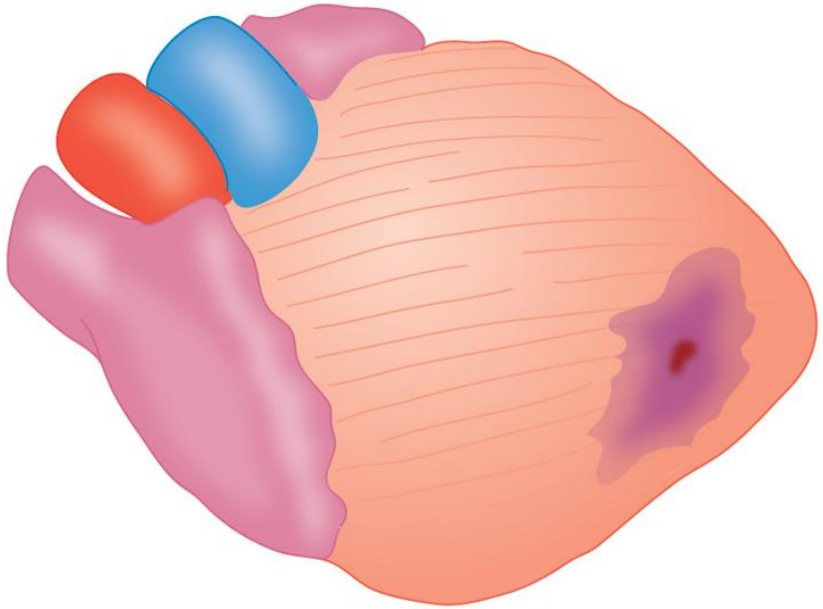
Recommendations	Class[a]	Level[b]
At presentation		
Emergency echocardiography is indicated in patients with cardiogenic shock and/or haemodynamic instability or suspected mechanical complications without delaying angiography.[295]	I	C
Emergency echocardiography before coronary angiography should be considered if the diagnosis is uncertain.[295]	IIa	C
Routine echocardiography that delays emergency angiography is not recommended.[295]	III	C

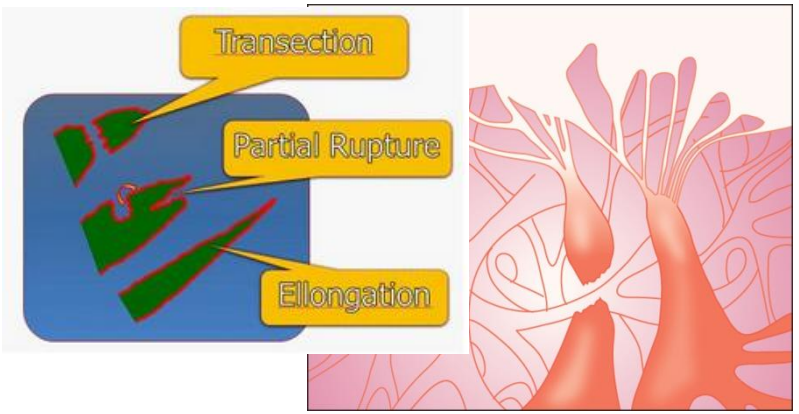
Mechanické komplikace STEMI

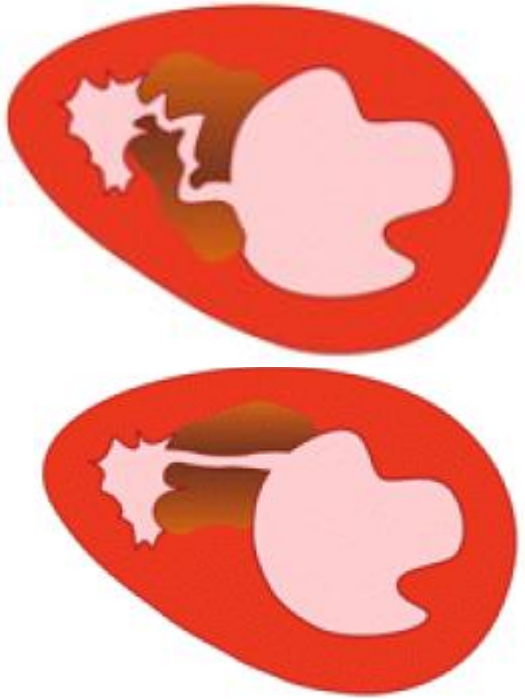




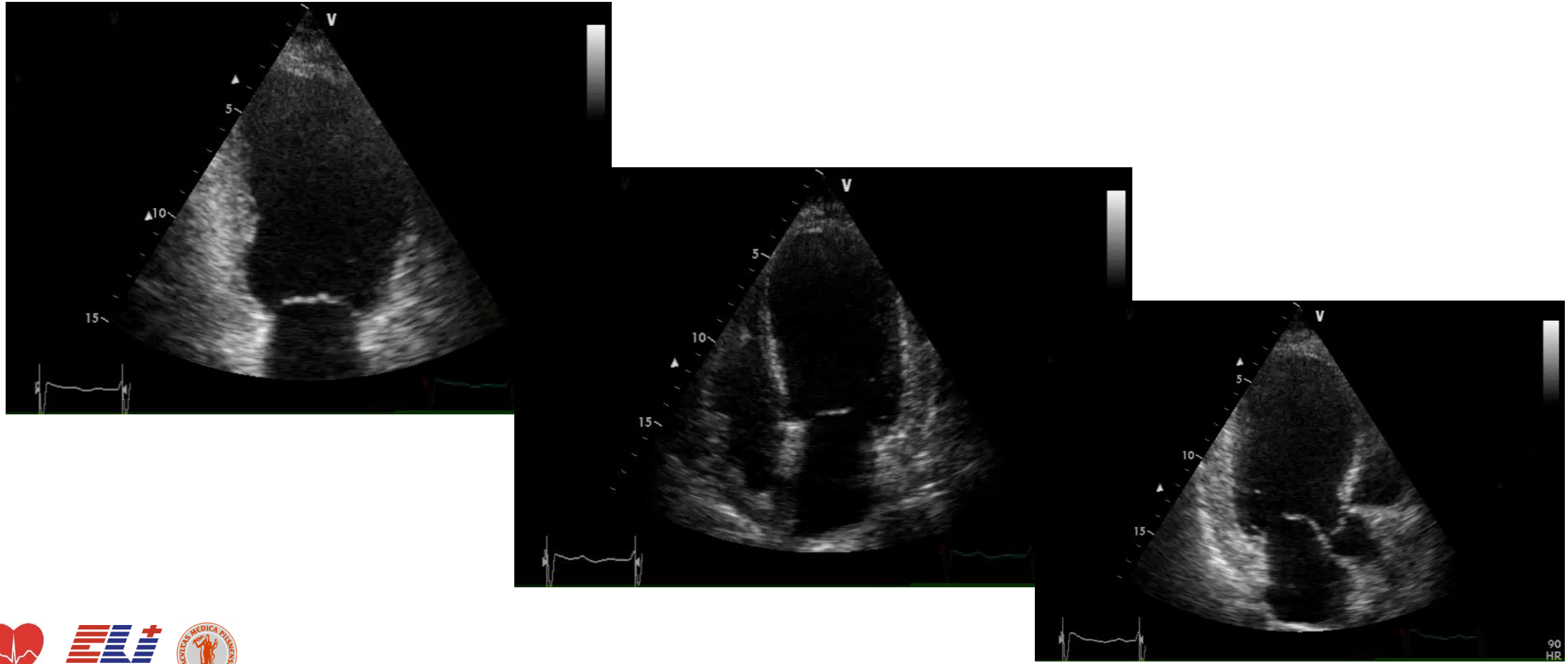




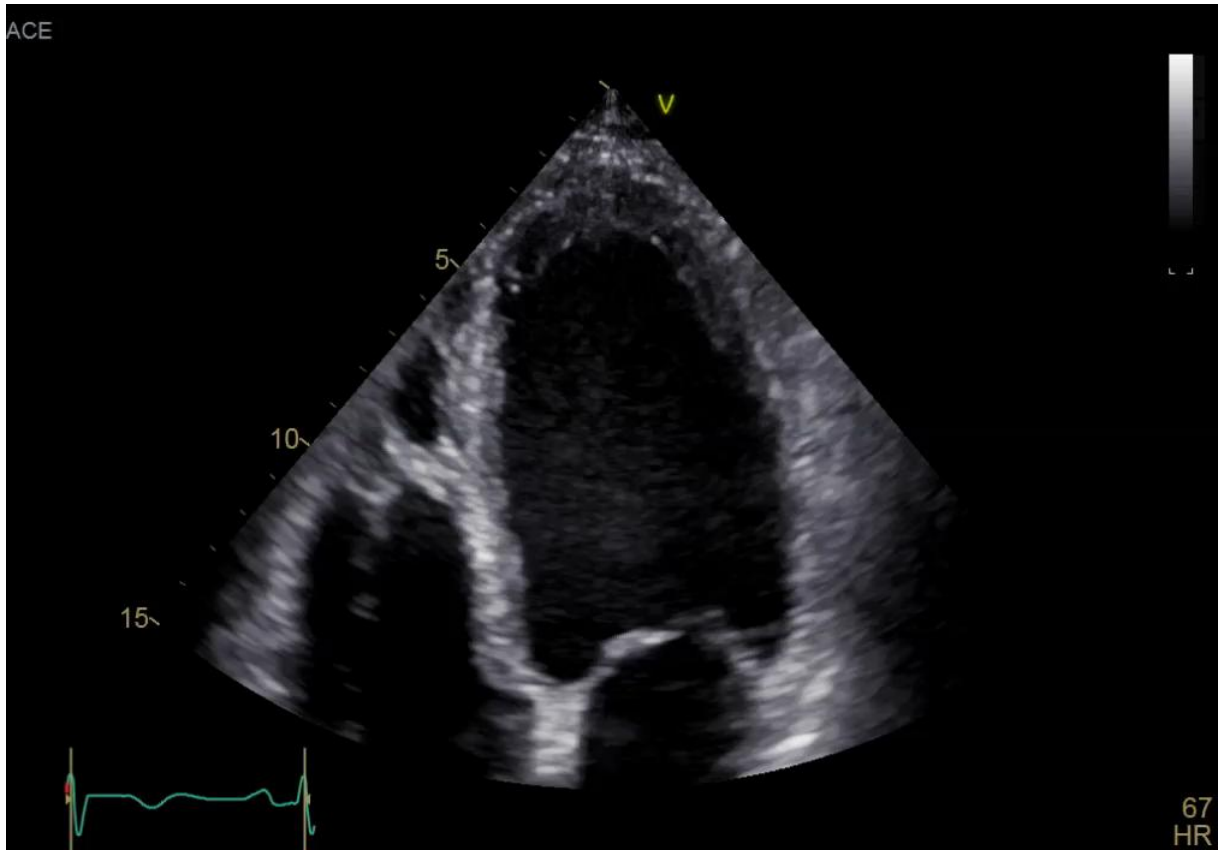


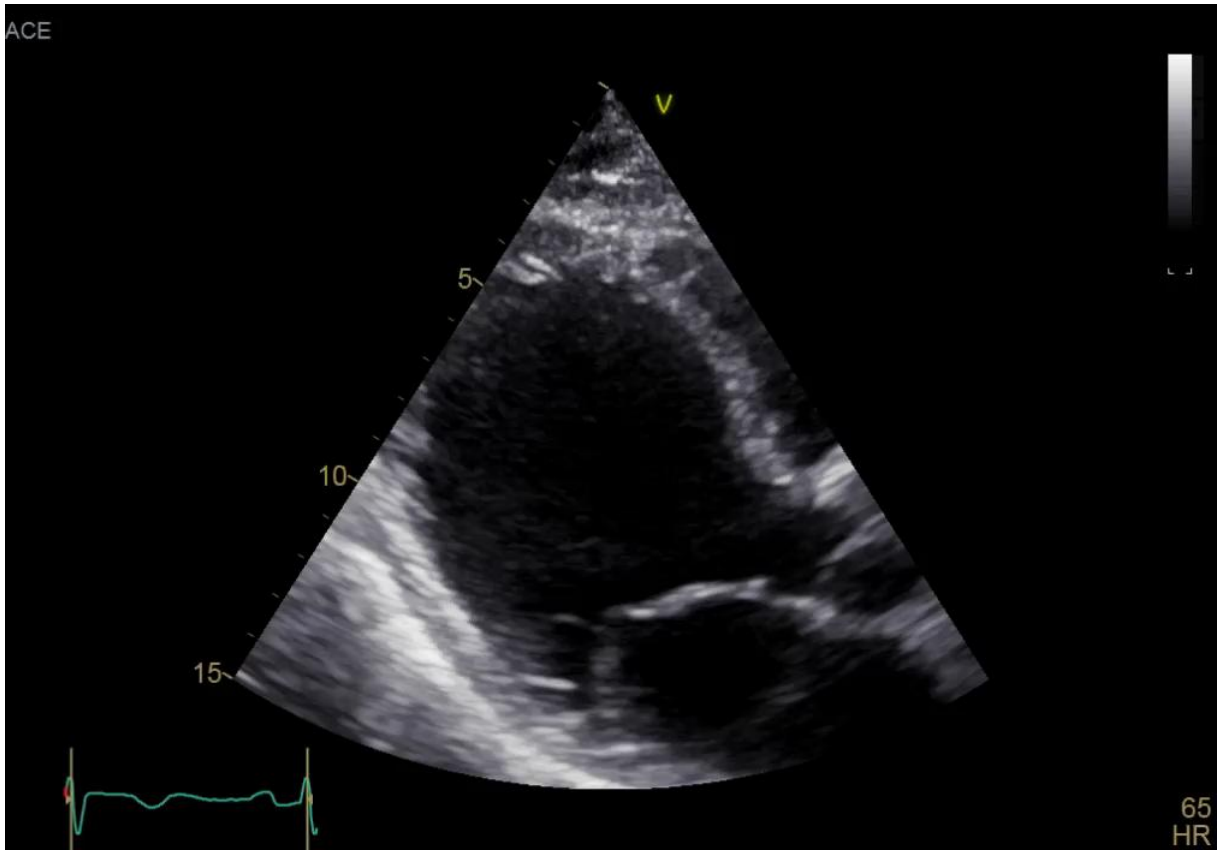


Rozsáhlý přední IM - srdeční selhání Killip III.



Kardiogenní šok při předním IM a po spodním IM s těžkou dysfunkcí levé komory

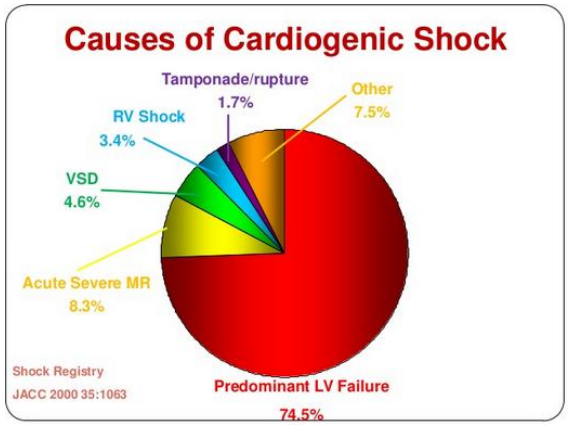




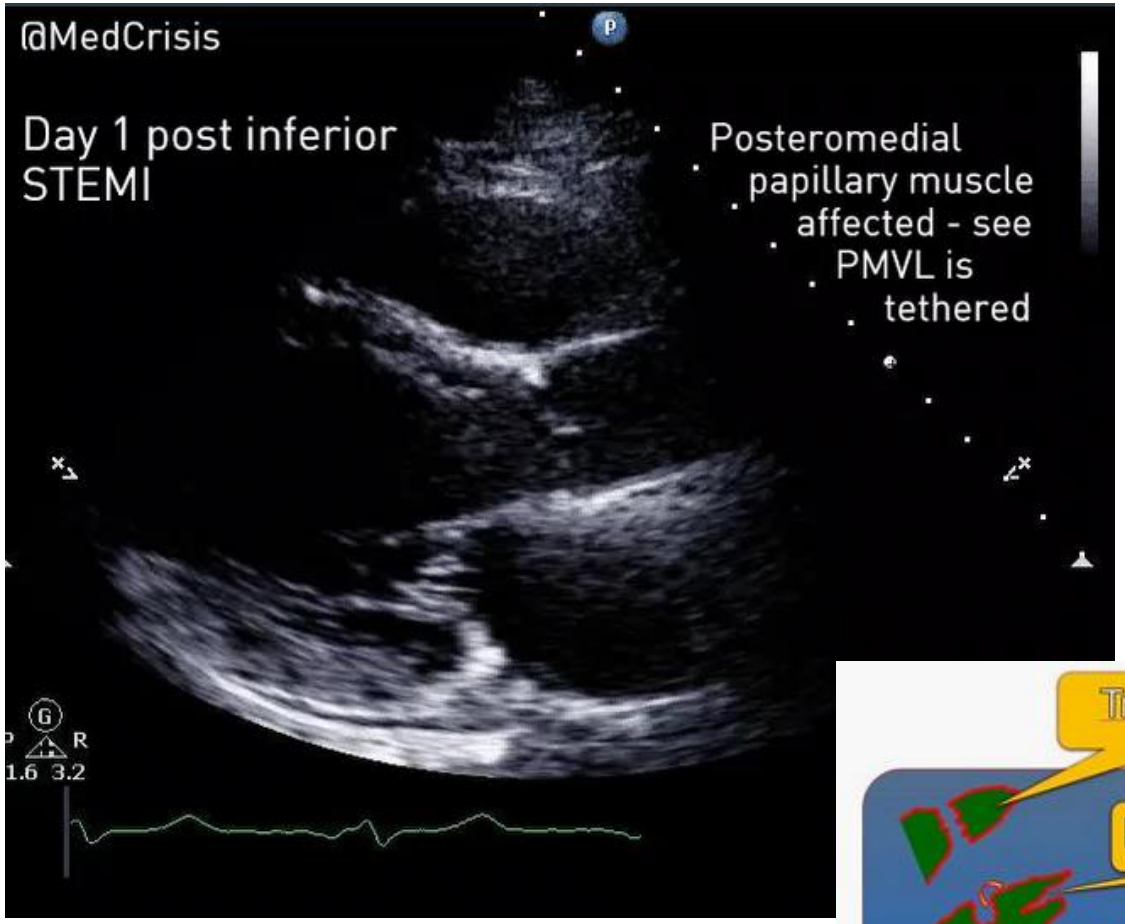
Doporučení pro léčbu šoku u STEMI - dle ESC 2017

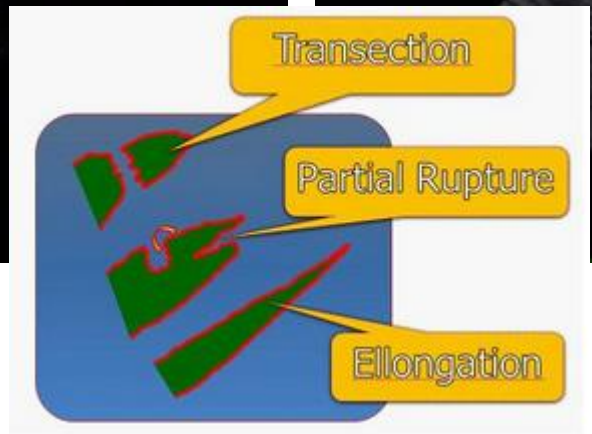
Recommendations for the management of cardiogenic shock in ST-elevation myocardial infarction

Recommendations	Class[a]	Level[b]
Immediate PCI is indicated for patients with cardiogenic shock if coronary anatomy is suitable. If coronary anatomy is not suitable for PCI, or PCI has failed, emergency CABG is recommended.[248]	I	B
Invasive blood pressure monitoring with an arterial line is recommended.	I	C
Immediate Doppler echocardiography is indicated to assess ventricular and valvular functions, loading conditions, and to detect mechanical complications.	I	C
It is indicated that mechanical complications are treated as early as possible after discussion by the Heart Team.	I	C
Oxygen/mechanical respiratory support is indicated according to blood gases.	I	C
Fibrinolysis should be considered in patients presenting with cardiogenic shock if a primary PCI strategy is not available within 120 min from STEMI diagnosis and mechanical complications have been ruled out.	IIa	C
Complete revascularization during the index procedure should be considered in patients presenting with cardiogenic shock.	IIa	C
Intra-aortic balloon pumping should be considered in patients with haemodynamic instability/cardiogenic shock due to mechanical complications.	IIa	C
Haemodynamic assessment with pulmonary artery catheter may be considered for confirming diagnosis or guiding therapy.[433]	IIb	B
Ultrafiltration may be considered for patients with refractory congestion, who failed to respond to diuretic-based strategies.[434–436]	IIb	B
Inotropic/vasopressor agents may be considered for haemodynamic stabilization.	IIb	C
Short-term mechanical support[c] may be considered in patients in refractory shock.	IIb	C
Routine intra-aortic balloon pumping is not indicated.[177,437]	III	B

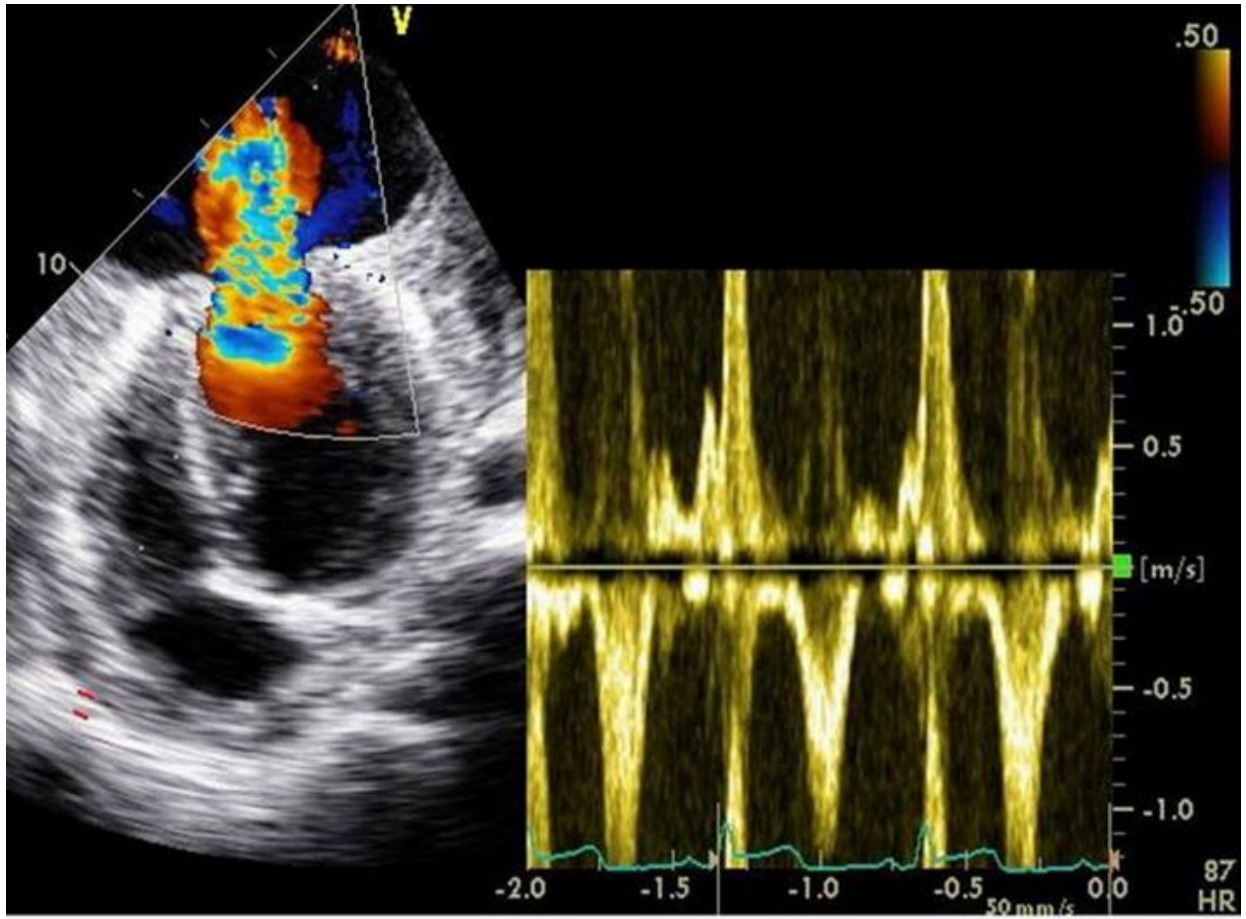


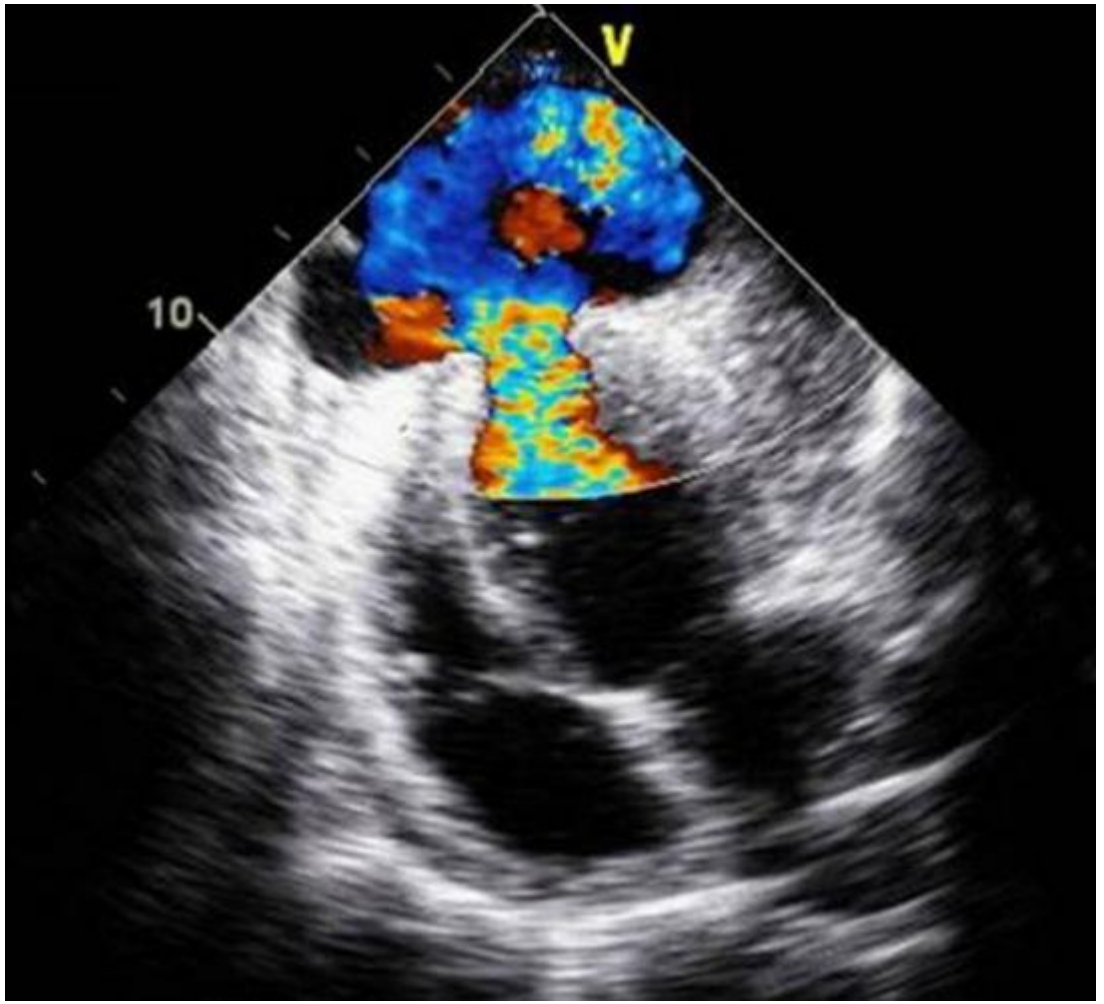
Infarktová postižení zadního papilárního svalu



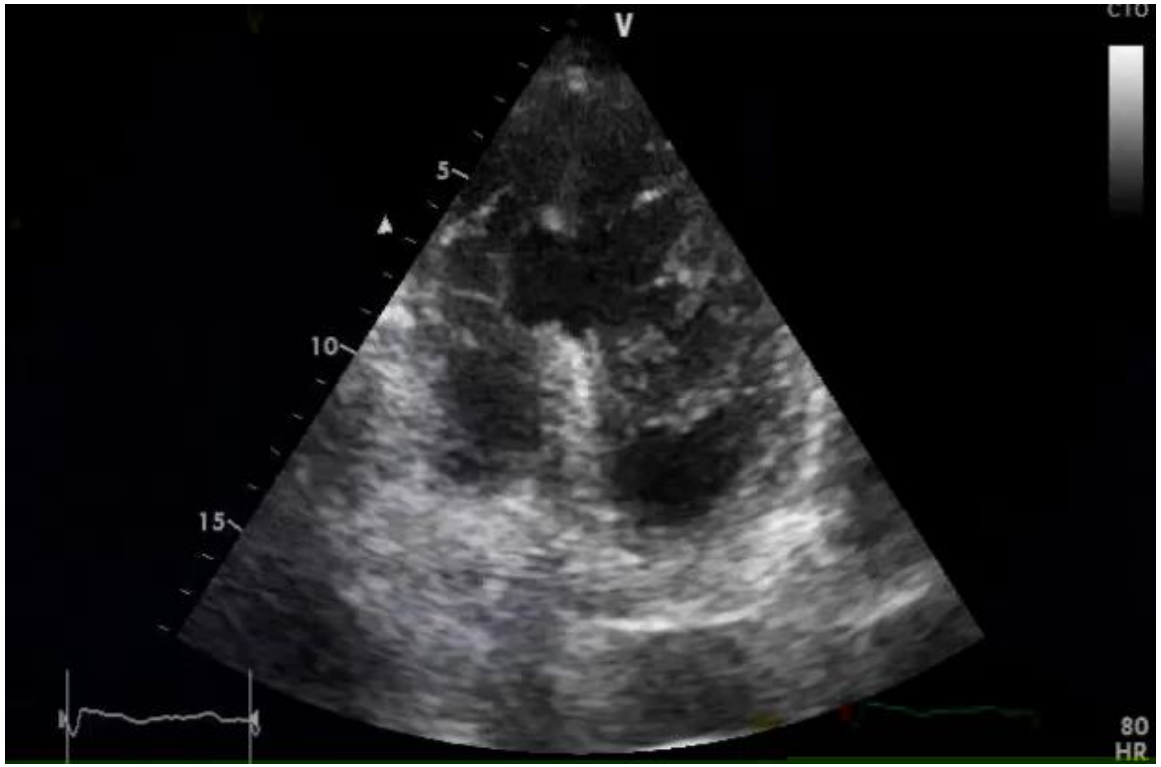


Pseudoaneurysma levé komory po předním IM

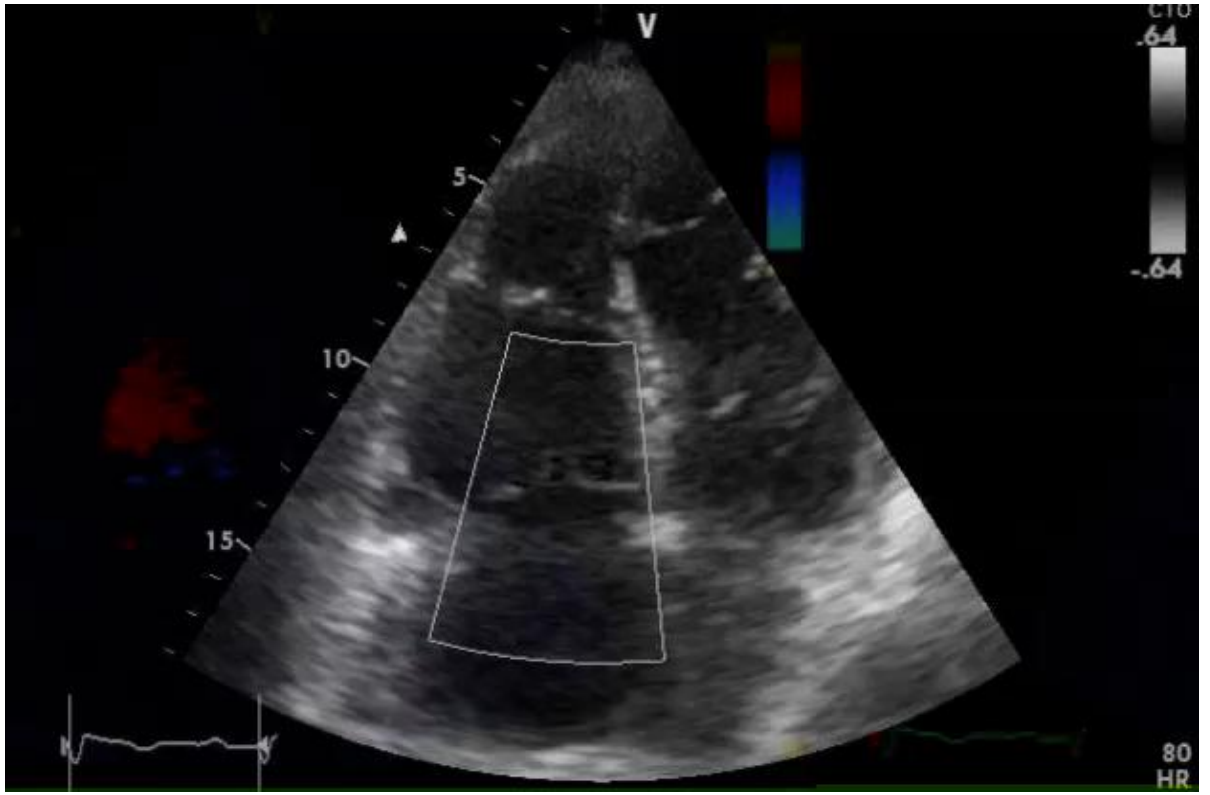




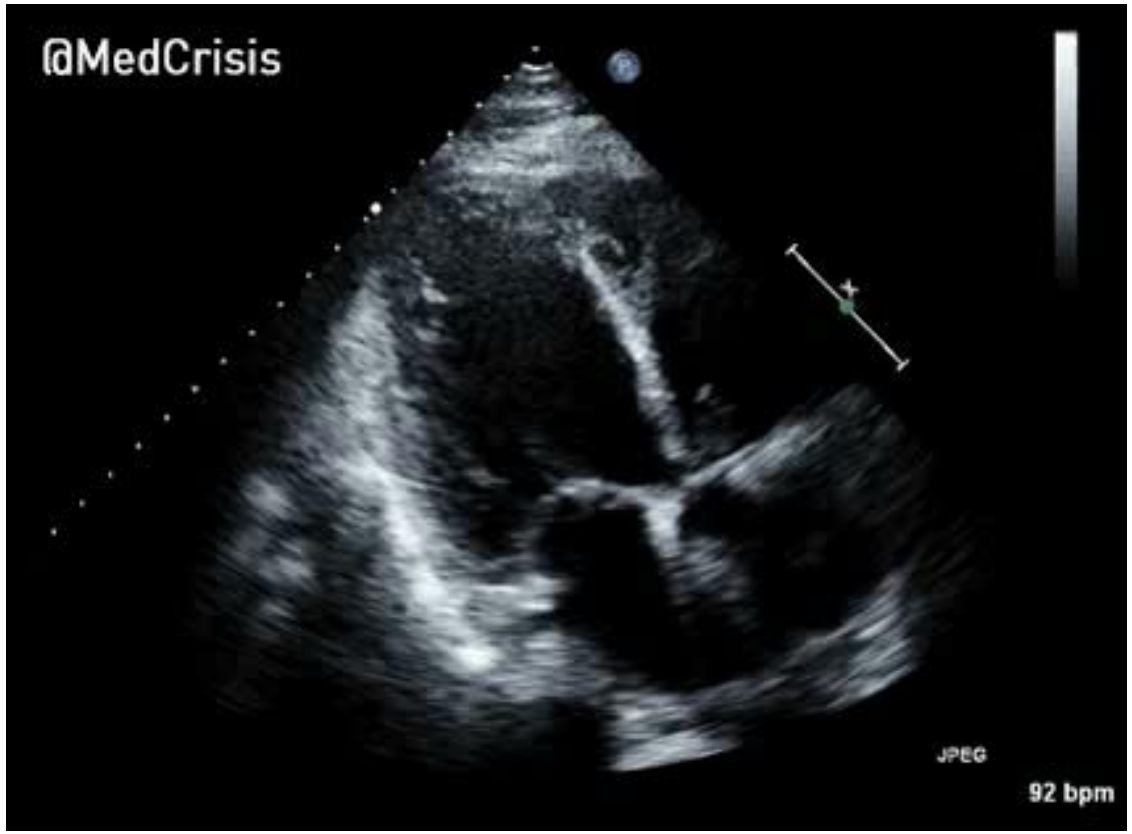
DSK distálně po IM s dilatací a dysfunkcí PK - uzávěr RIVP



DSK distálně po IM s dilatací a dysfunkcí PK - uzávěr RIVP



Poinfarktové DSK s lokální devastací tkáně septa



3.Arytmické komplikace

- Supraventrikulární
- Komorové
- Bradyarytmické

Doporučení pro léčbu fibrilace síní u STEMI - dle ESC 2017

Management of atrial fibrillation

Recommendations	Class[a]	Level[b]
Acute rate control of AF		
Intravenous beta-blockers are indicated for rate control if necessary and there are no clinical signs of acute heart failure or hypotension.[449]	I	C
Intravenous amiodarone is indicated for rate control if necessary in the presence of concomitant acute heart failure and no hypotension.[450]	I	C
Intravenous digitalis should be considered for rate control if necessary in the presence of concomitant acute heart failure and hypotension.[451]	IIa	B

Cardioversion		
Immediate electrical cardioversion is indicated when adequate rate control cannot be achieved promptly with pharmacological agents in patients with AF and ongoing ischaemia, severe haemodynamic compromise, or heart failure.	I	C
Intravenous amiodarone is indicated to promote electrical cardioversion and/or decrease risk for early recurrence of AF after electrical cardioversion in unstable patients with recent onset AF.	I	C
In patients with documented *de novo* AF during the acute phase of STEMI, long-term oral anticoagulation should be considered depending on CHA_2DS_2-VASc score and taking concomitant antithrombotic therapy into account.[5,444]	IIa	C

Digoxin is ineffective in converting recent onset AF to sinus rhythm and is not indicated for rhythm control.[452,453]	III	A
Calcium channel blockers and beta-blockers including sotalol are ineffective in converting recent onset AF to sinus rhythm.[453]	III	B
Prophylactic treatment with antiarrhythmic drugs to prevent AF is not indicated.[438,444]	III	B

Doporučení pro léčbu dalších arytmií u STEMI - dle ESC 2017

Management of ventricular arrhythmias and conduction disturbances in the acute phase

Recommendations	Class[a]	Level[b]
Intravenous beta-blocker treatment is indicated for patients with polymorphic VT and/or VF unless contraindicated.[462,463]	I	B
Prompt and complete revascularization is recommended to treat myocardial ischaemia that may be present in patients with recurrent VT and/or VF[71,72]	I	C
Intravenous amiodarone is recommended for treatment of recurrent polymorphic VT.[3]	I	C
Correction of electrolyte imbalances (especially hypokalaemia and hypomagnesemia) is recommended in patients with VT and/or VF.[3]	I	C
In cases of sinus bradycardia with haemodynamic intolerance or high degree AV block without stable escape rhythm:		
• i.v. positive chronotropic medication (epinephrine, vasopressin, and/or atropine) is indicated	I	C
• temporary pacing is indicated in cases of failure to respond to positive chronotropic medication	I	C
• urgent angiography with a view to revascularization is indicated if the patient has not received previous reperfusion therapy.	I	C
Intravenous amiodarone should be considered for recurrent VT with haemodynamic intolerance despite repetitive electrical cardioversion.[438]	IIa	C
Transvenous catheter pace termination and/or overdrive pacing should be considered if VT cannot be controlled by repetitive electrical cardioversion.	IIa	C
Radiofrequency catheter ablation at a specialized ablation centre followed by ICD implantation should be considered in patients with recurrent VT, VF, or electrical storm despite complete revascularization and optimal medical therapy.	IIa	C
Recurrent VT with haemodynamic repercussion despite repetitive electrical cardioversion may be treated with lidocaine if beta-blockers, amiodarone, and overdrive stimulation are not effective/applicable.[438]	IIb	C
Prophylactic treatment with antiarrhythmic drugs is not indicated and may be harmful.[464,465]	III	B
Asymptomatic and haemodynamically irrelevant ventricular arrhythmias should not be treated with antiarrhythmic drugs.	III	C

Long-term management of ventricular arrhythmias and risk evaluation for sudden death

Recommendations	Class[a]	Level[b]
ICD therapy is recommended to reduce sudden cardiac death in patients with symptomatic heart failure (NYHA class II–III) and LVEF ≤35% despite optimal medical therapy for >3 months and ≥6 weeks after MI, who are expected to survive for at least 1 year with good functional status.[3,466,467]	I	A
ICD implantation or temporary use of a wearable cardioverter defibrillator may be considered <40 days after MI in selected patients (incomplete revascularization, pre-existing LVEF dysfunction, occurrence of arrhythmias >48 h after STEMI onset, polymorphic VT or VF).	IIb	C

4.- 6. Komplikace embolické, zánětlivé a v souvislosti s léčbou

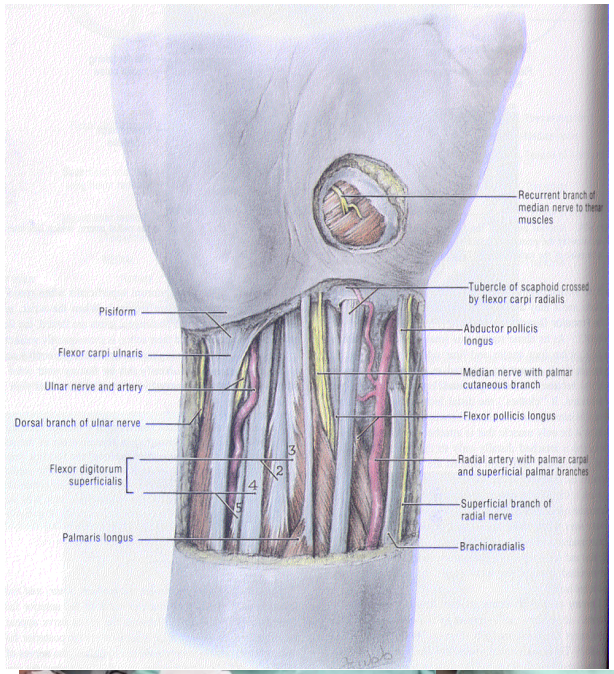
Embolické - z nástěnných trombů při aneurysmatu LK nebo při fibrilaci síní

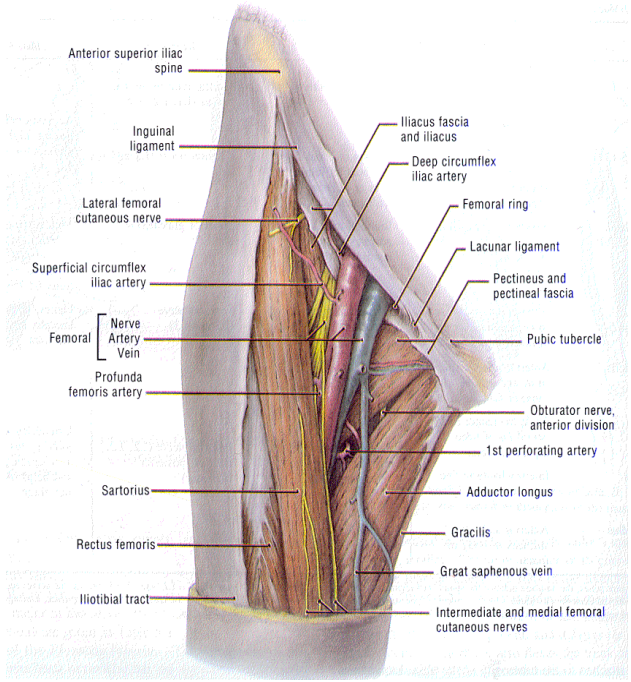
- ischemická CMP, ischemie do končetin, mensenterická, renální

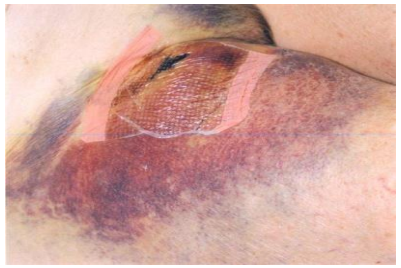
Zánětlivé - perikarditida při transmurálním infarktu nejčastěji 1.-3.den

V souvislosti s léčbou STEMI - nejčastěji krvácení po pPCI, TL, resuscitaci

Radiální přístup u STEMI dle ESC 2017 - I A







- Hematoma (1-12%)
- Pseudoaneurysm (1-6%)
- AV fistula (<1%)
- Vessel laceration (<1%)
  - Free bleeding
- Acute vessel closure (<1%)
  - Thrombosis (small artery lumen)
- Infection (<1%)
- Retroperitoneal hemorrhage (0.2 – 2 %)
- Intimal dissection
  - Ante- or retro-grade
- Thickening of the perivascular tissues
- Neural damage
- Venous thrombosis
- Pericatheter clot

Závěr :

- Z hlediska mortality patří mezi nejzávažnější komplikace STEMI kardiogenní šok, ruptury myokardu a maligní arytmie
- Diagnoza a léčba arytmických, mechanických, ischemických, embolizačních a arytmickcýh komplikací STEMI by měla být časná
- Většině těchto komplikací lze předejít časnou intervencí infarktové tepny
- Krvácivé komplikace v souvislosti s intervenční léčbou STEMI lze částečně redukovat radiálním přístupem