

CARDIAC MASSES

ADAM SNYMAN

TORONTO GENERAL HOSPITAL

UNIVERSITY HEALTH NETWORK

OVERVIEW
NORMAL STRUCTURES, THROMBI, ENDOCARDITIS,
TUMORS

- NORMAL STRUCTURES

OVERVIEW

NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

- NORMAL STRUCTURES
- THROMBI

OVERVIEW

NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

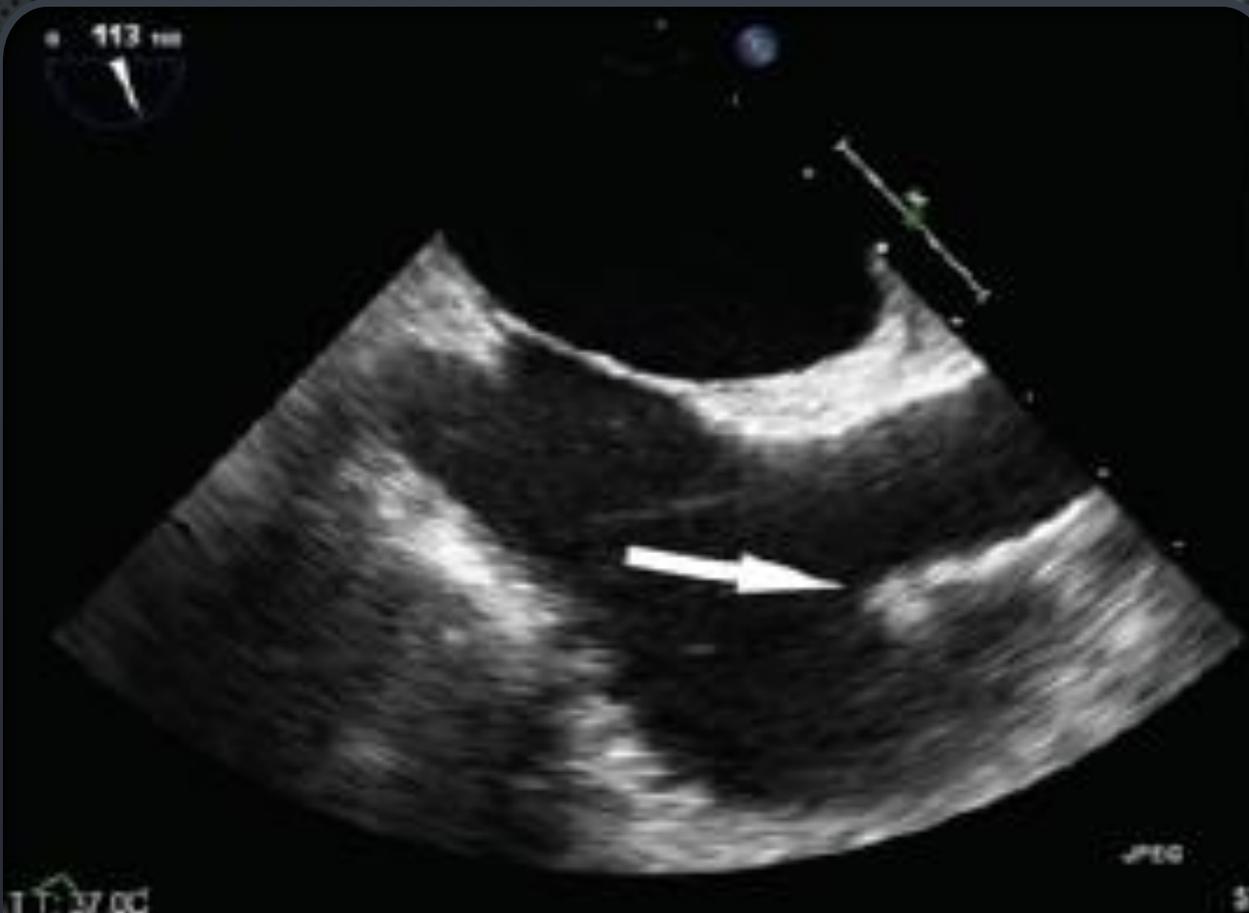
- NORMAL STRUCTURES
- THROMBI
- ENDOCARDITIS

OVERVIEW

NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

- NORMAL STRUCTURES
- THROMBI
- ENDOCARDITIS
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OVERVIEW

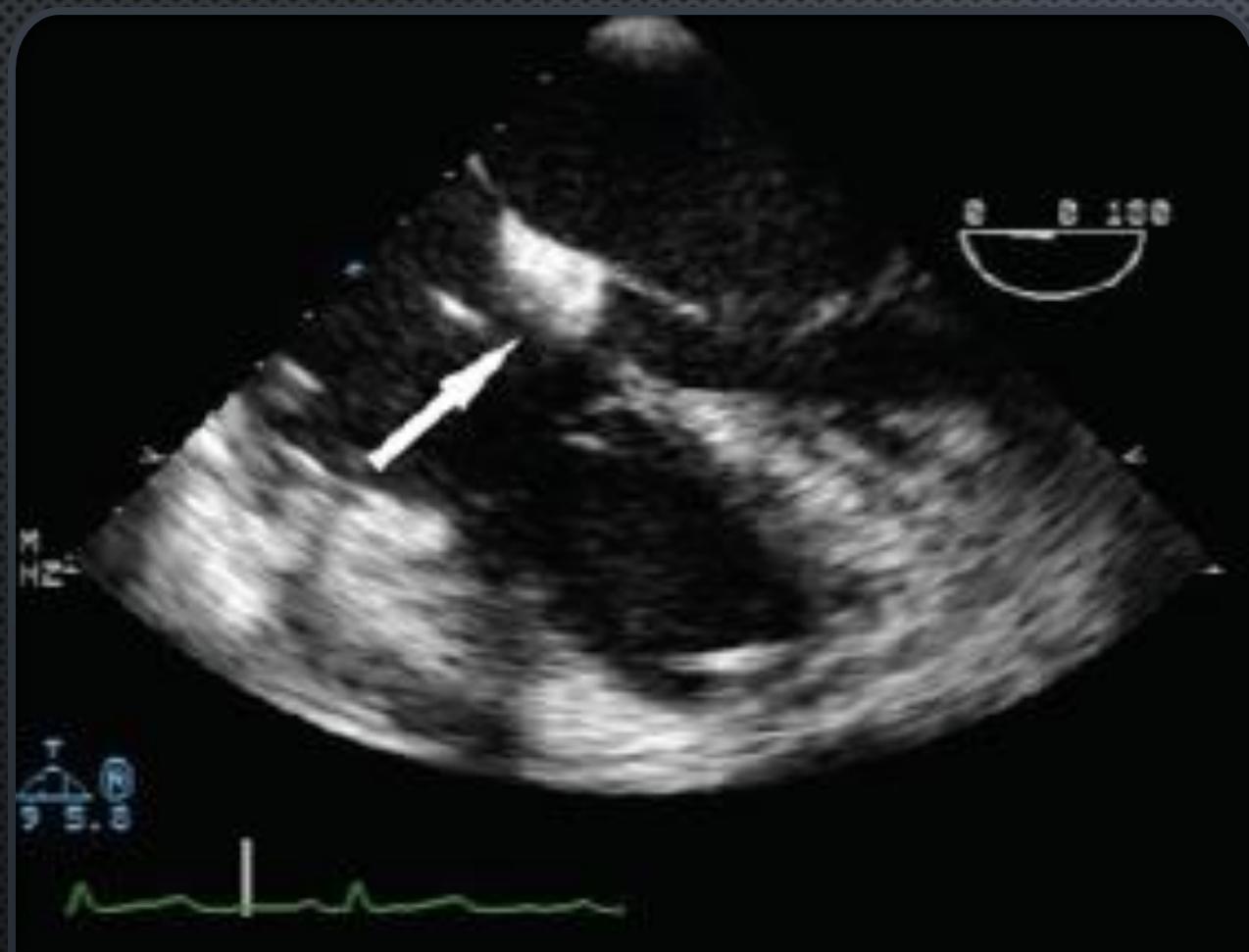
NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

- CRISTA TERMINALIS
- EUSTACHIAN VALVE
- THEBESIAN VALVE
- CHIARI NETWORK
- RA APPENDAGE
- PECTINATE MUSCLE
- CORONARY SINUS
- CATHETERS
- WIRES



RIGHT ATRIUM

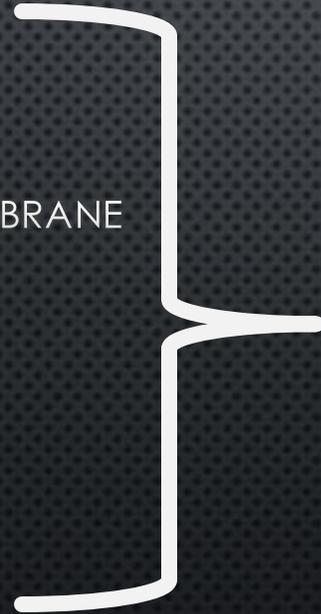
OVERVIEW
NORMAL STRUCTURES, THROMBI, ENDOCARDITIS,
TUMORS



OVERVIEW

NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

- FOSSA OVALIS DOUBLE MEMBRANE
- LIPOMATOUS IAS
- IAS ANEURYSM



INTRA ATRIAL SEPTUM

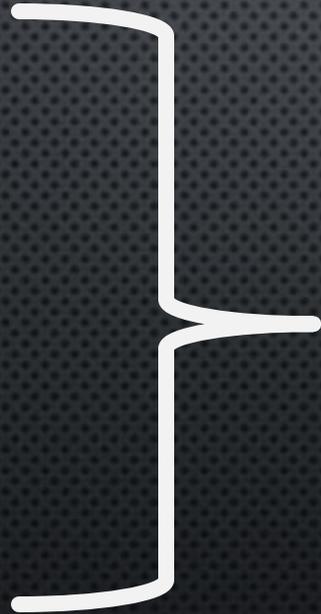
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TUMORS



OVERVIEW

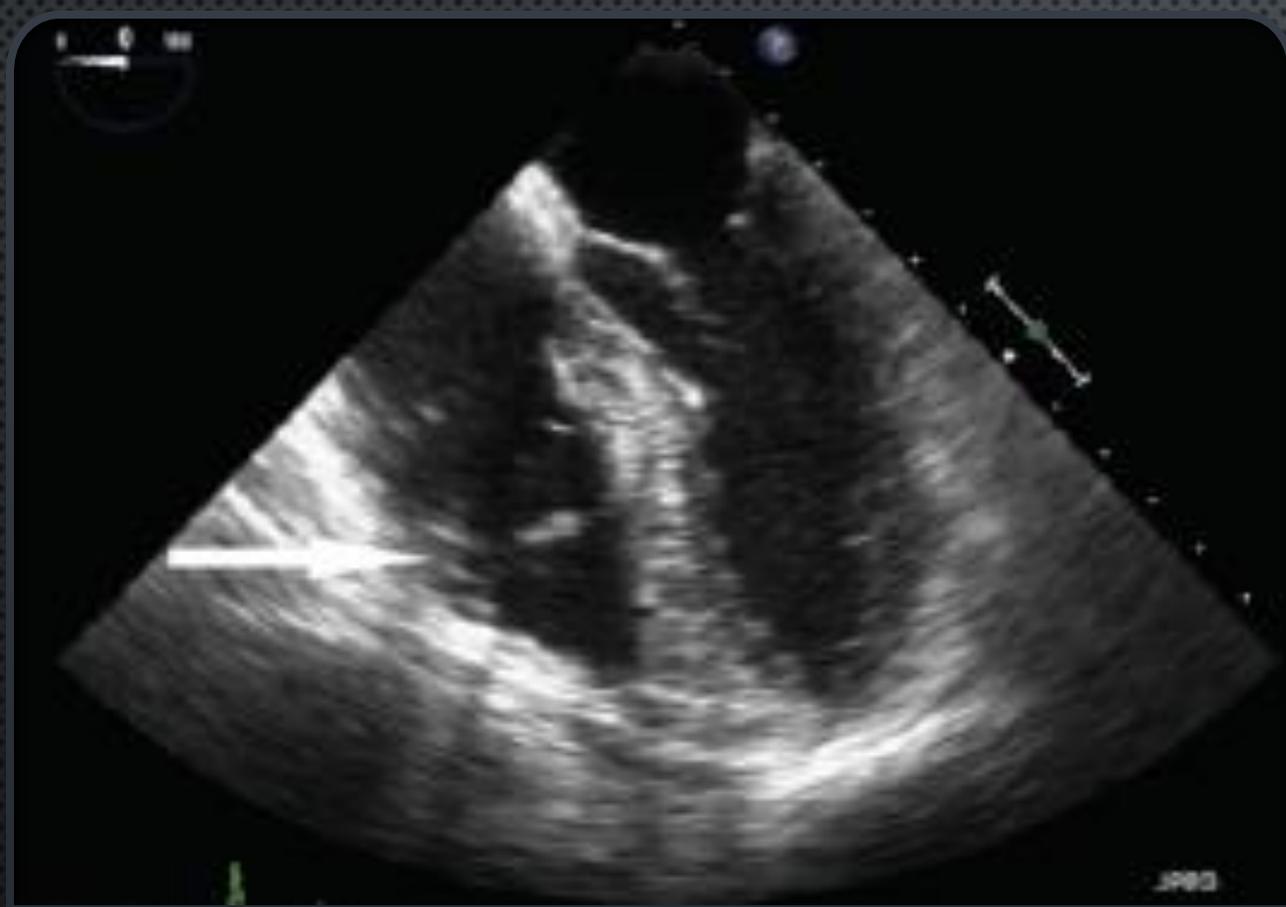
NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

- WARFERIN RIDGE
- COR TRIARIATUM
- LA APPENDAGE
 - MULTI LOBED
 - STAPLED
 - INVERTED
- PECTINATE MUSCLE



LEFT ATRIUM

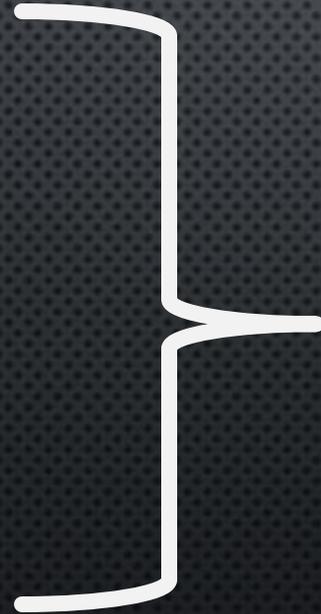
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OVERVIEW

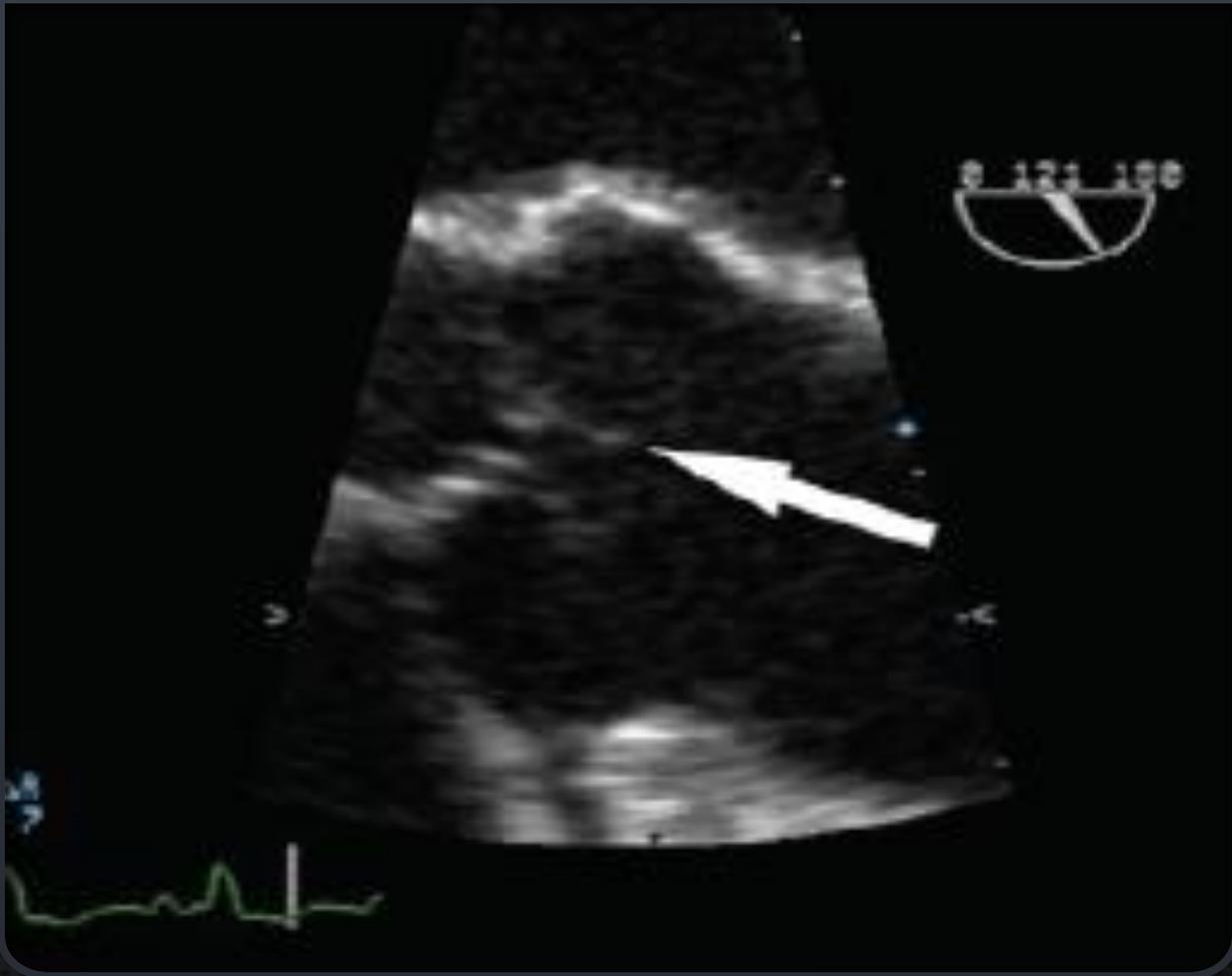
NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS

- TRABECULAE
- MODERATOR BAND
- FALSE TENDONS
- SUBVALVULAR APPARATUS



RV AND LV

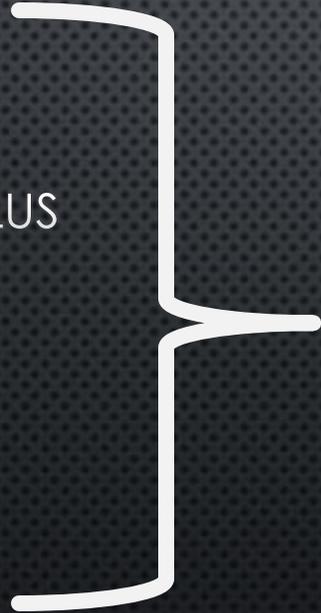
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TUMORS



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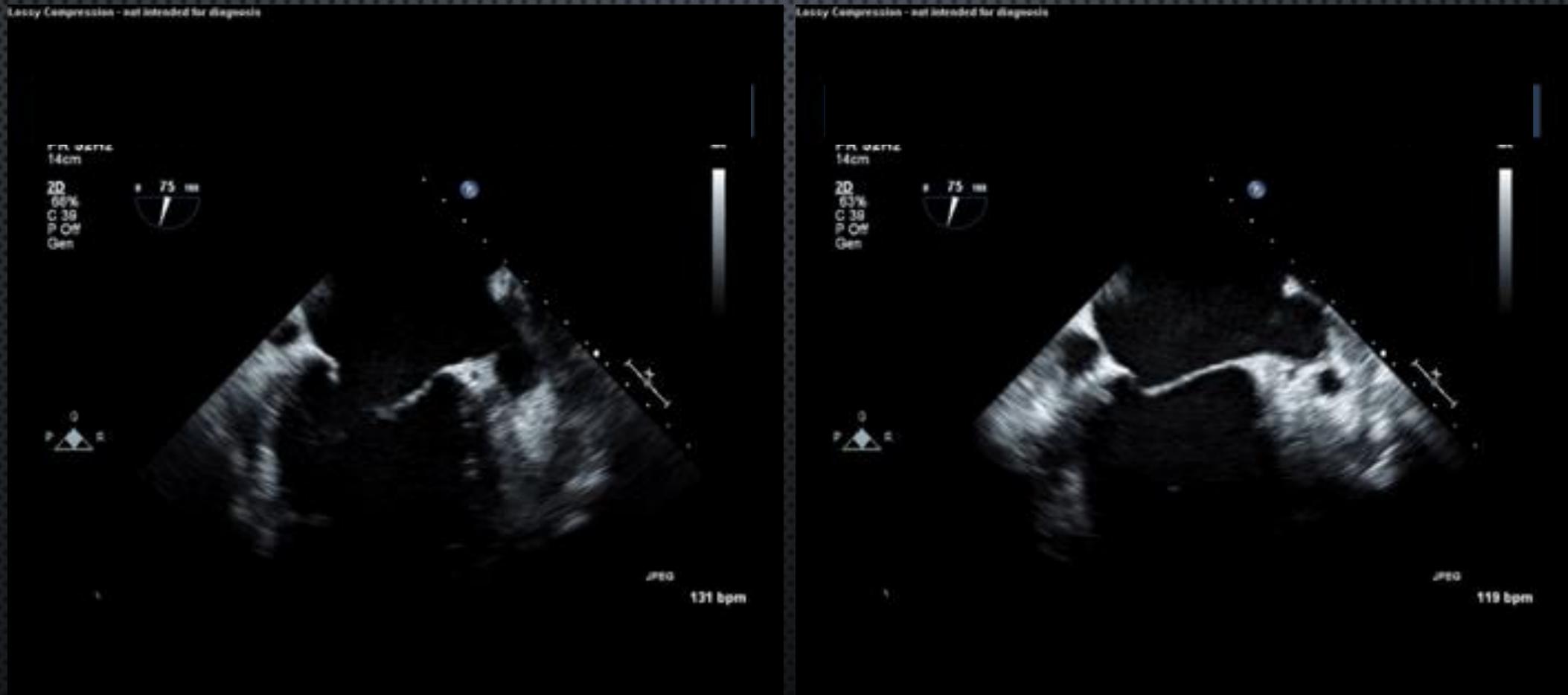
- MAC
- LIPOMATOUS TV ANNULUS
- TRANSVERSE SINUS
- OBLIQUE SINUS
- VALVULAR STRANDS



VALVES/PERICARDIAL SPACE

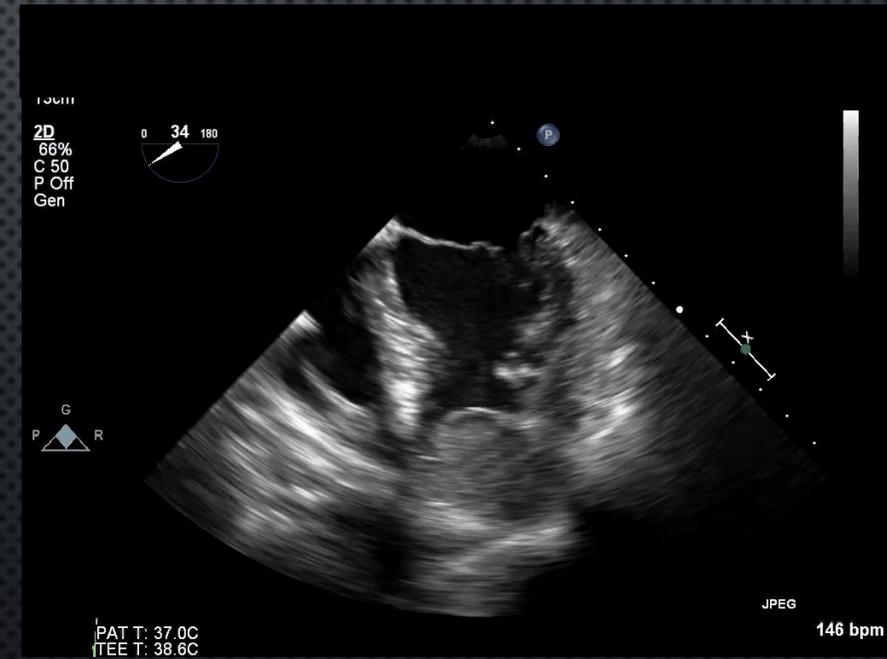
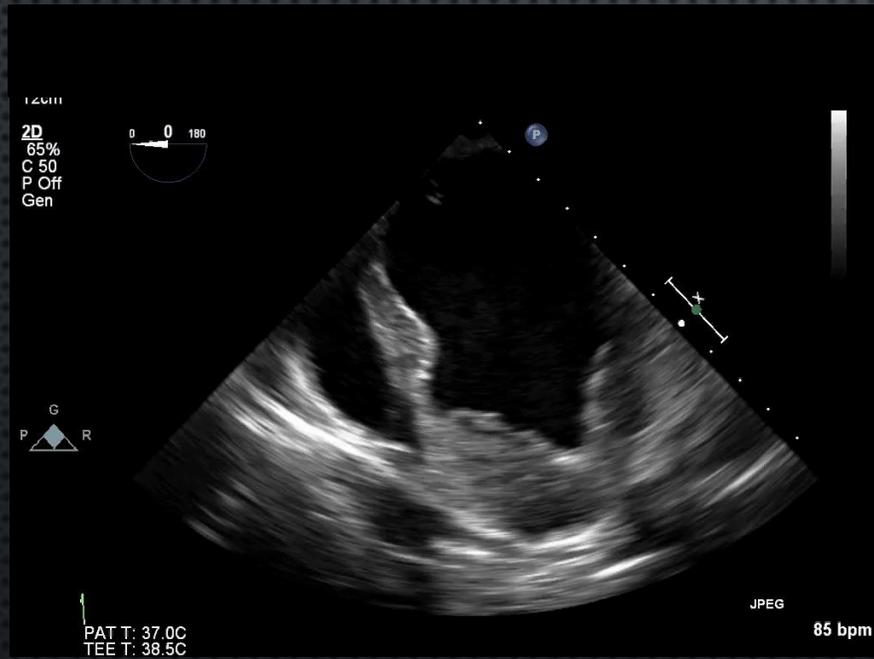
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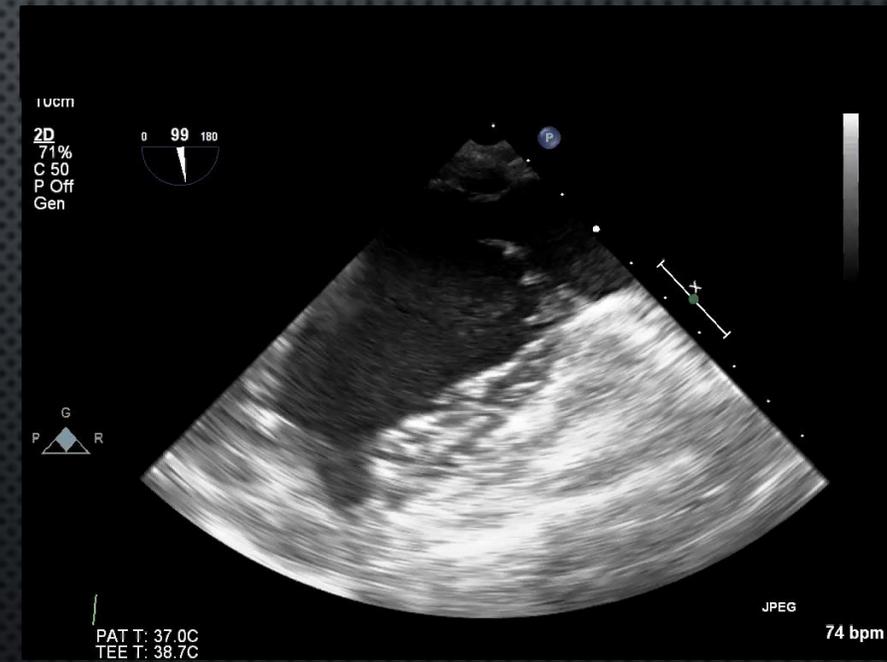
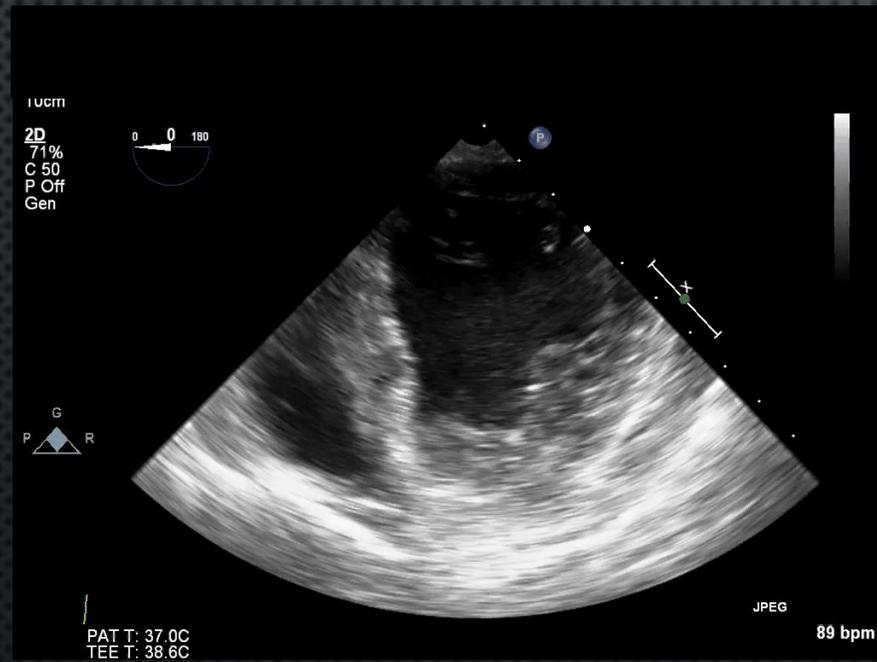
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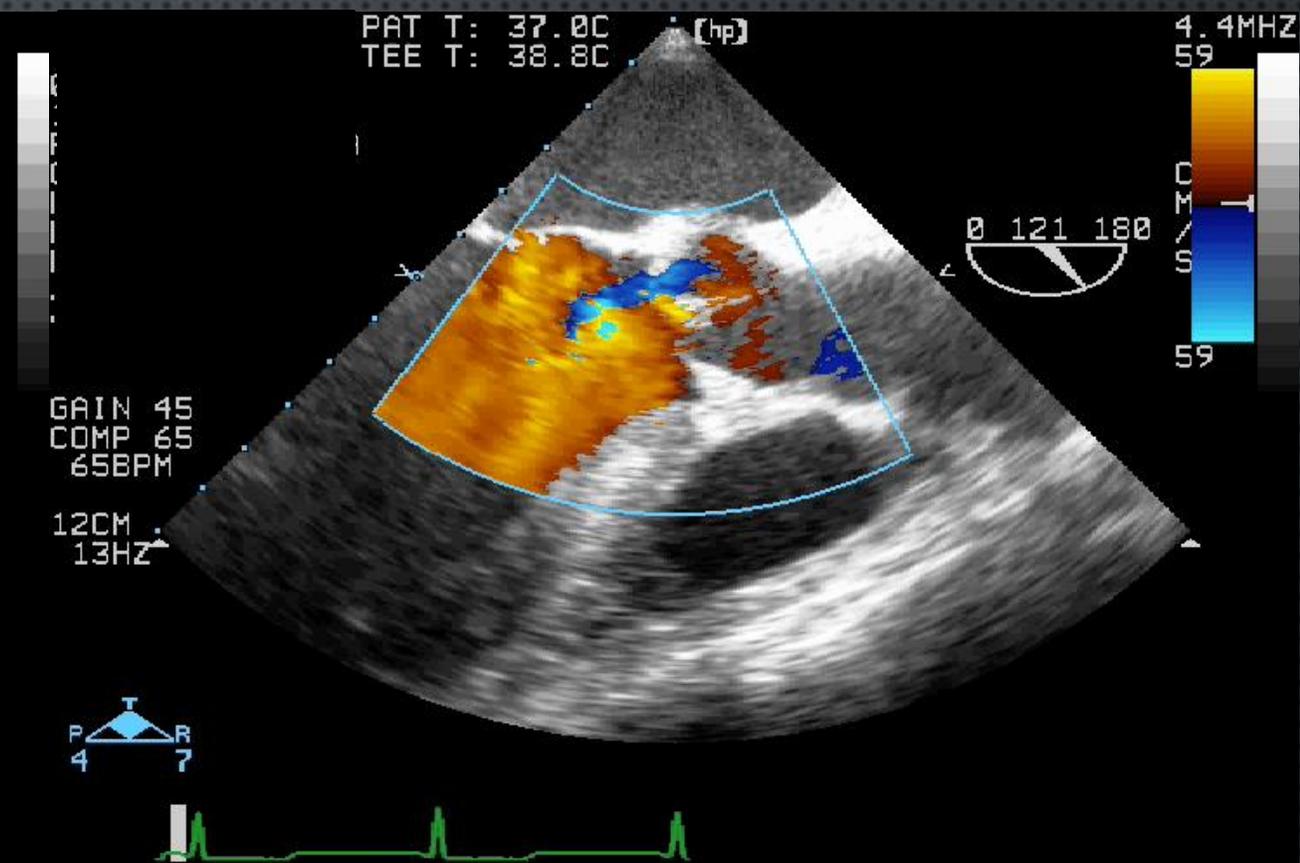
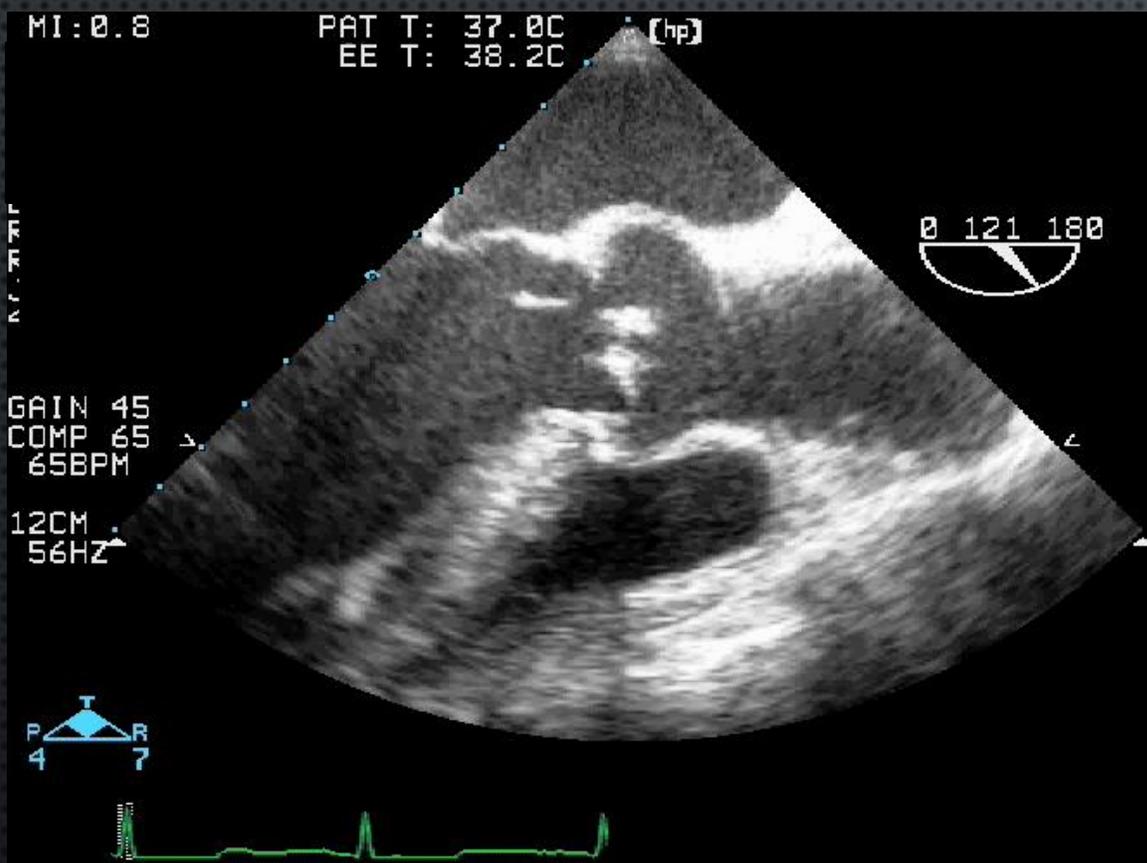
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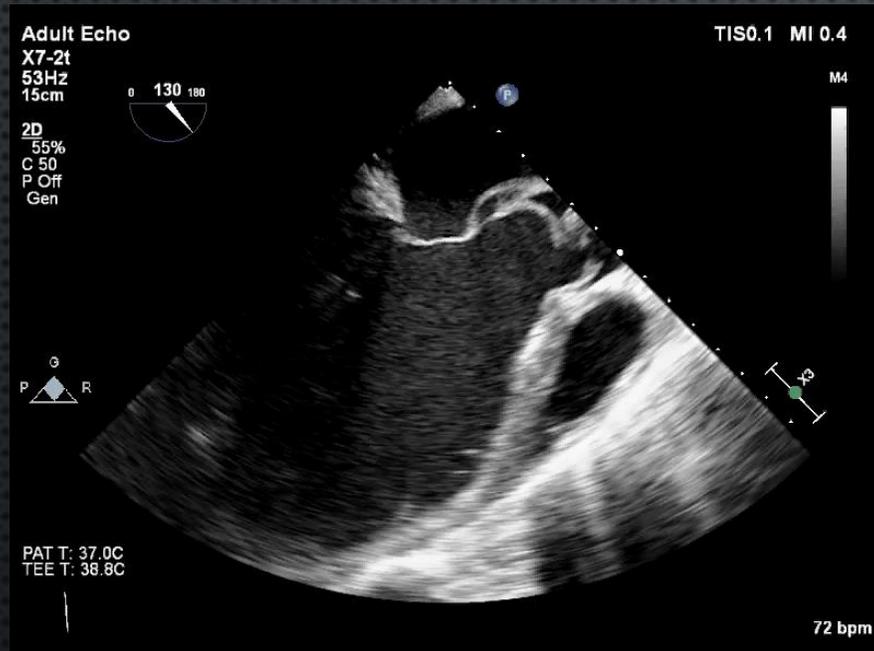
OVERVIEW

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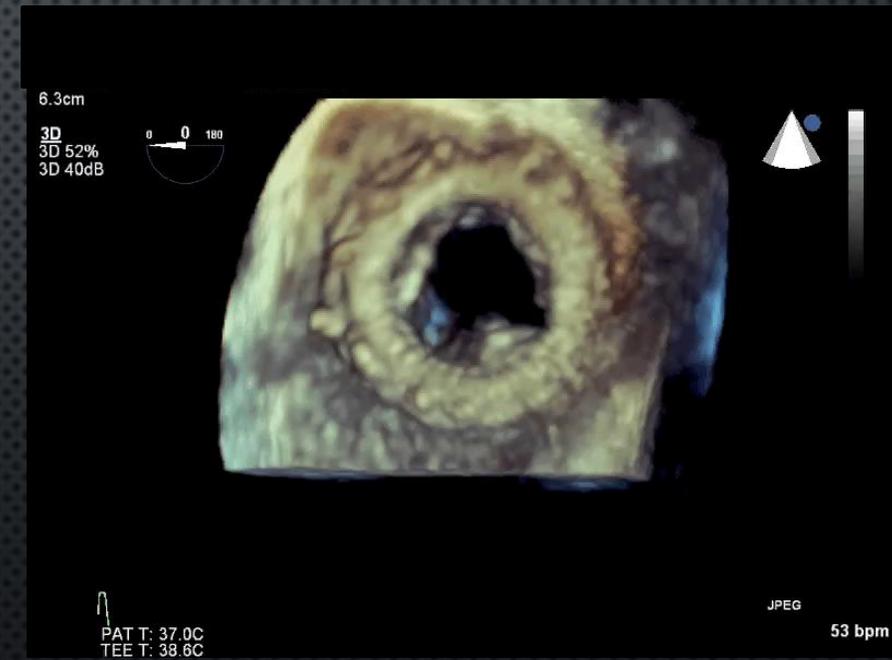
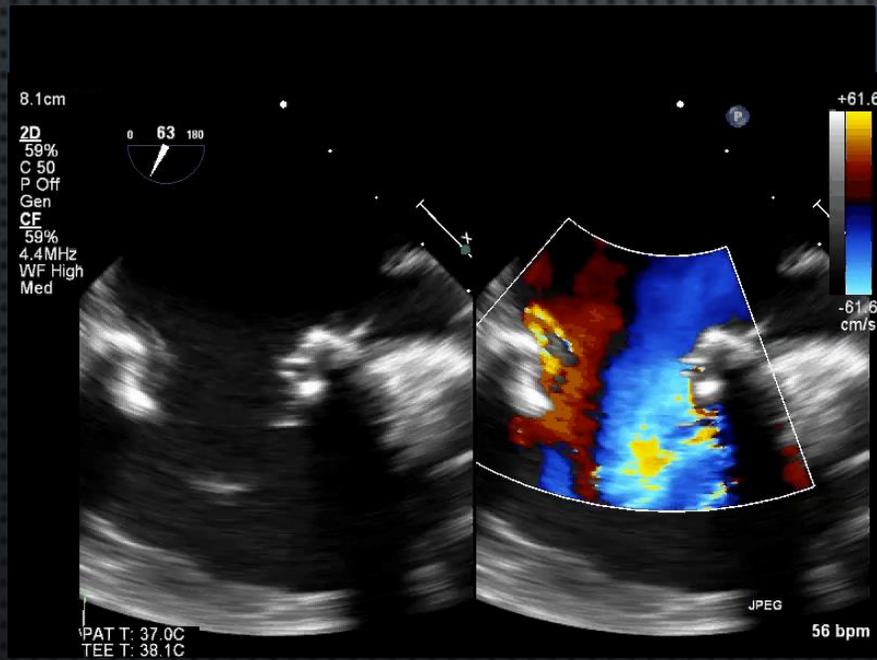
OVERVIEW

NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS



OVERVIEW

NORMAL STRUCTURES, THROMBI, ENDOCARDITIS, TUMORS



DIFFERENTIATE
THROMBI, ENDOCARDITIS, TUMORS

DIFFERENTIATE THROMBI, ENDOCARDITIS, TUMORS

	Thrombi	Vegetation	Tumor
Location			
Shape			
Echogenicity			
Mobile			
History			

DIFFERENTIATE THROMBI, ENDOCARDITIS, TUMORS

	Thrombi	Vegetation	Tumor
Location	LAA, LV, Foreign material	Valves, Foreign material	Anywhere
Shape			
Echogenicity			
Mobile			
History			

DIFFERENTIATE THROMBI, ENDOCARDITIS, TUMORS

	Thrombi	Vegetation	Tumor
Location	LAA, LV, Foreign material	Valves, Foreign material	Anywhere
Shape	Spheroid, Laminar	Irregular	Varied shapes
Echogenicity			
Mobile			
History			

DIFFERENTIATE THROMBI, ENDOCARDITIS, TUMORS

	Thrombi	Vegetation	Tumor
Location	LAA, LV, Foreign material	Valves, Foreign material	Anywhere
Shape	Spheroid, Laminar	Irregular	Varied shapes
Echogenicity	Med to high echogenicity	Med to high echogenicity	Variable
Mobile			
History			

DIFFERENTIATE THROMBI, ENDOCARDITIS, TUMORS

	Thrombi	Vegetation	Tumor
Location	LAA, LV, Foreign material	Valves, Foreign material	Anywhere
Shape	Spheroid, Laminar	Irregular	Varied shapes
Echogenicity	Med to high echogenicity	Med to high echogenicity	Variable
Mobile	Mobile or not	Independently mobile	Mobile or not
History			

DIFFERENTIATE THROMBI, ENDOCARDITIS, TUMORS

	Thrombi	Vegetation	Tumor
Location	LAA, LV, Foreign material	Valves, Foreign material	Anywhere
Shape	Spheroid, Laminar	Irregular	Varied shapes
Echogenicity	Med to high echogenicity	Med to high echogenicity	Variable
Mobile	Mobile or not	Independently mobile	Mobile or not
History	AF, MS, MI, Cancer	Fever, Endocarditis history	Asymptomatic, Dyspnea, Stroke, Cancer history

TUMOR INCIDENCE AND CLASSIFICATION

INCIDENCE AND CLASSIFICATION

1% OF AUTOPSIES

- PRIMARY (0.03-0.05%)
 - BENIGN (75%)
 - MYXOMA
 - PAPILLARY FIBROELASTOMA
 - LIPOMAS
 - MYO-FIBROMA
 - MALIGNANT (25%)
 - SARCOMAS
- METASTATIC OR SECONDARY (1%)
 - 20-40X MORE THAN PRIMARY
 - 20% OF CANCERS HEART METASTASIS
 - MELANOMAS 50% CARDIAC METASTASIS

INCIDENCE AND CLASSIFICATION

1% OF AUTOPSIES

- WHICH TUMORS TYPICALLY PRESENT IN THE OPERATING ROOM?

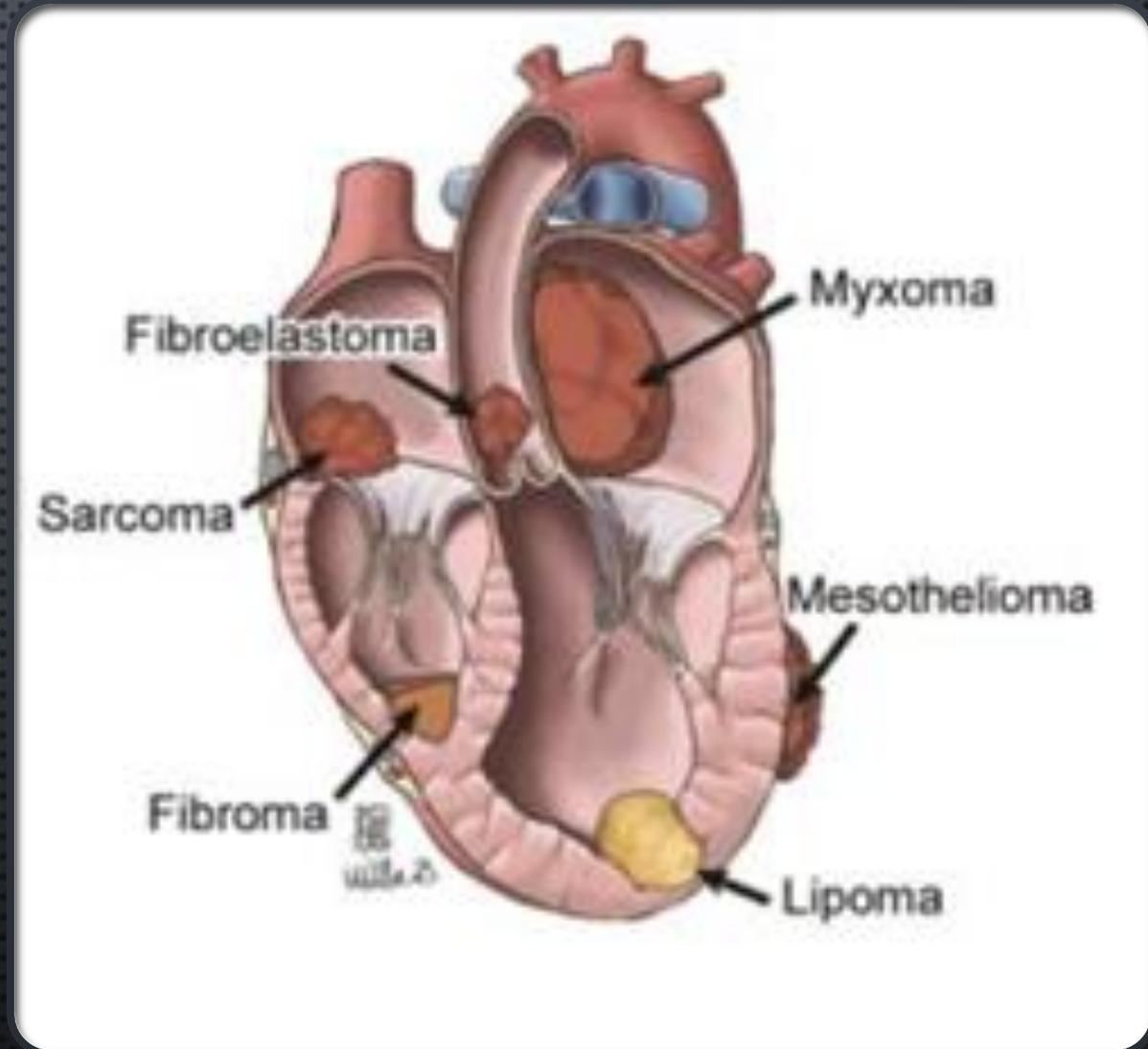
INCIDENCE AND CLASSIFICATION, 1% OF AUTOPSIES

- WHICH TUMORS TYPICALLY PRESENT IN THE OPERATING ROOM?
 - CURATIVE VERSUS PALLIATIVE TREATMENT
 - INCIDENTAL

TEE FOR TUMORS

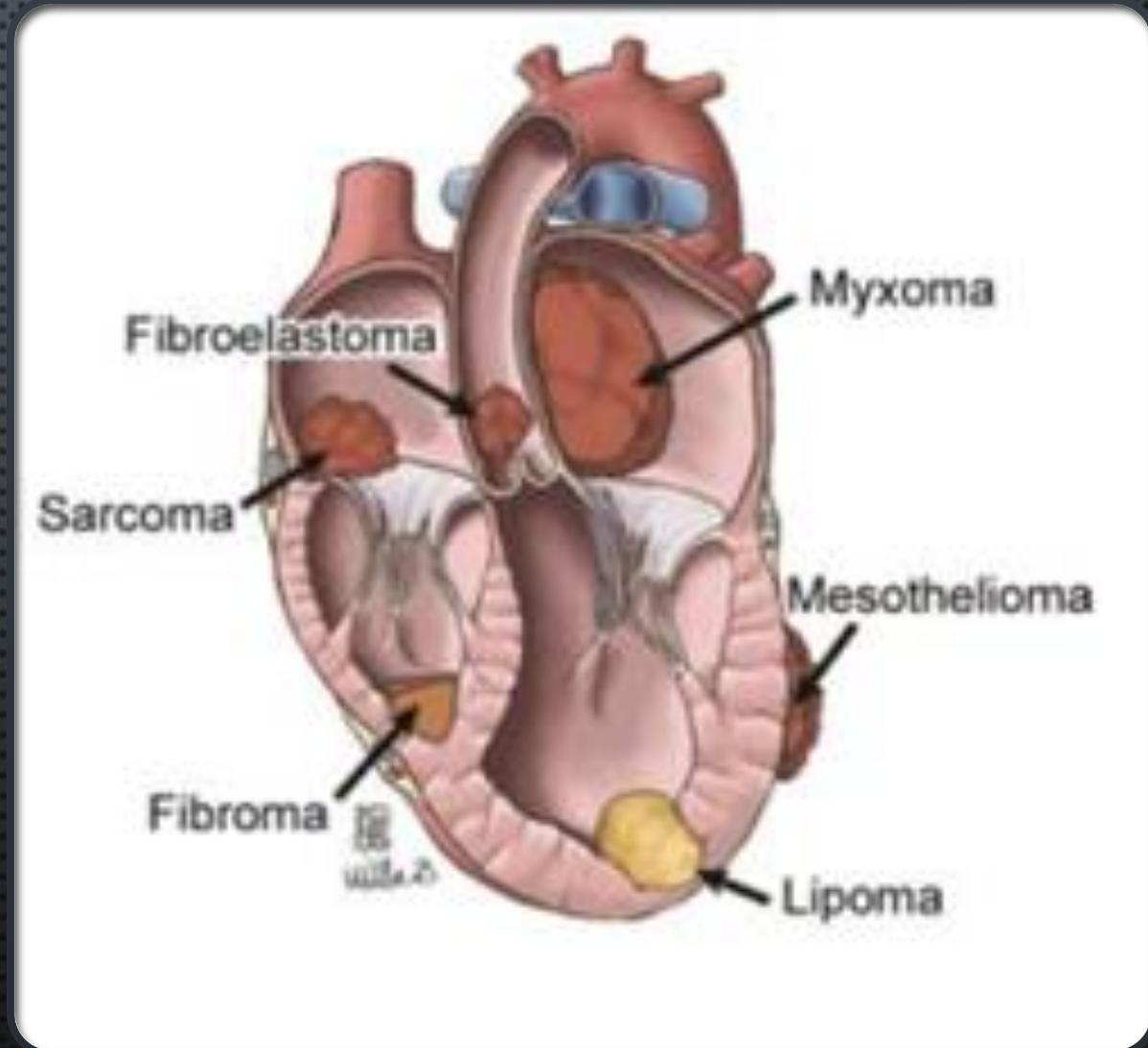
TEE FOR TUMORS

- LOCATION



TEE FOR TUMORS

- LOCATION
- SIZE
- SHAPE
- PEDUNCULATED OR SESSILE
- MOBILE
- ECHOGENICITY/VASCULARITY
- HEMODYNAMIC EFFECTS
- SOLITARY OR MULTIPLE

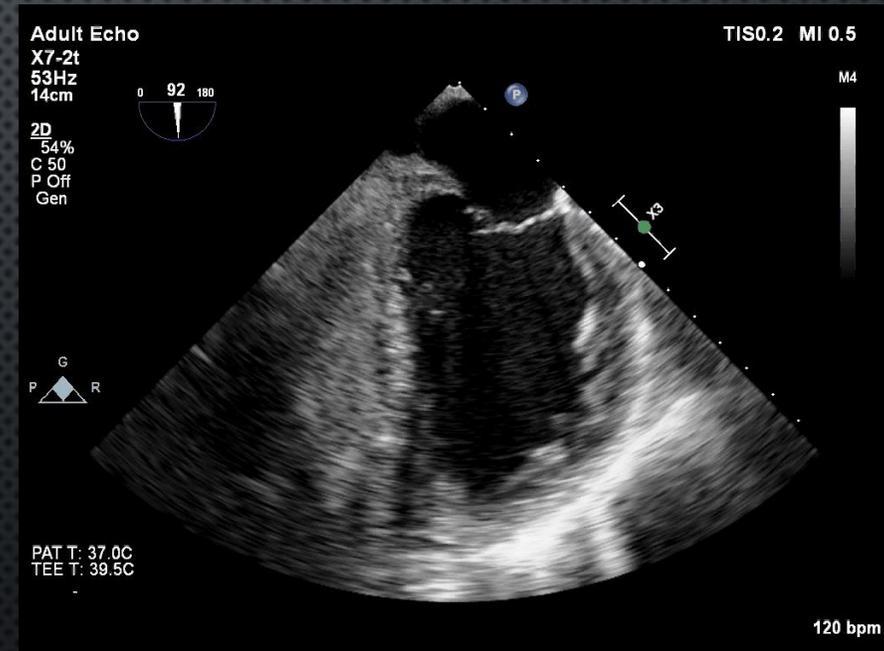
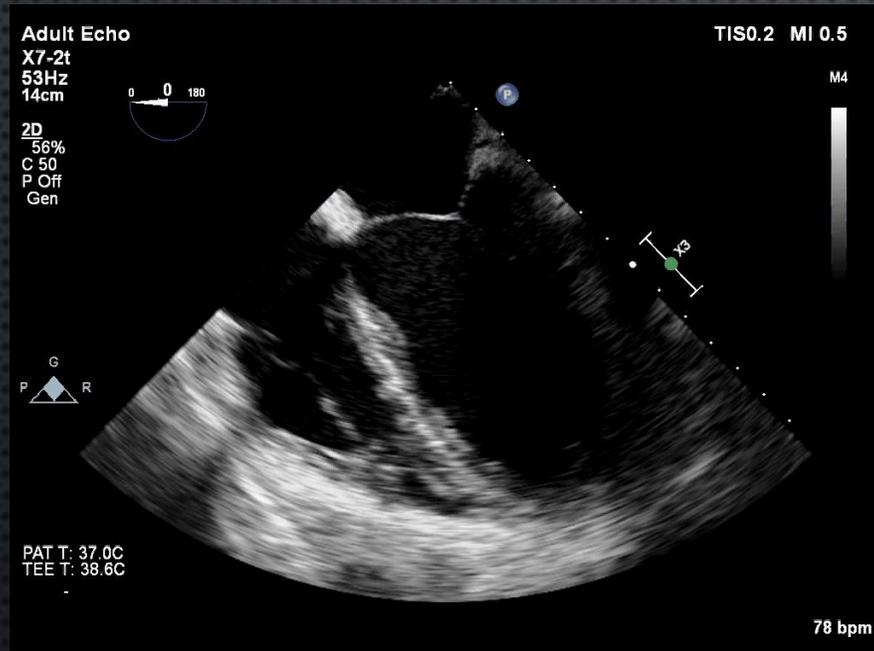


CASE 1

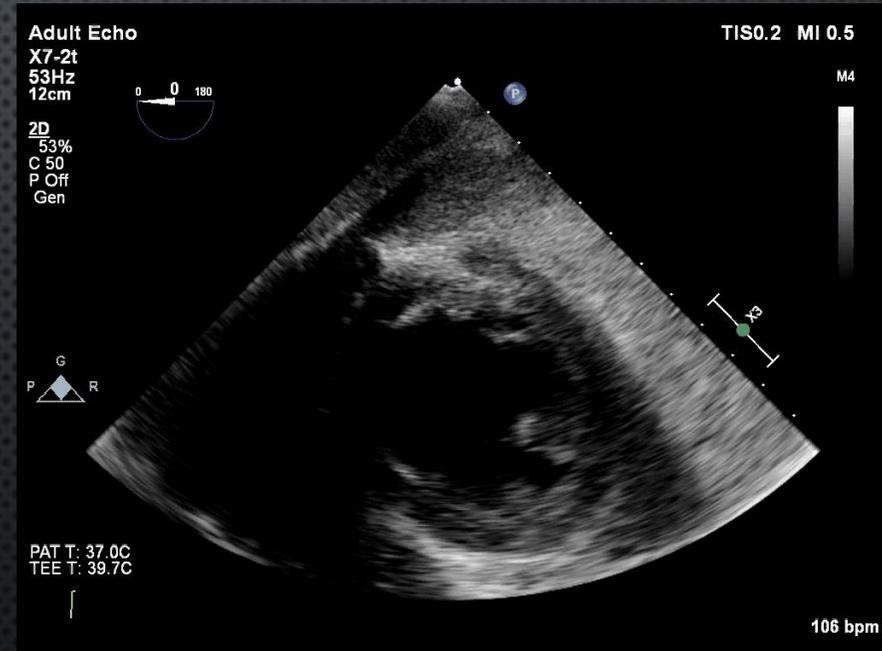
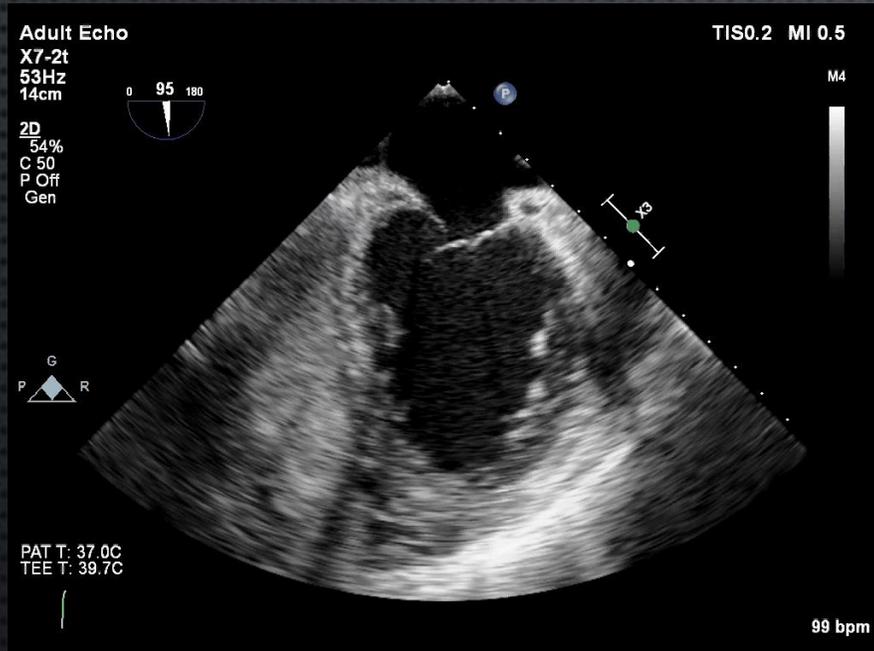
- 36A MALE
- LARGE CARDIAC SILHOUETTE ON CHEST X-RAY
 - INCIDENTAL FINDING
- PERICARDIAL EFFUSION
- PLANNED SURGERY
 - CARDIAC TUMOR RESECTION

CASE 1

PRE CPB

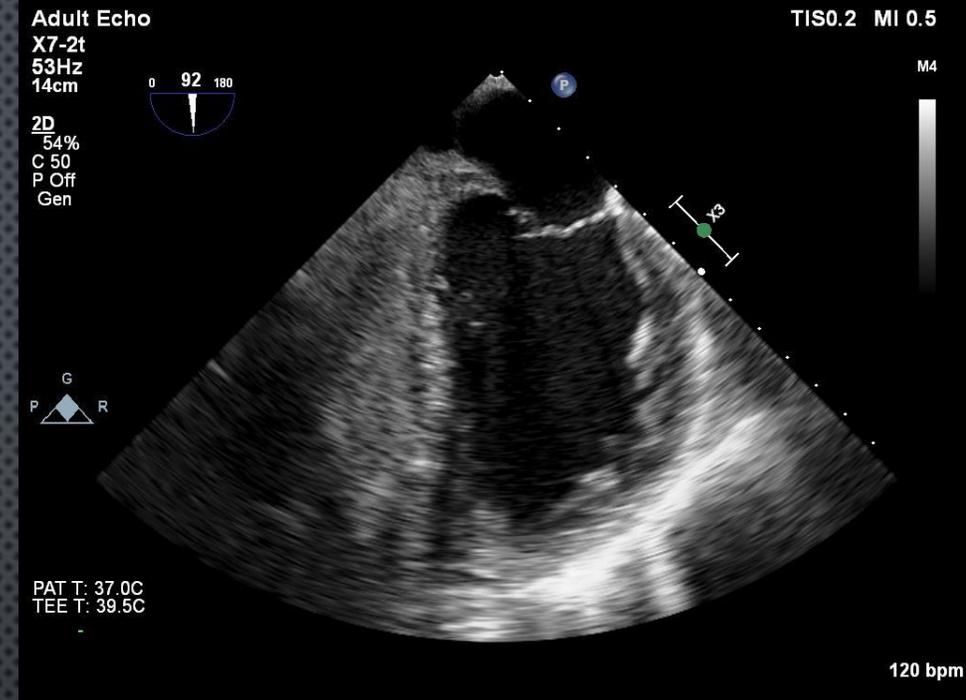


CASE 1 PRE CPB,

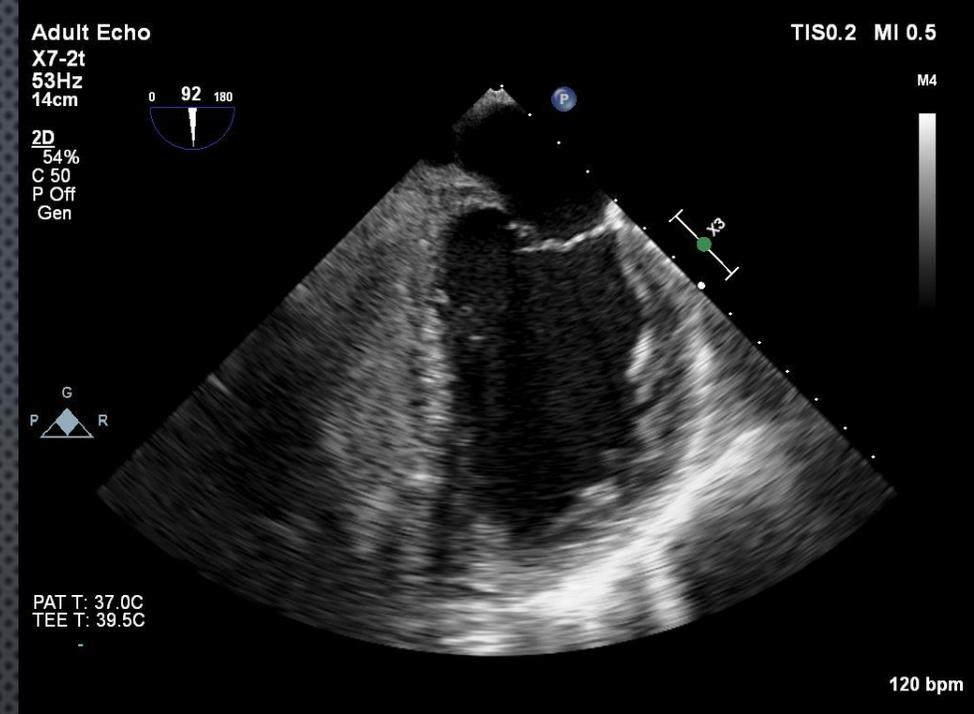


CASE 1 DIFF DX

- LOCALIZED EFFUSION
- INFECTIVE PERICARDITIS
- CONSTRICTIVE PERICARDITIS
- TUMOR
 - MELANOMA, LUNG, BREAST, ESOPHAGEAL, MESOTHELIOMA



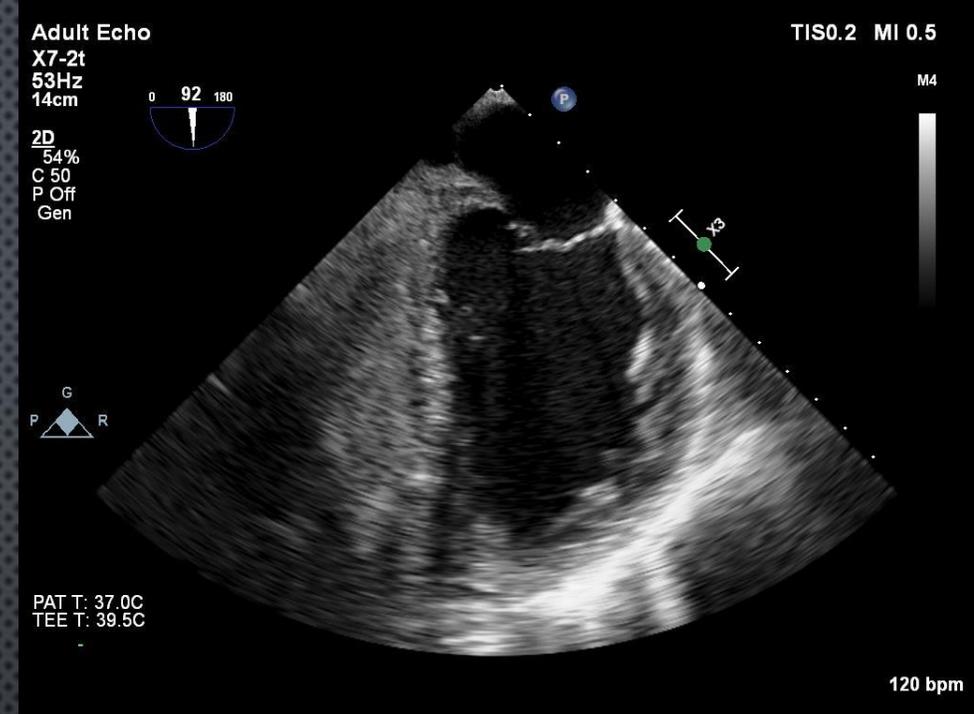
CASE 1 MORE HISTORY



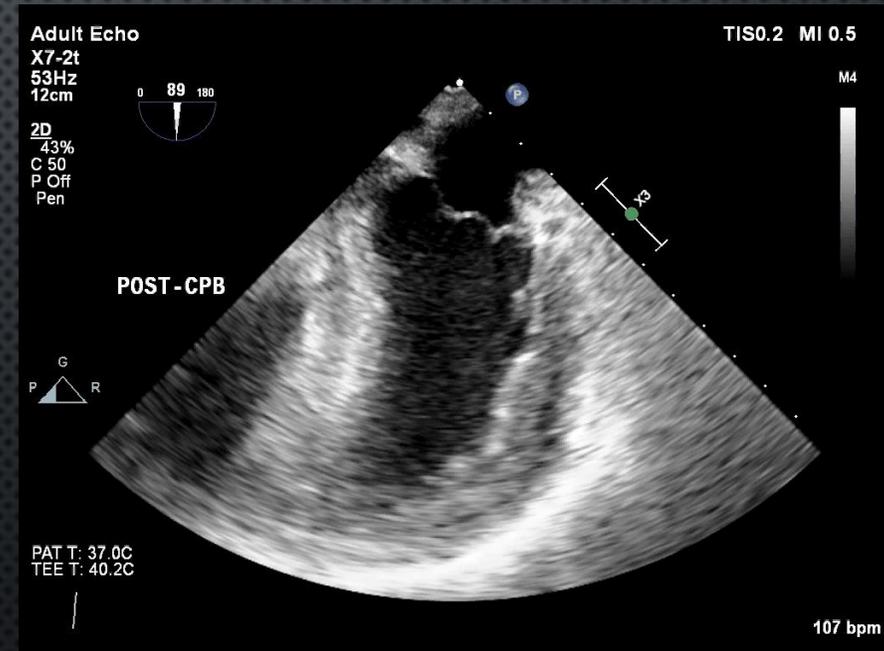
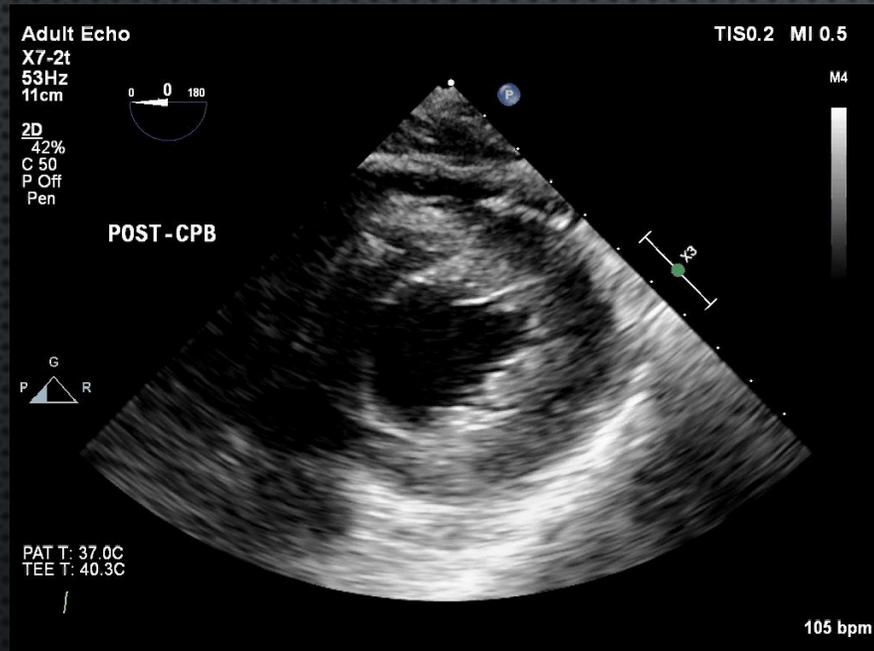
- PREVIOUSLY TREATED FOR MYXOID LIPOSARCOMA LEFT BUTTOCK
 - SURGERY AND RADIOTHERAPY 5 YEARS AGO

CASE 1 OPERATIVE NOTE

- RESECTION LEFT VENTRICULAR TUMOR
- PARTIAL LEFT PERICARDIECTOMY

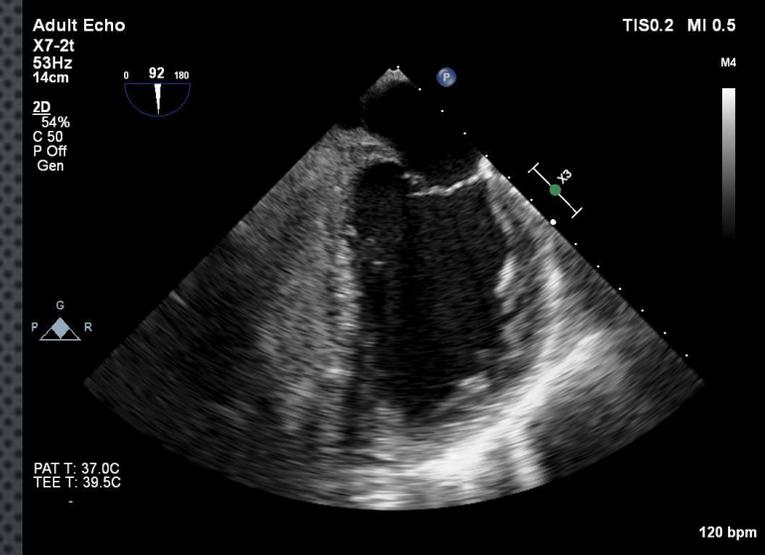


CASE 1, POST CPB



CASE 1

PERICARDIAL TUMORS



- PRIMARY

- BENIGN

- LIPOMA, TERATOMA, FIBROMA, HEMANGIOMA

- MALIGNANT

- MESOTHELIOMA (50%), SARCOMA, LYMPHOMA

- METASTATIC

- LUNG, BREAST, MELANOMA, LEUKEMIA, LYMPHOMA

- MOST COMMON

- ESOPHAGEAL, **SARCOMAS**

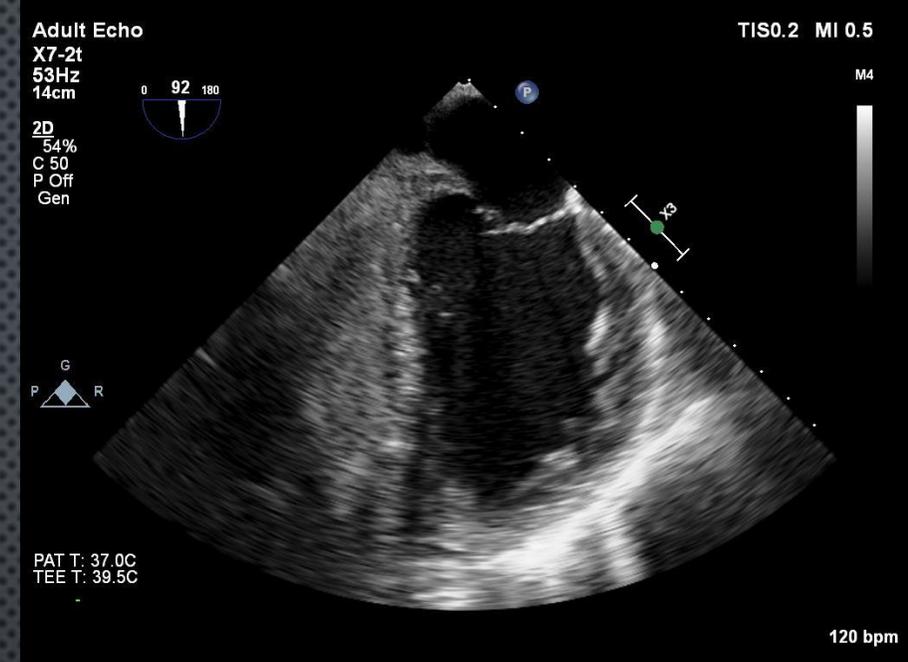
- RARE

CASE 1

METASTATIC PERICARDIAL TUMOR

CLINICAL PRESENTATION

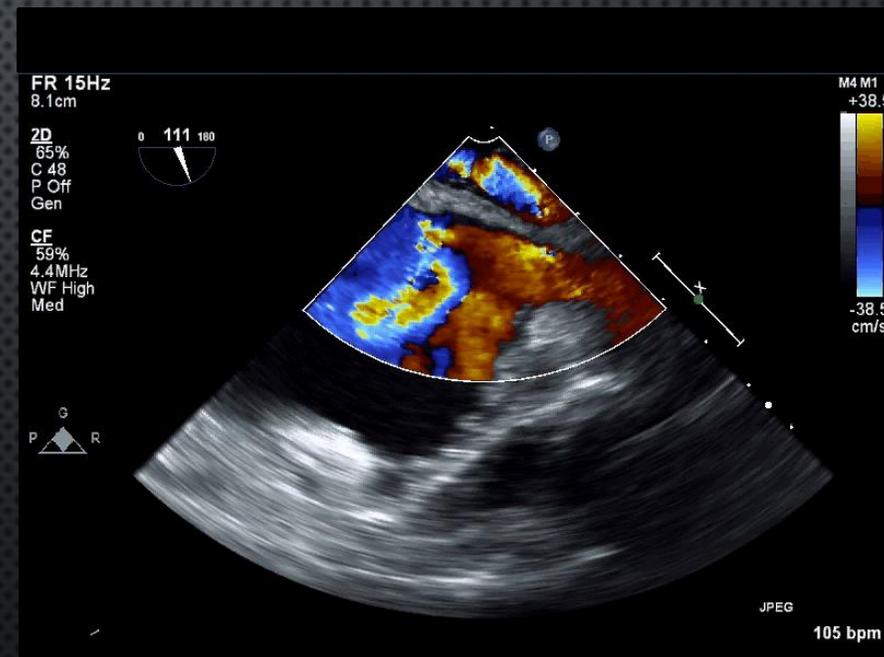
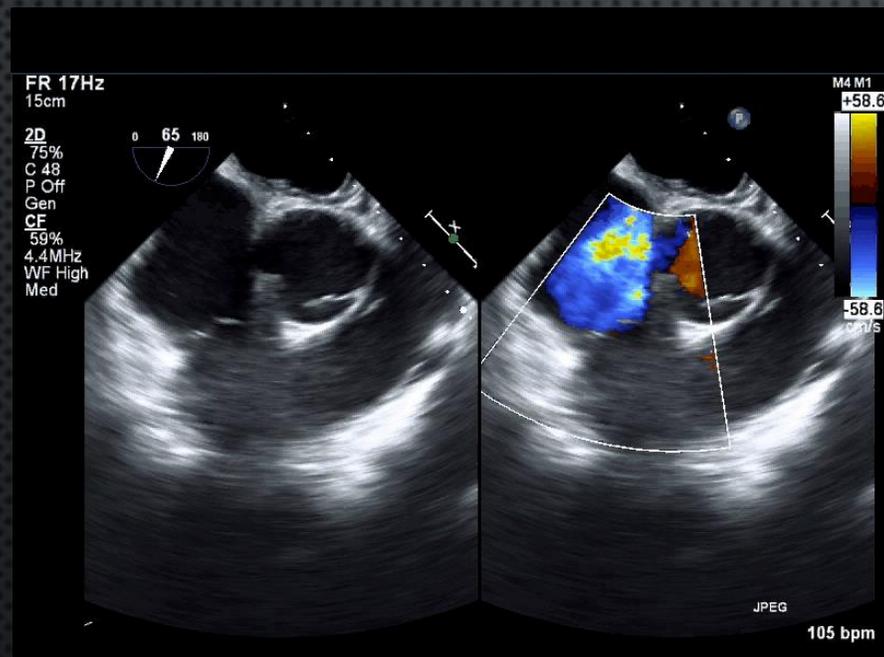
- ASYMPTOMATIC
- CHEST PAIN, DYSPNEA, PALPITATIONS, SYNCOPE
- PERICARDIAL EFFUSION
- PERICARDITIS
- ATRIAL DYSRHYTHMIAS



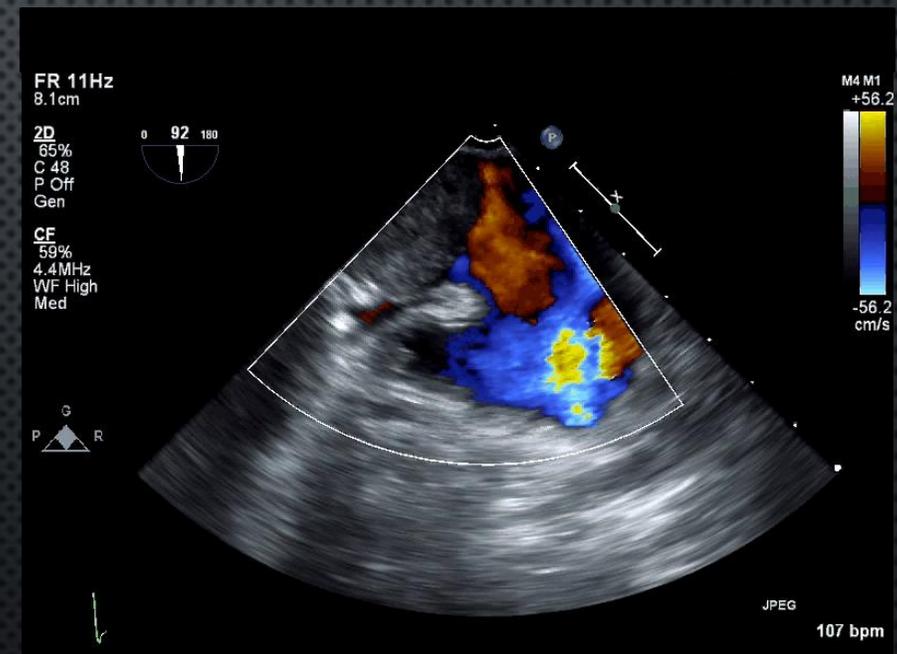
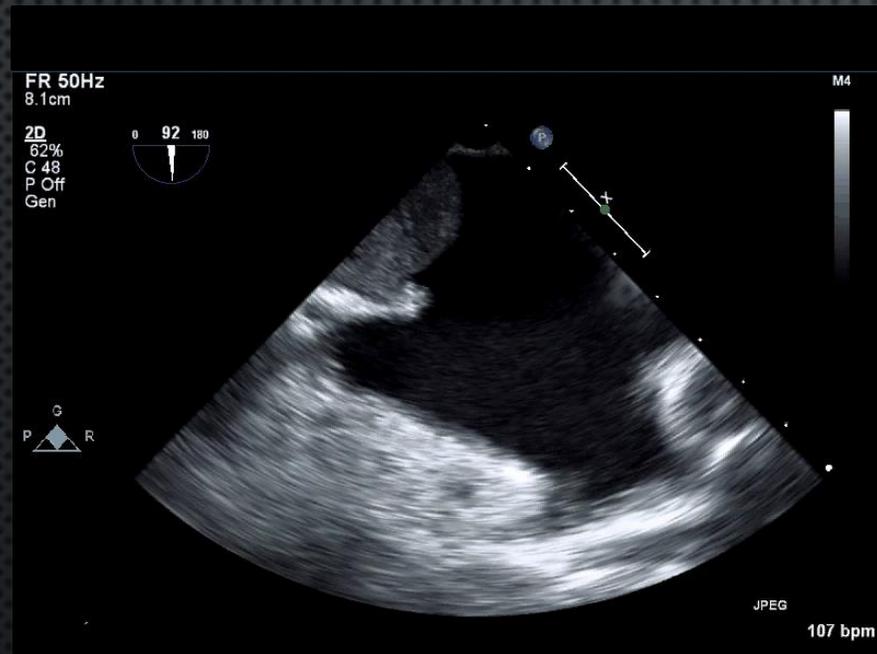
CASE 2

- 23A MALE
- ACUTE PRESENTATION WITH BILATERAL LEG SWELLING AND ABDOMINAL MASS
- PLANNED SURGERY
 - ABDOMINAL AND CARDIAC SURGERY

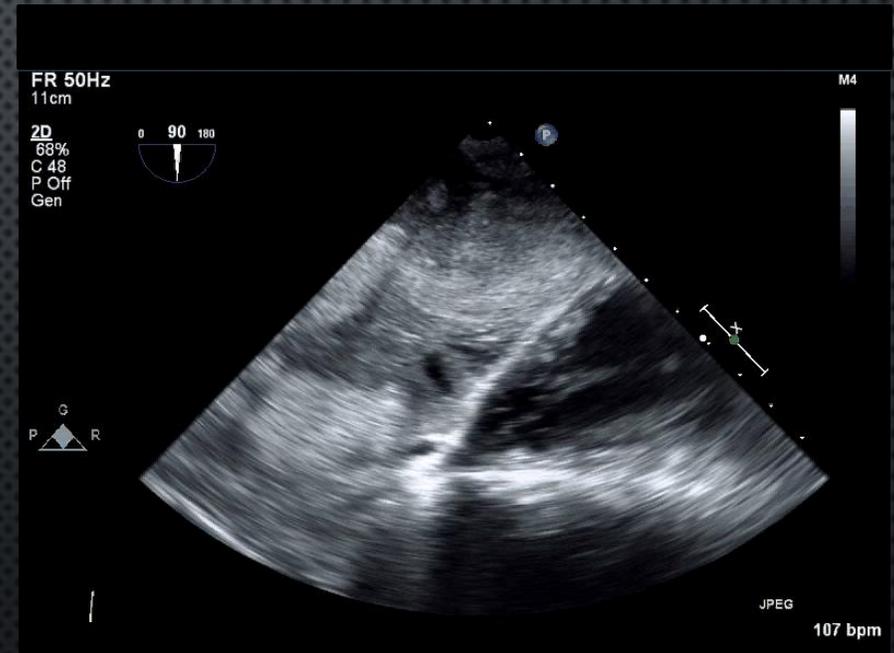
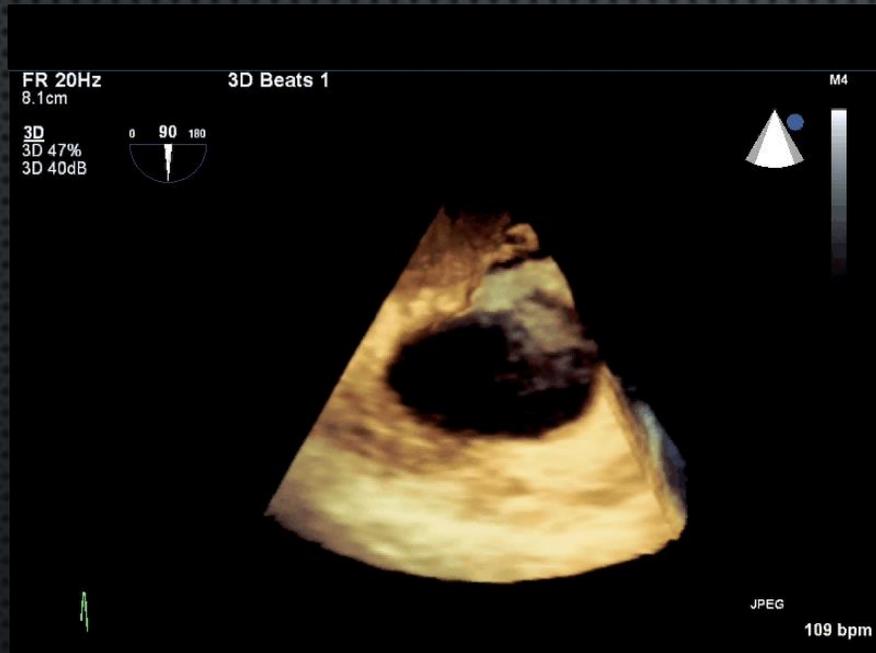
CASE 2



CASE 2

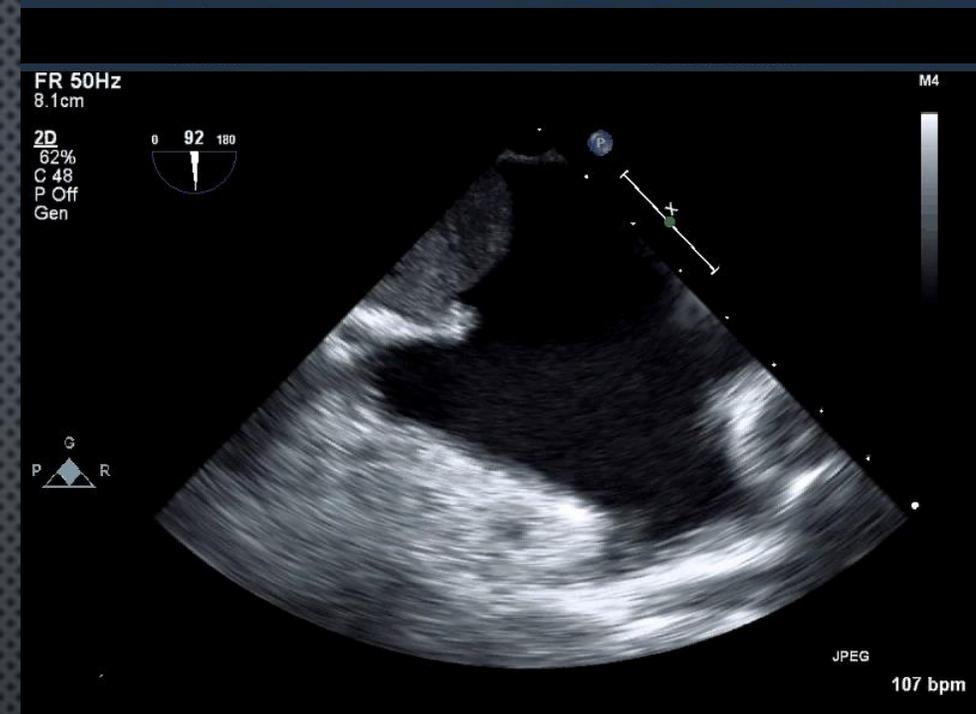


CASE 2,



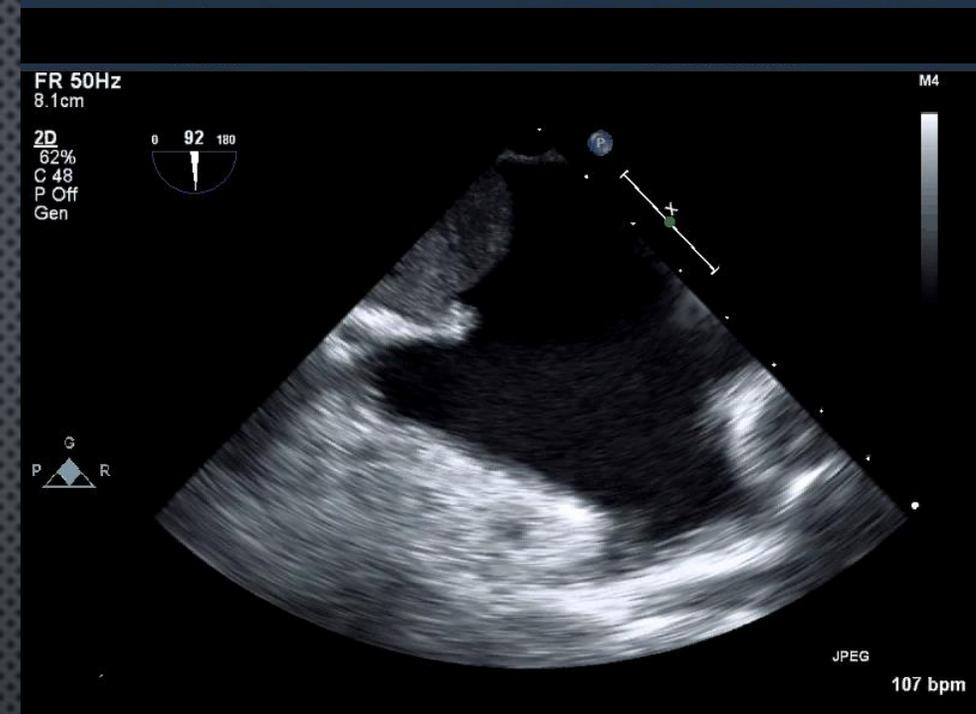
CASE 2 DIFF DX

- RENAL CELL CARCINOMA
- THROMBUS



CASE 2 MORE HISTORY

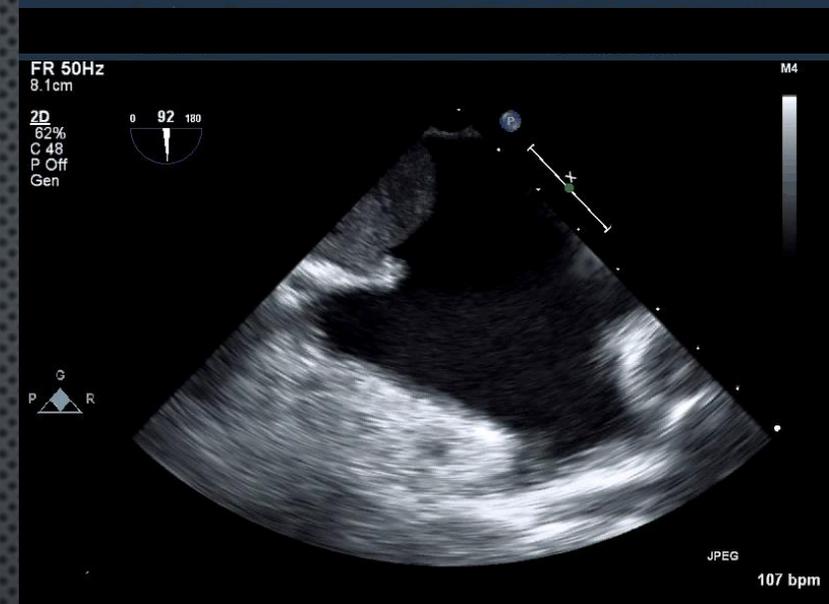
- LARGE LEFT SIDED HEPATIC MASS
- THROMBUS IN HEPATIC VEIN, IVC EXTENDING INTO RA
- 100LB WEIGHT LOSS IN 1 YEAR



CASE 2

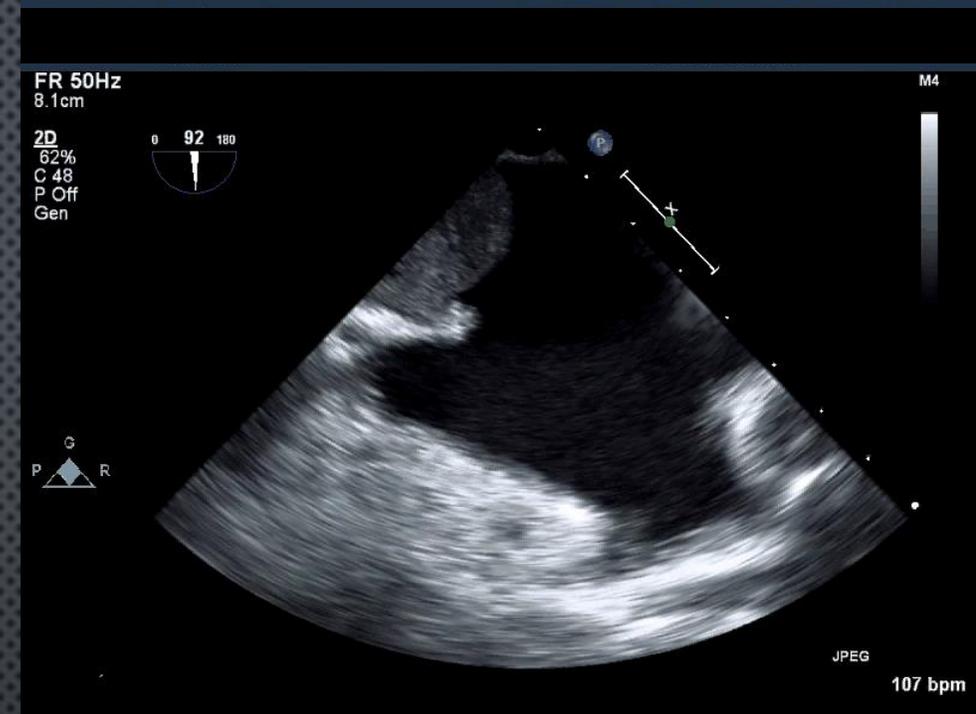
SURGICAL NOTES

- EXTENDED LEFT HEPATECTOMY WITH VENO-VENO BYPASS
- SUPRA-HEPATIC CAVAL TUMOR THROMBUS, THROMBECTOMY
- SUPRAHEPATIC, VENA CAVA RECONSTRUCTION



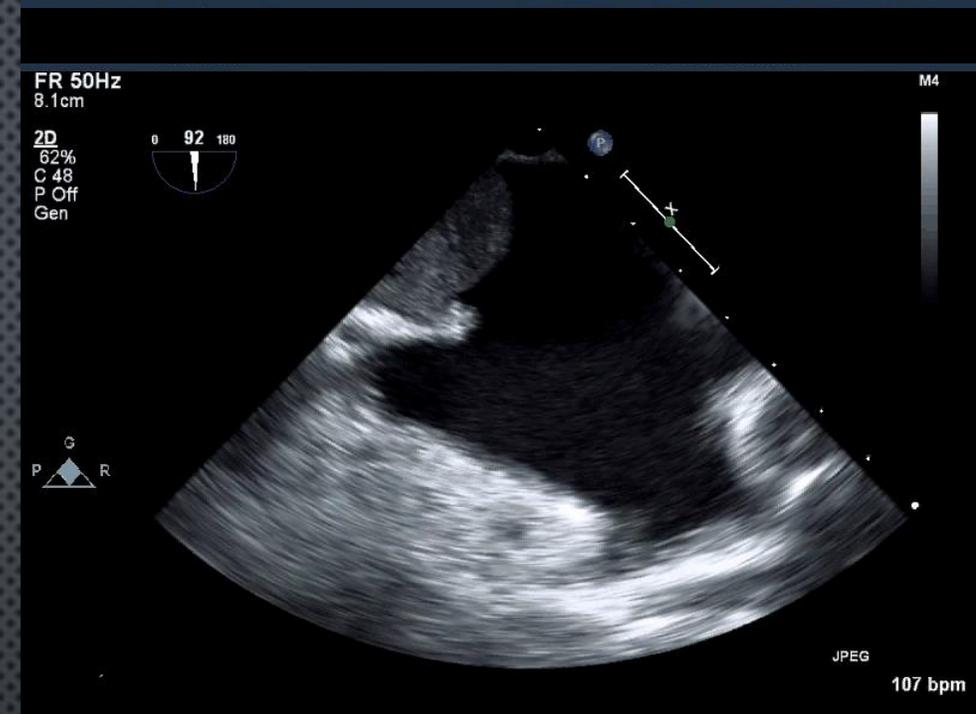
CASE 2, PATHOLOGY NOTE

- HEPATOCELLULAR CARCINOMA
- SUPRA-HEPATIC CAVAL THROMBUS POSITIVE FOR TUMOR



CASE 2, IVC TUMORS

- BENIGN
 - LEIOMYOMATOSIS, MOST COMMON
- MALIGNANT
 - RENAL CELL, MOST COMMON
 - WILM'S TUMOR, LEIOMYOSARCOMA, HEPATOMA

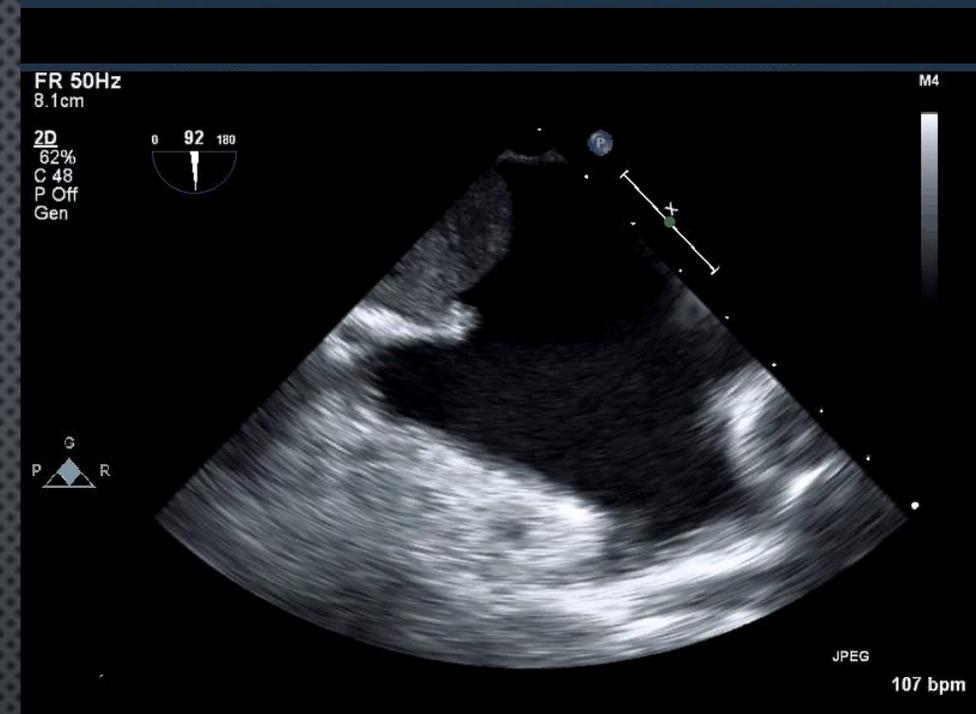


CASE 2

METASTATIC IVC TUMOR

CLINICAL PRESENTATION

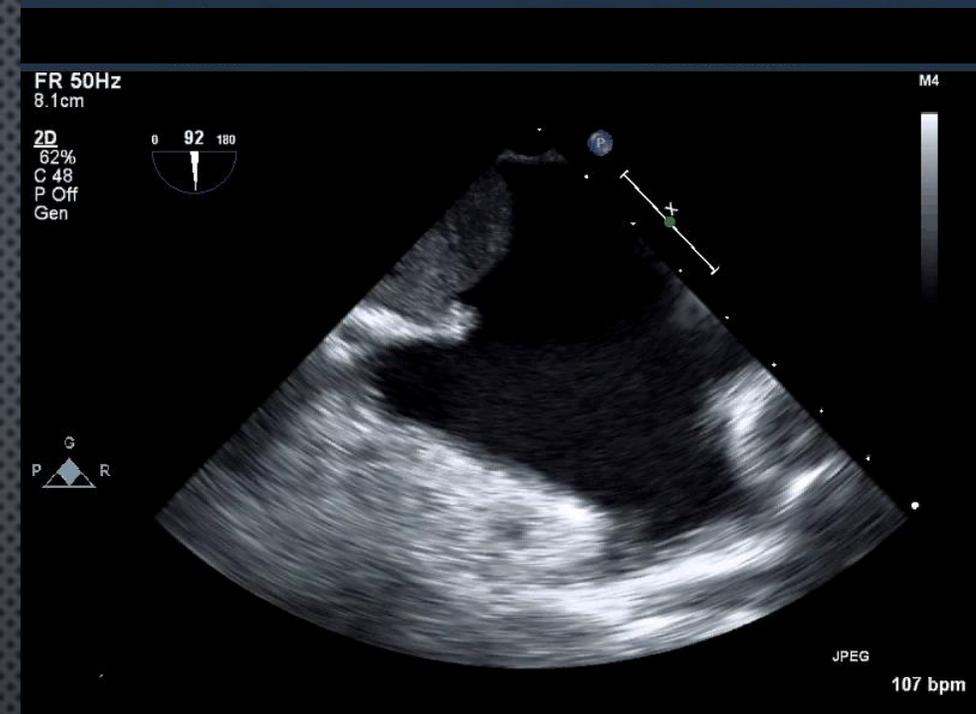
- BILATERAL LEG SWELLING
- ABDOMINAL MASS
- WEIGHT LOSS
- BUDD CHIARI SYNDROME



CASE 2

METASTATIC IVC TUMOR COMPLICATIONS

- HEMODYNAMIC DERANGEMENTS
 - OBSTRUCTIONS TO FILLING AND EMPTYING
 - TRICUSPID VALVE FUNCTIONING
- BUDD CHIARI SYNDROME
- THROMBUS
- EMBOLUS – PULMONARY AND PARADOXICAL



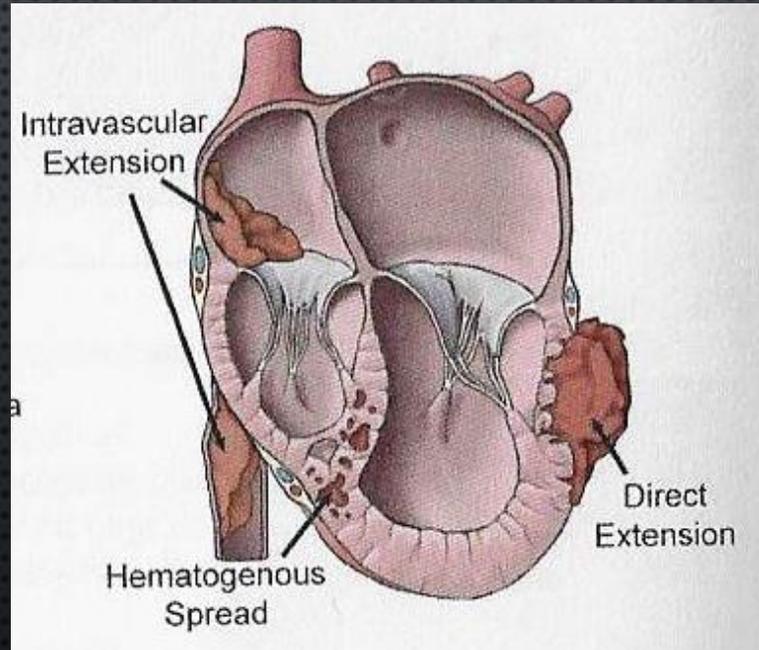
METASTATIC CARDIAC TUMORS

- SECONDARY CARDIAC TUMORS (1%)
 - 20-40X MORE THAN PRIMARY
 - 20% OF CANCERS HEART METASTASIS
 - MELANOMAS 50% CARDIAC METASTASIS AND MOST COMMON
- TYPICALLY PATIENTS WITH WIDESPREAD SYSTEMIC TUMOR DISSEMINATION

METASTATIC CARDIAC TUMORS SPREAD

Leiomyomatosis,
Renal, Hepatic

Melanoma, Lymphoma, Leukemia



Breast, Lung, Esophagus

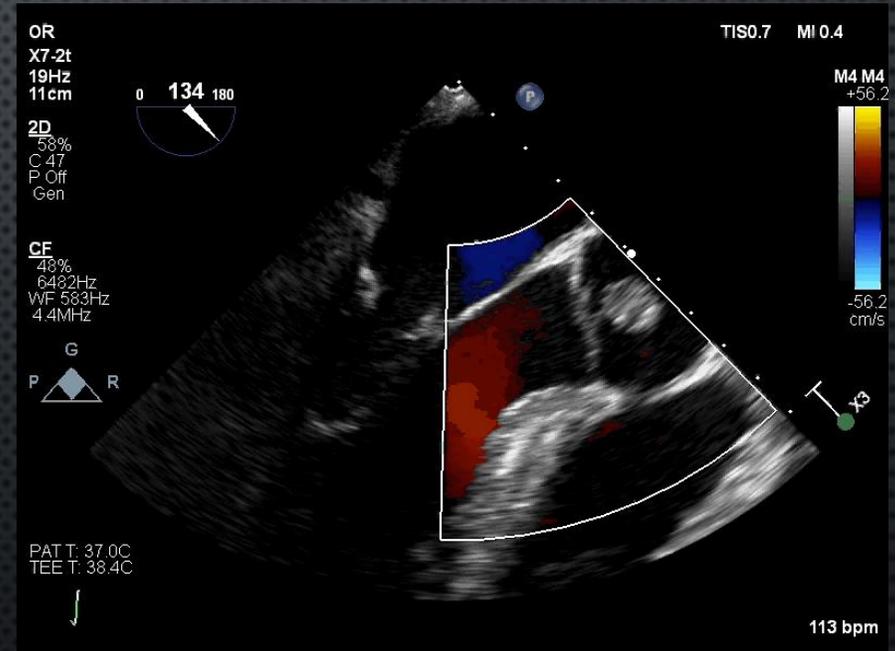
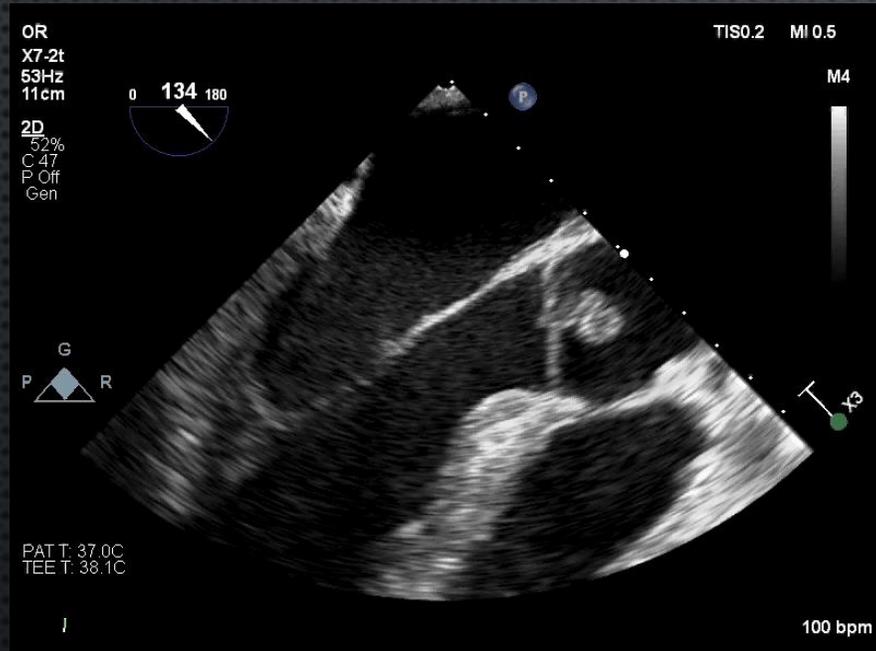
METASTATIC CARDIAC TUMORS

- PERICARDIAL INVOLVEMENT > MYOCARDIAL INVOLVEMENT
- 25% OF INTRACARDIAC TUMORS HAVE PERICARDIAL INVOLVEMENT
- PERICARDIAL EFFUSION MOST COMMON PRESENTATION

CASE 3

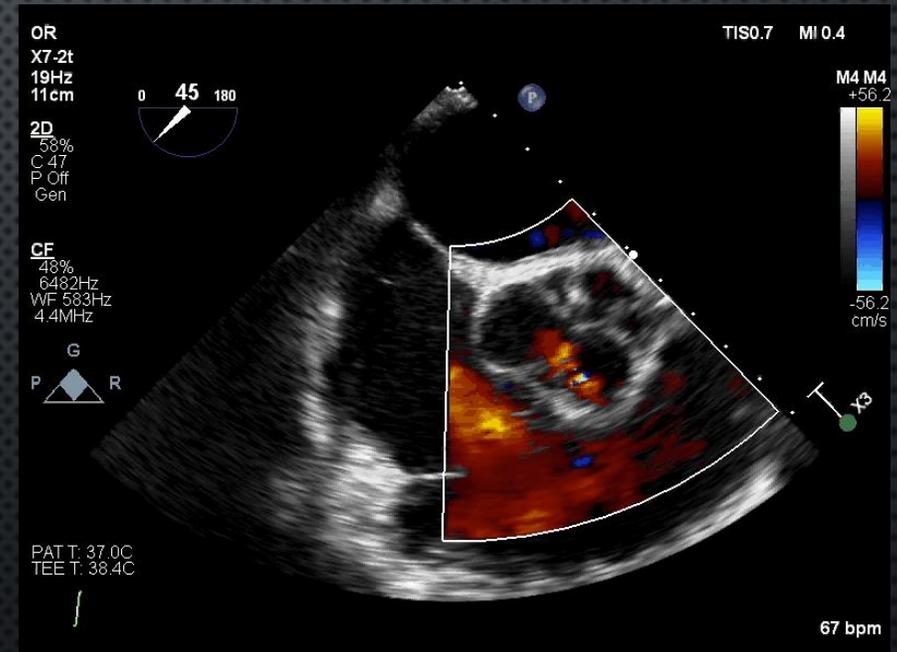
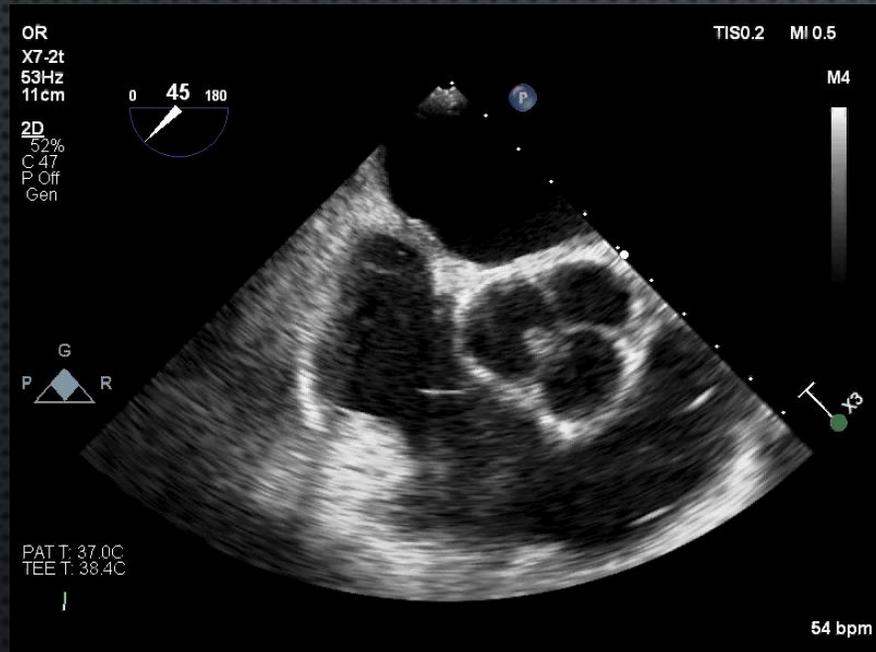
- 54A MALE
- SMOKER
- PREVIOUS STROKE
- PLANNED SURGERY
 - CARDIAC TUMOR RESECTION

CASE 3 PRE CPB

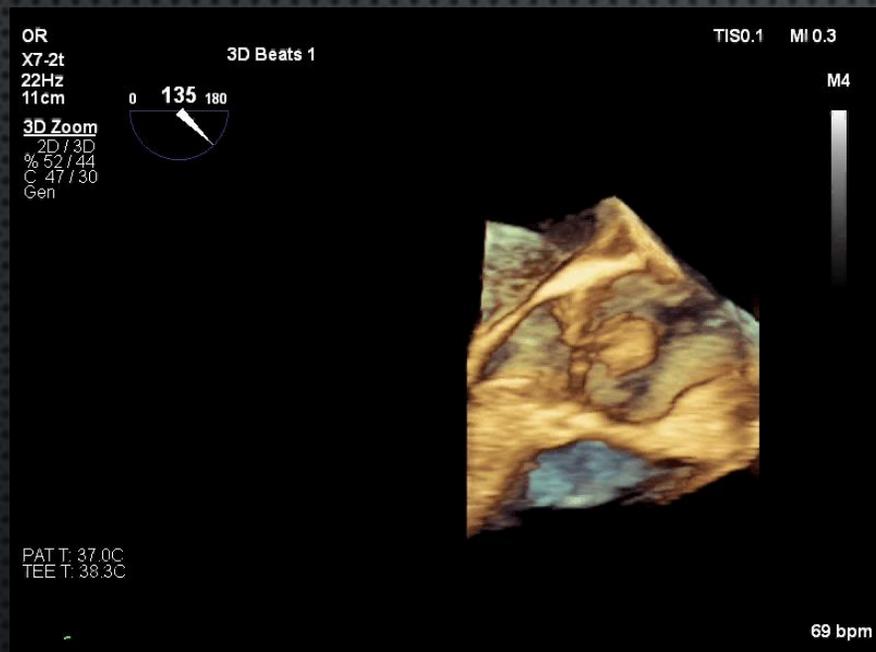


CASE 3

PRE CPB

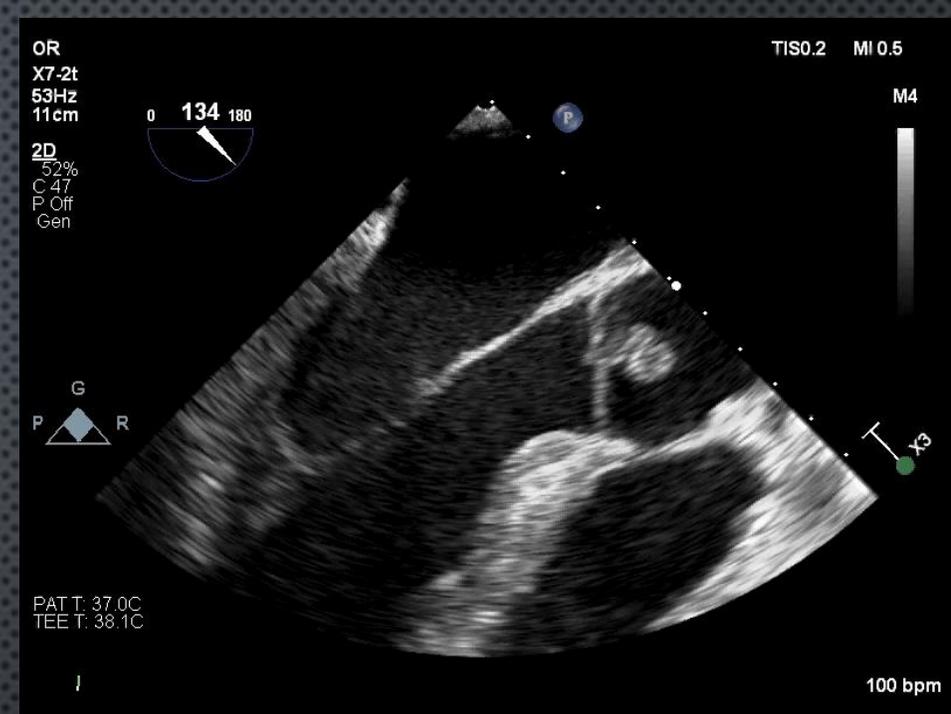


CASE 3, PRE CPB



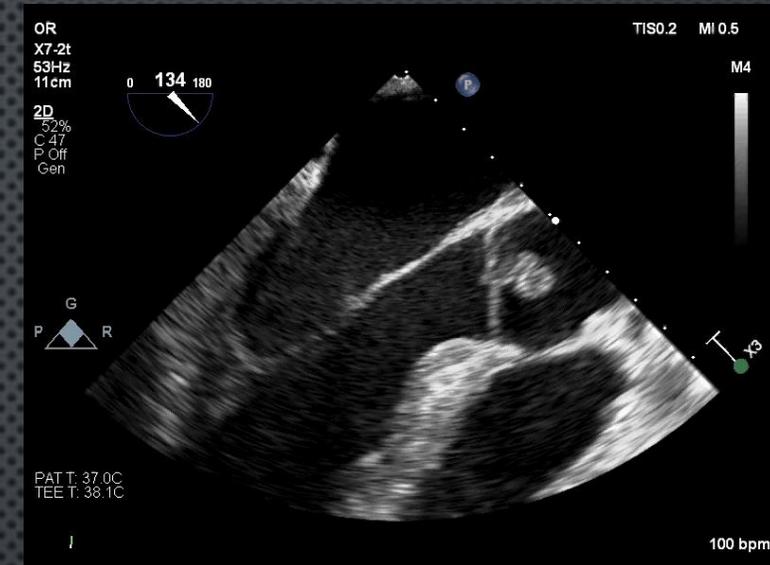
CASE 3 DIFF DX

- ENDOCARDITIS
- THROMBUS
- LAMBL'S EXCRESCENCES
- NODULES OF ARANTIUS
- TUMOR



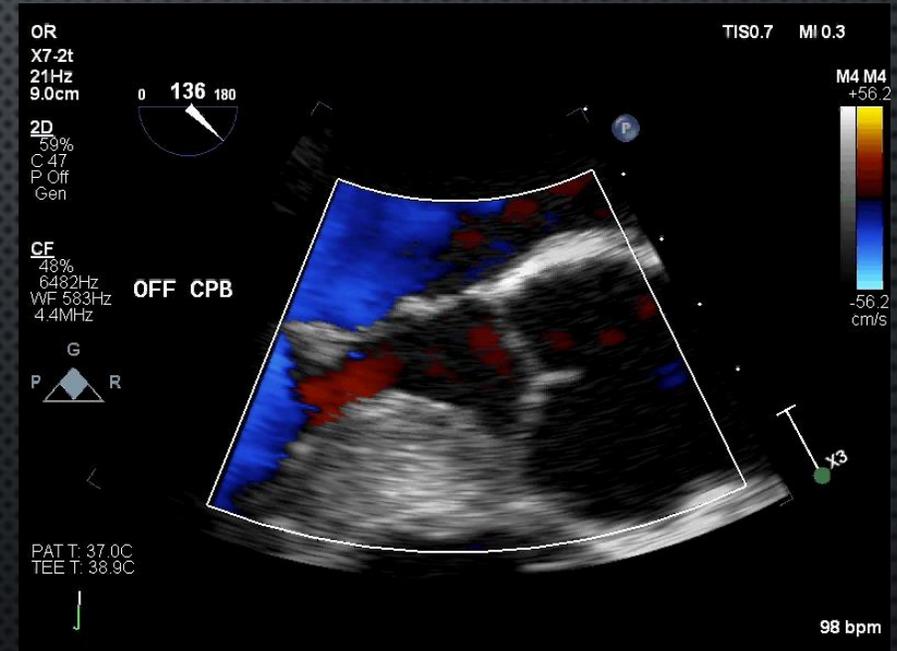
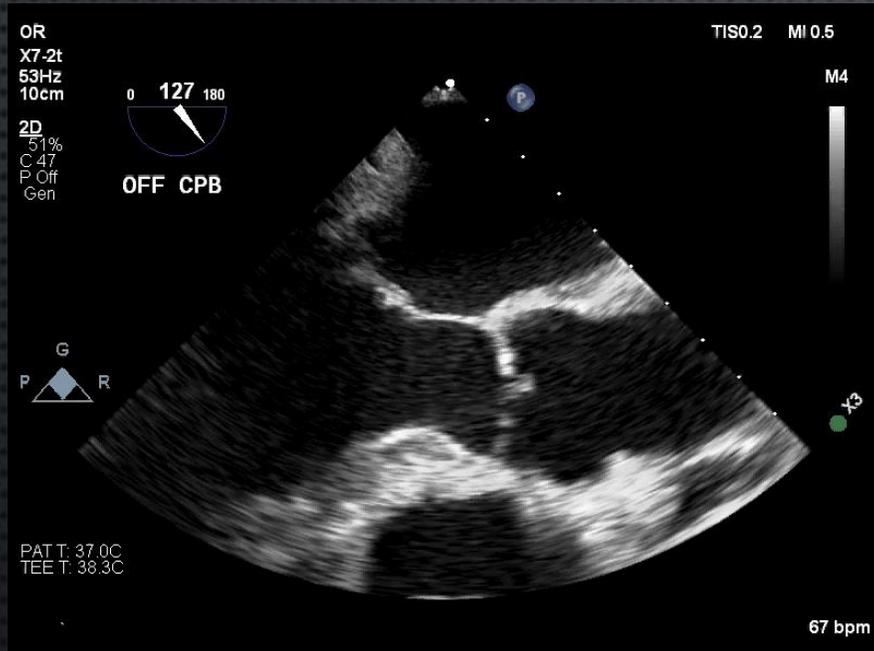
CASE 3

OPERATIVE AND PATHOLOGY NOTE



- PAPILLARY FIBROELASTOMA
- EXCISION FROM RCC

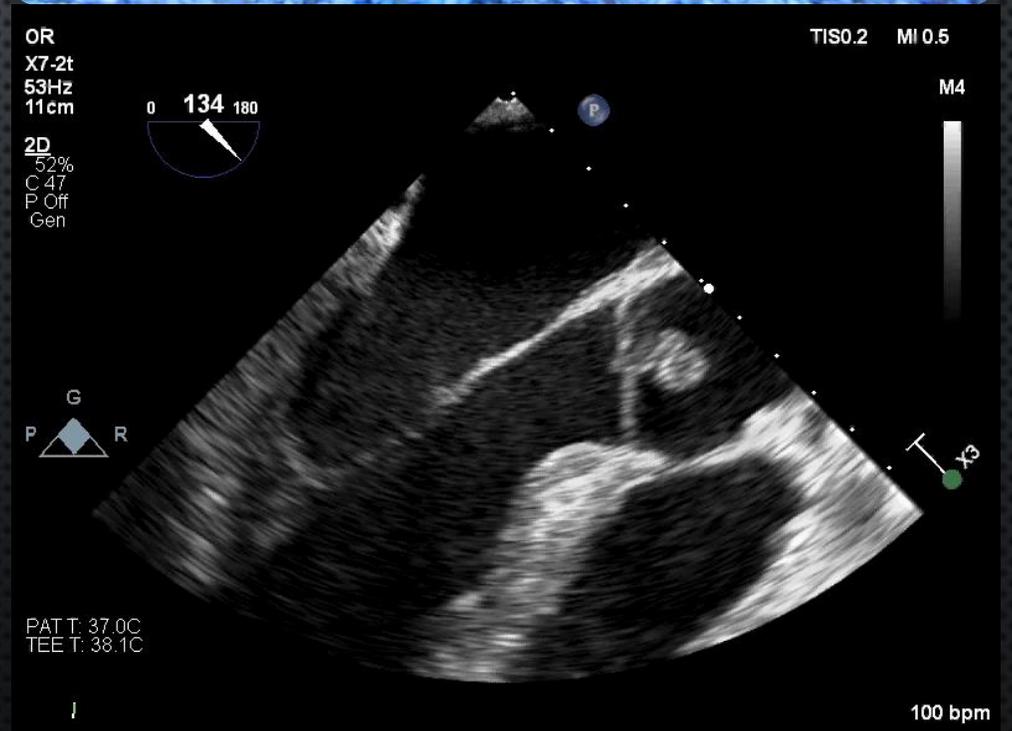
CASE 3 POST CPB



CASE 3

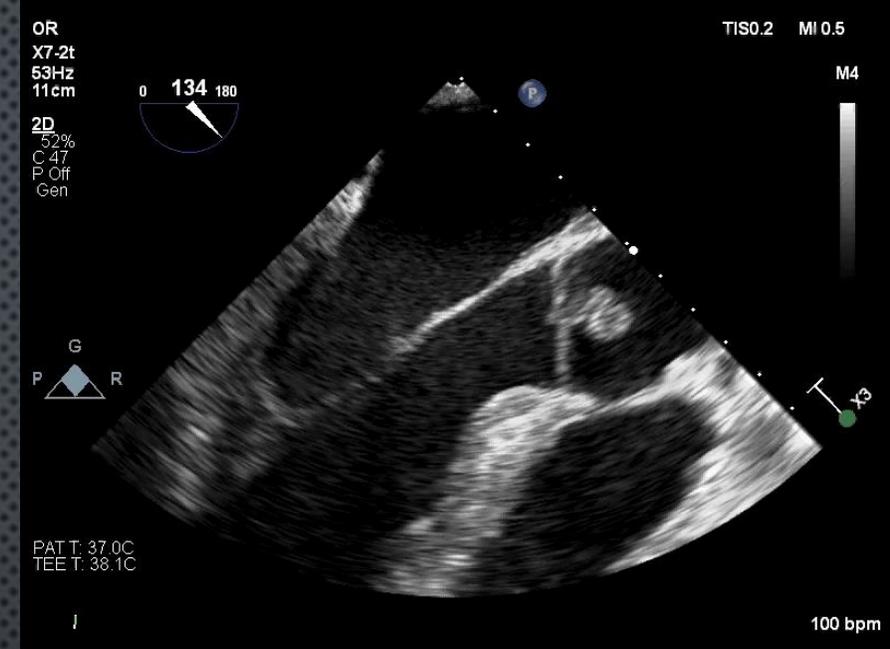
PAPILLARY FIBROELASTOMA

- HOMOGENOUS
- ROUND, OVAL OR IRREGULAR
- <20MM
- DENSE SHORT STALK
- OFTEN MOBILE
- FROND LIKE PROJECTIONS
- 90% SOLITARY TUMORS



CASE 3

PAPILLARY FIBROELASTOMA

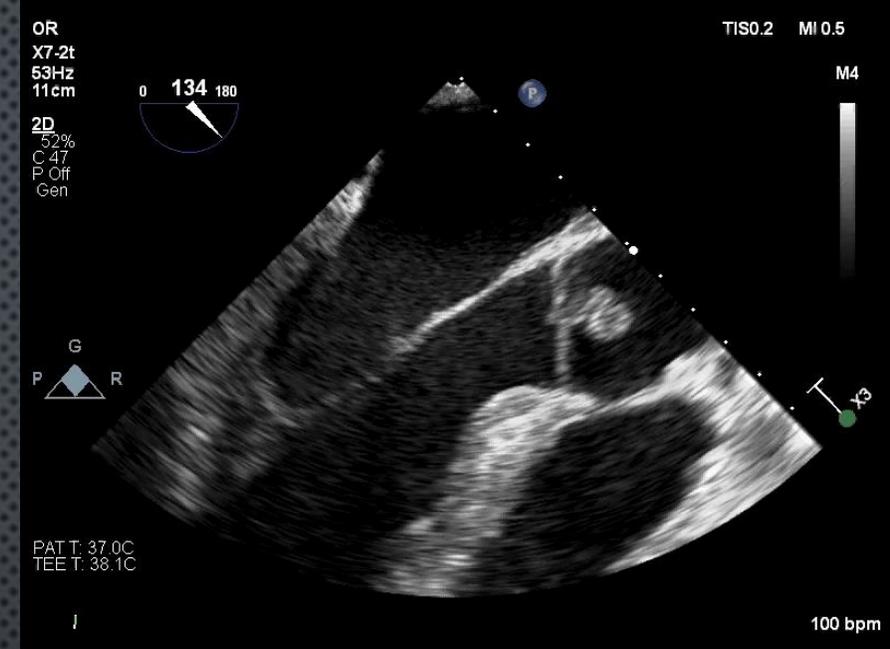


- 2ND MOST COMMON PRIMARY CARDIAC TUMOR
- 80% ON VALVES: AV>MV>TV>PV
- DOWNSTREAM (VEGETATIONS NORMALLY UPSTREAM)

CASE 3

PAPILLARY FIBROELASTOMA

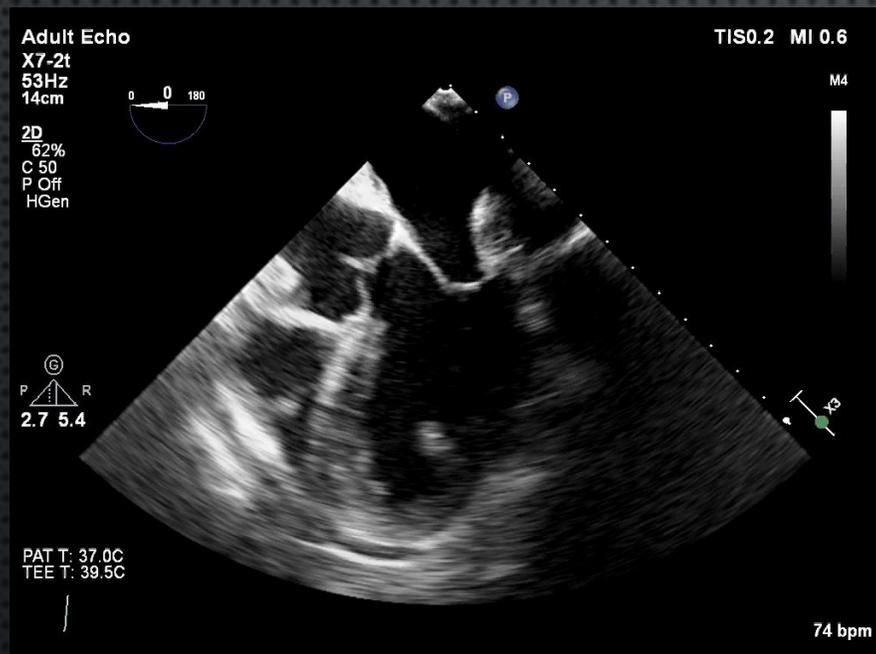
- VALVULAR DYSFUNCTION RARE
- 2/3 HAVE EVIDENCE OF EMBOLIC EVENTS
 - TIA, STROKE, CORONARY EVENTS, SUDDEN DEATH
- SURGERY RECOMMENDED
 - NO RECURRENCE



CASE 4

- 78A MALE
- RECENT STROKE
- ECHO REVEALED INTRACARDIAC MASS

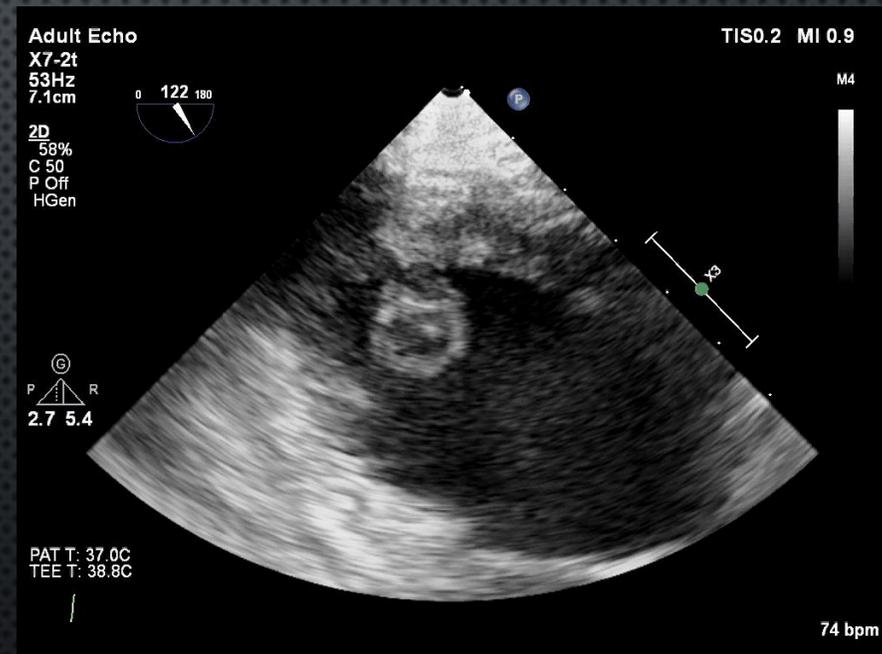
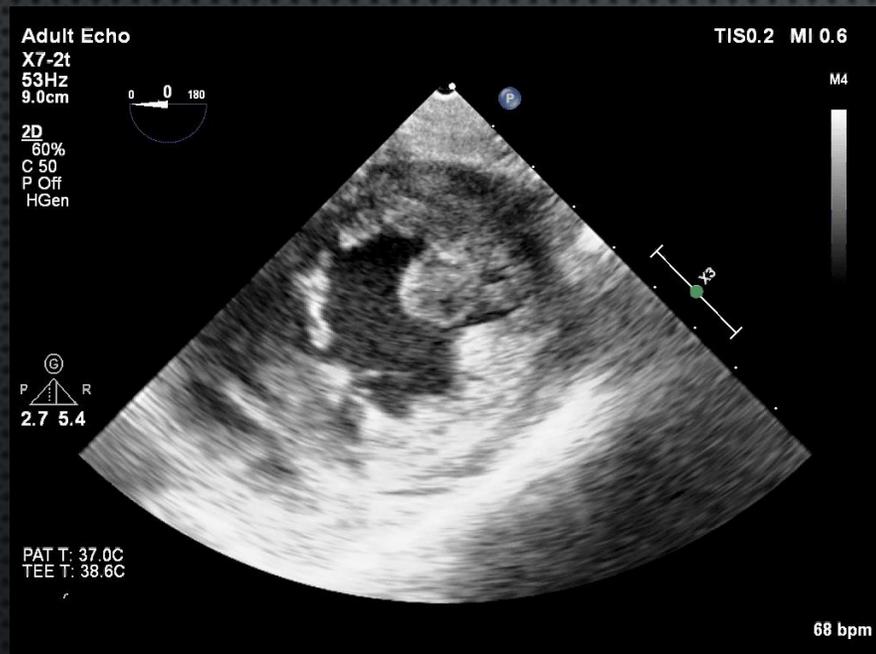
CASE 4



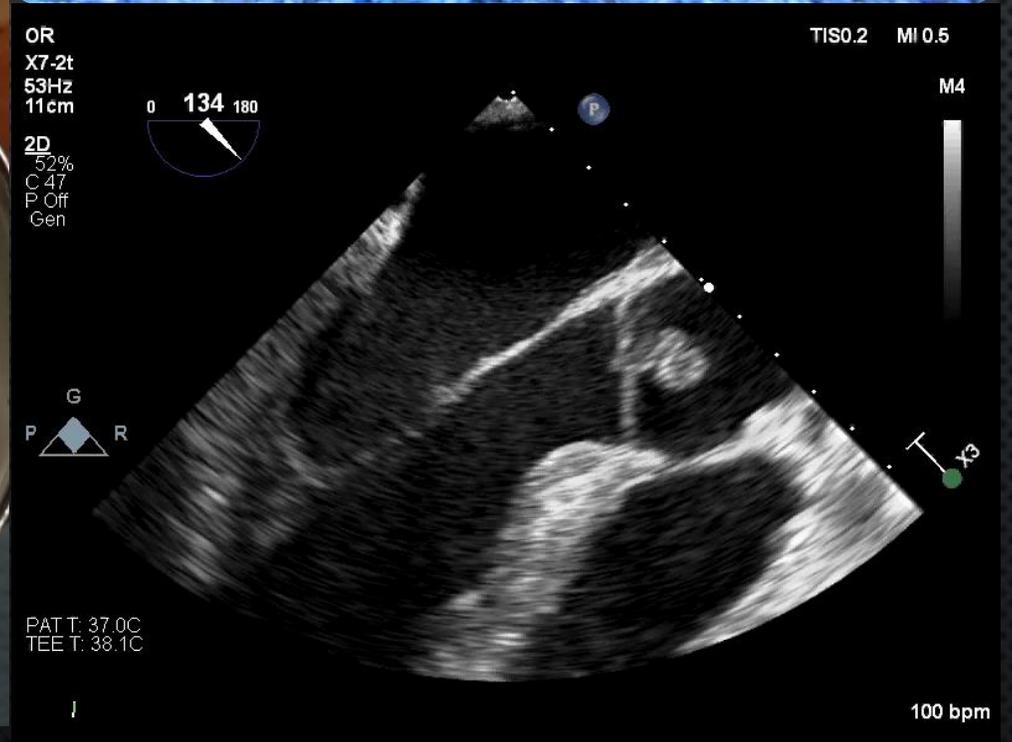
CASE 4



CASE 4,



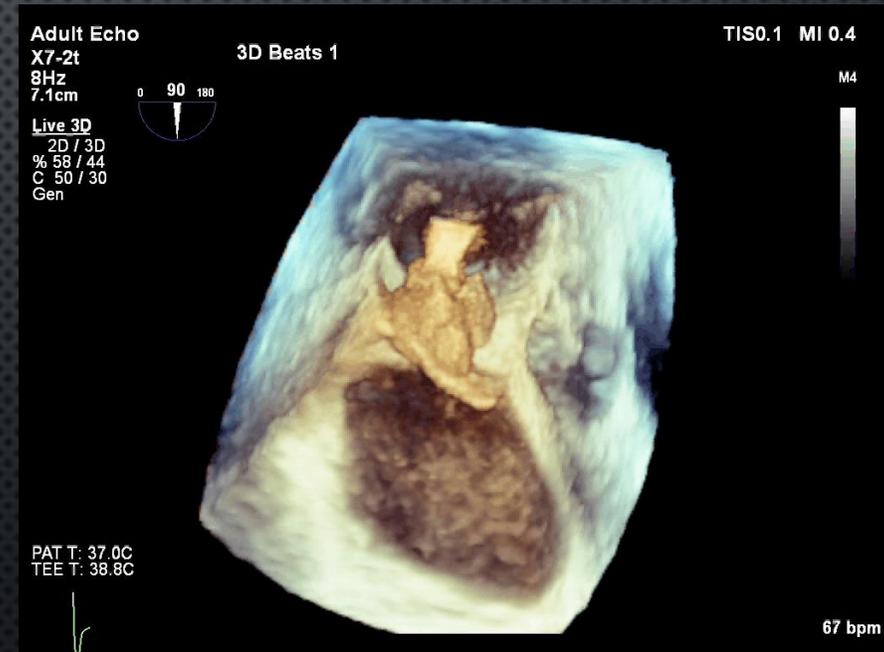
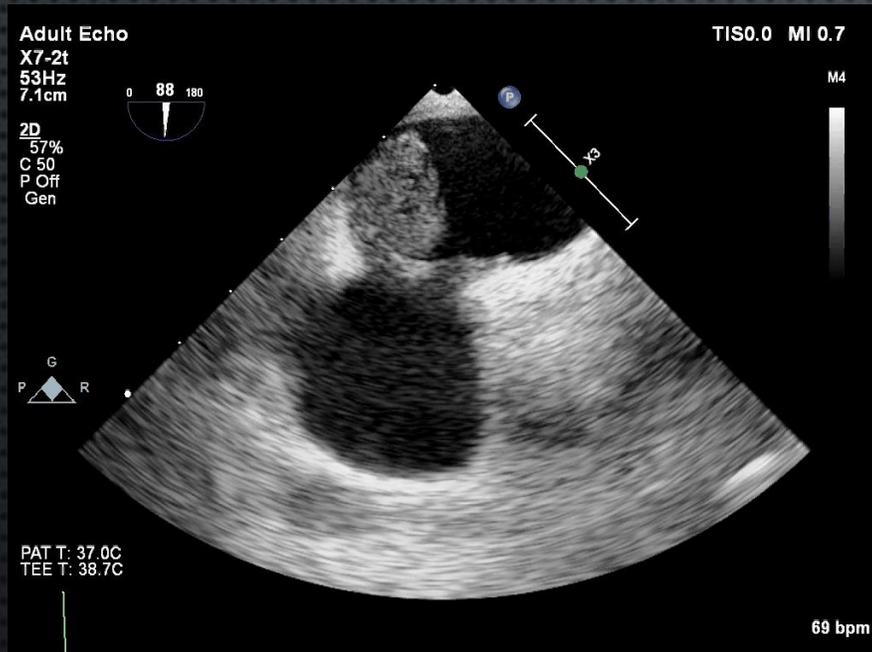
CASE 4
PAPILLARY FIBROELASTOMA
SEA ANEMONE



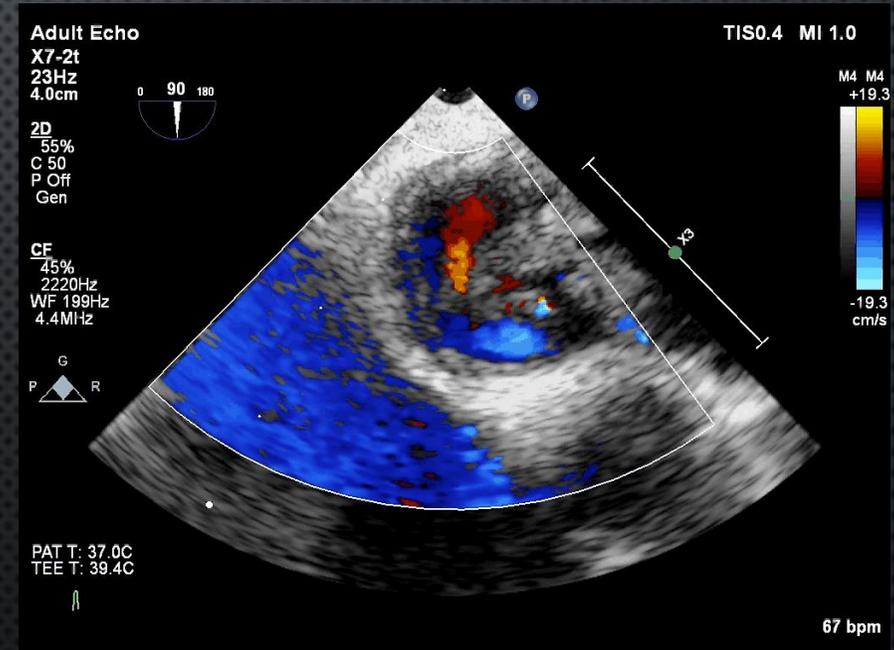
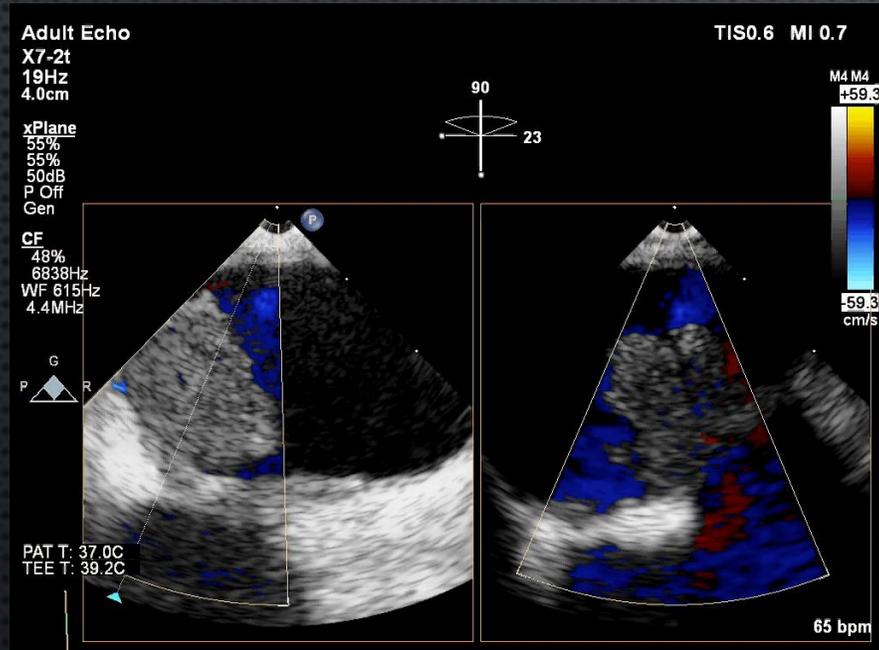
CASE 5

- 64A FEMALE
- CHEST PAIN AND DYSPNEA
- NORMAL CORONARIES
- INVESTIGATIONS REVEALED INTRACARDIAC MASS

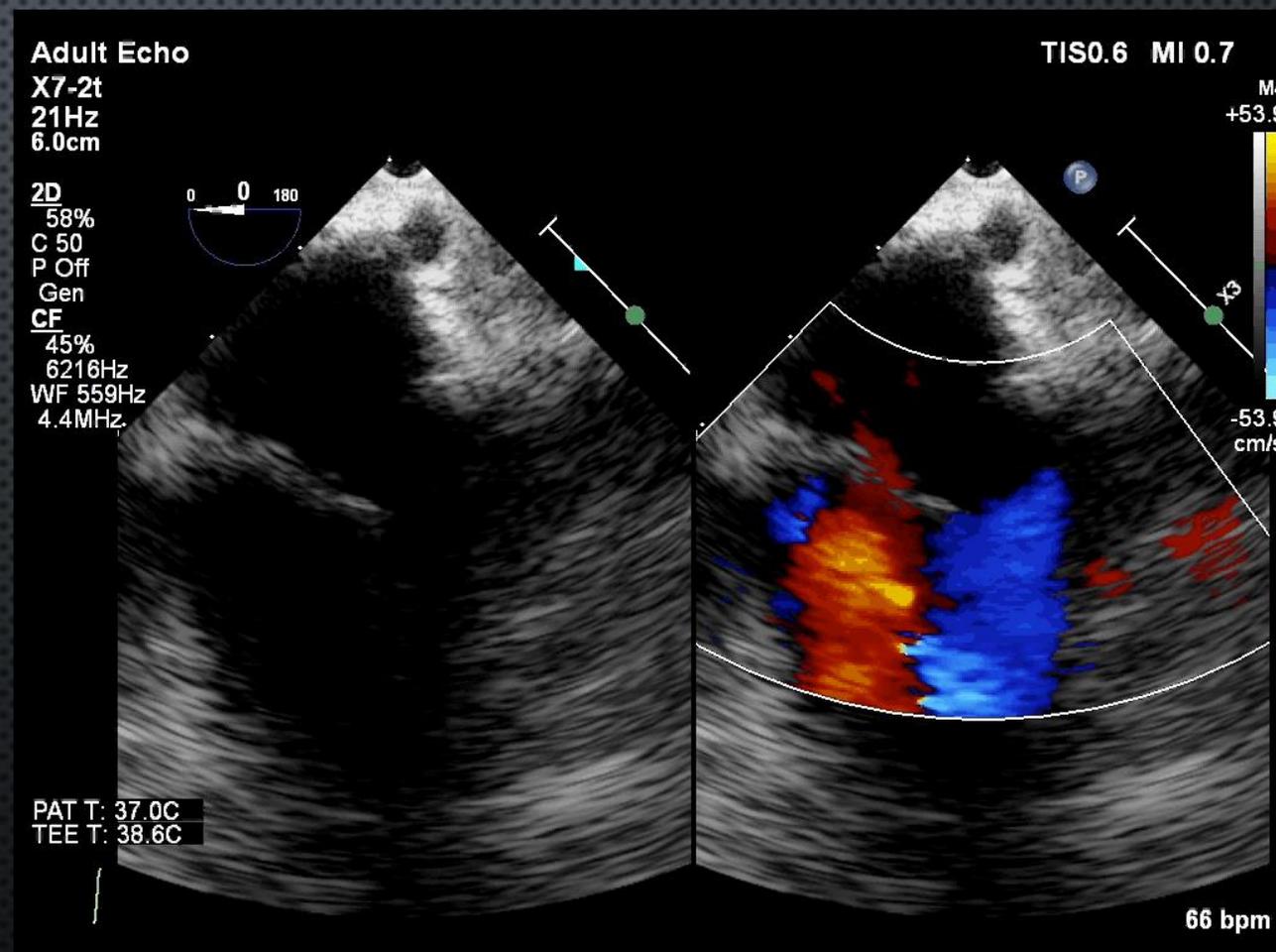
CASE 5 PRE CPB



CASE 5 PRE CPB

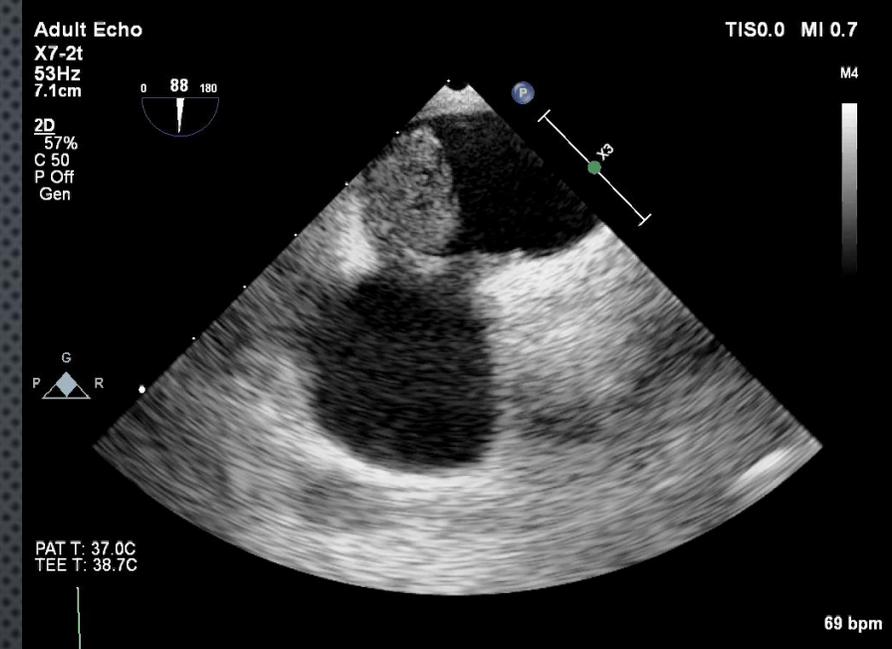


CASE 5, PRE CPB

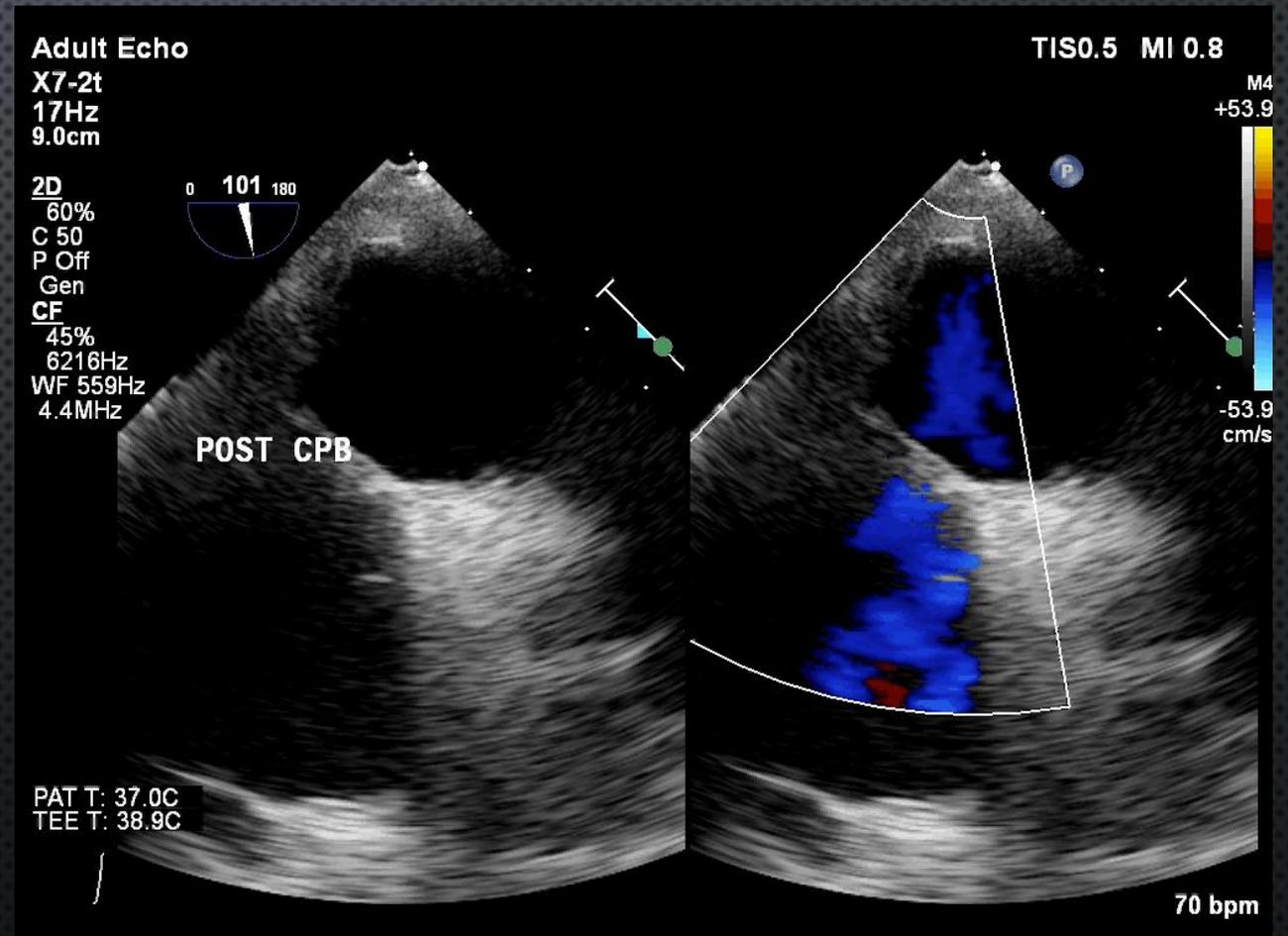


CASE 5 DIFF DX

- THROMBUS
- VEGETATION
- TUMOR
 - MYXOMA
 - RHABDOMYOSARCOMA

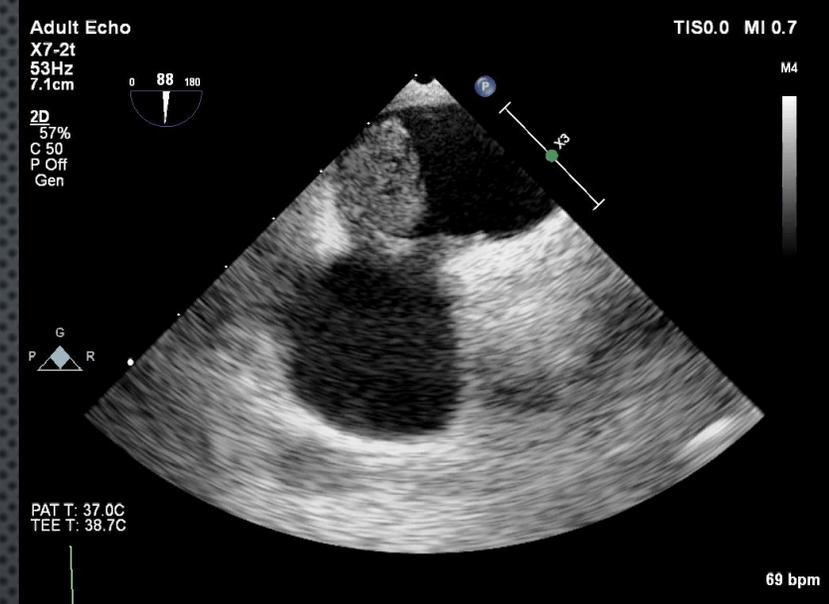


CASE 5 POST CPB



CASE 5

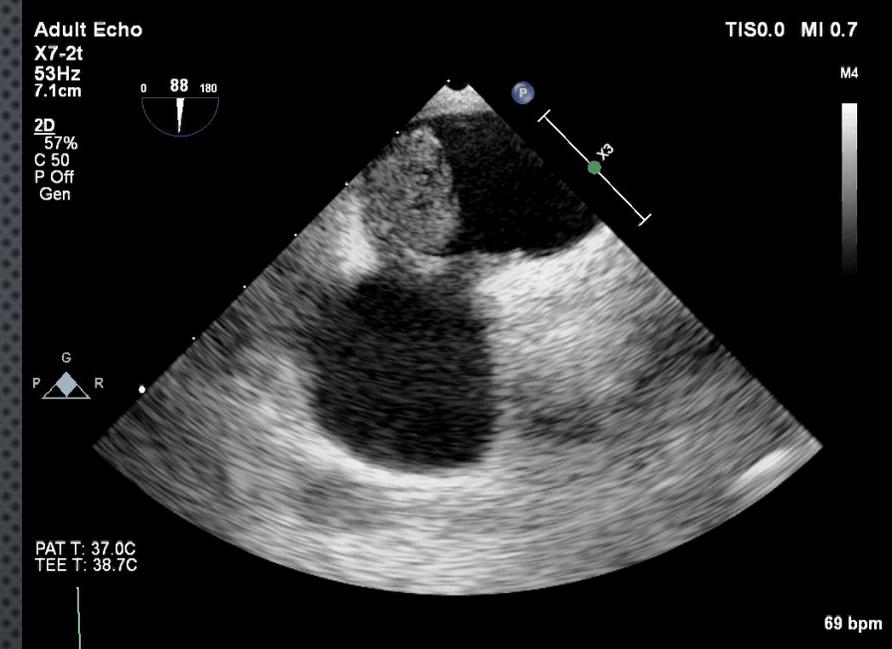
SURGICAL AND PATHOLOGY NOTE



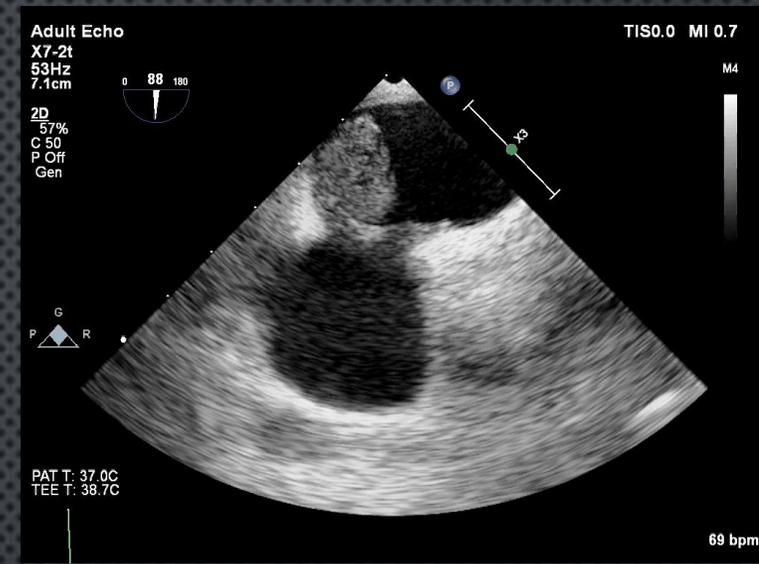
- MYXOMA AND IAS RESECTION
- REPAIR IAS WITH AUTOLOGOUS PERICARDIAL PATCH
- MYXOMA WITH INTRA-ATRIAL TISSUE

CASE 5 MYXOMA

- 90% PEDUNCULATED
- 90% ATTACHED TO THE AREA OF THE FOSSA OVALIS
- GLOBULAR AND IRREGULAR
- HETEROGENEOUS
- CAVITATIONS AND PROTRUDING FRONDLIKE EXTENSIONS
- LARGE TUMORS - FUNCTIONAL OBSTRUCTION
- PARTLY VASCULARIZED



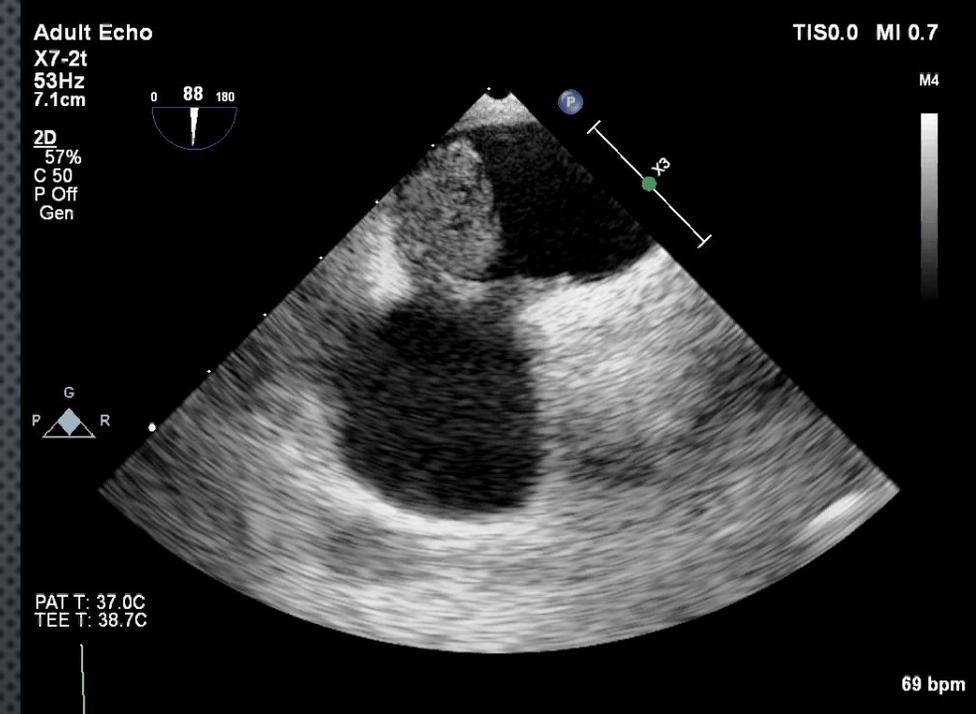
CASE 5 MYXOMA



- MOST COMMON BENIGN PRIMARY CARDIAC TUMOR
- 25 % OF ALL PRIMARY CARDIAC TUMORS
- 50% OF BENIGN CARDIAC NEOPLASMS
- 75% LA > 20% RA > LV AND RV

CASE 5 MYXOMA

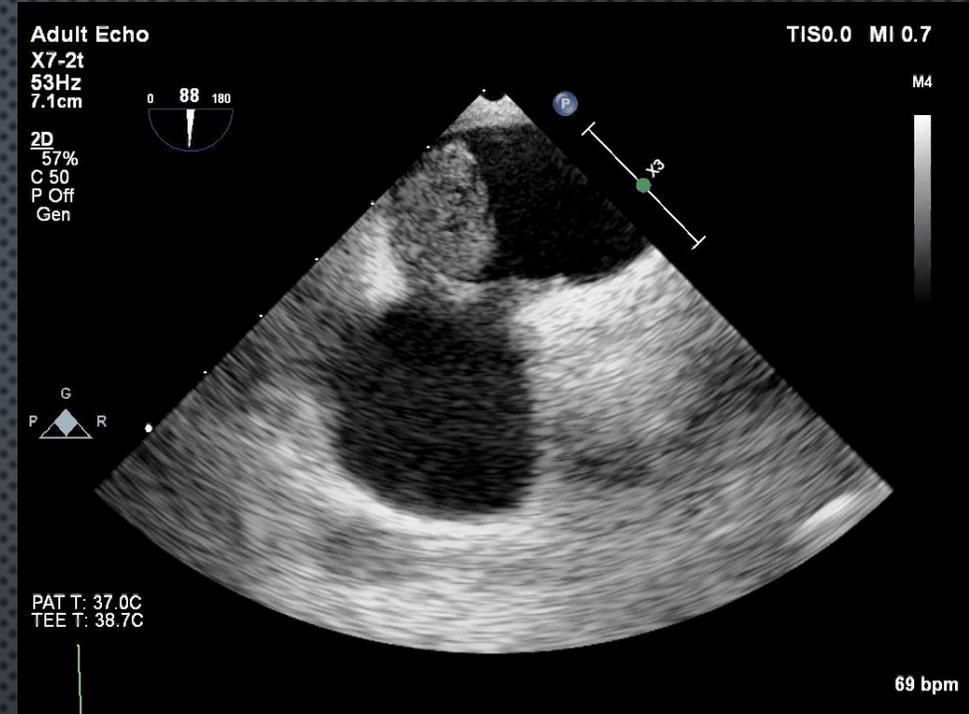
- PRESENT 30-60A OF AGE
- 7% FAMILIAL
- 5% MULTIPLE TUMORS
- F > M
- SURGICAL EXCISION INDICATED
 - MAY RECUR



CASE 5

CLINICAL PRESENTATION

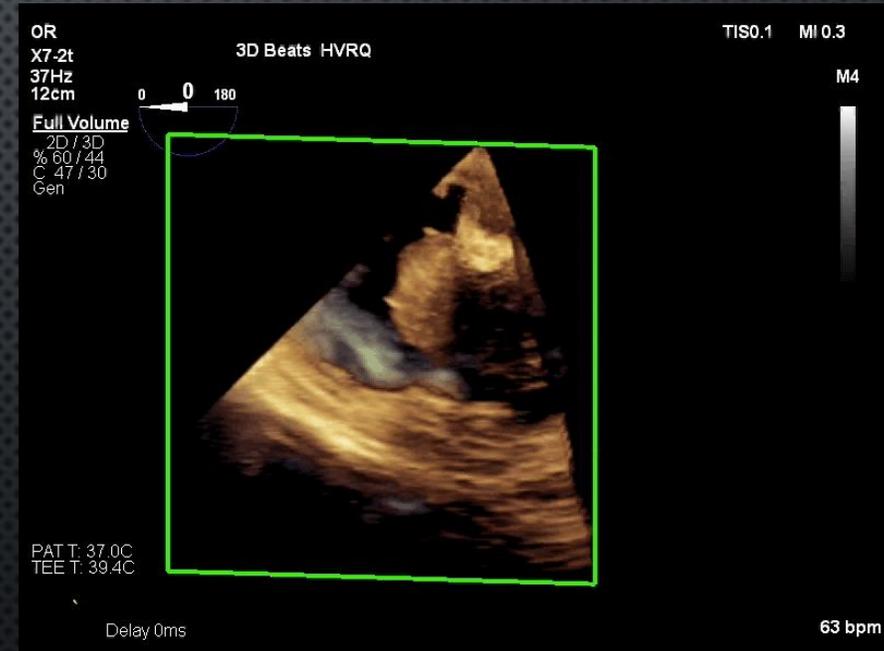
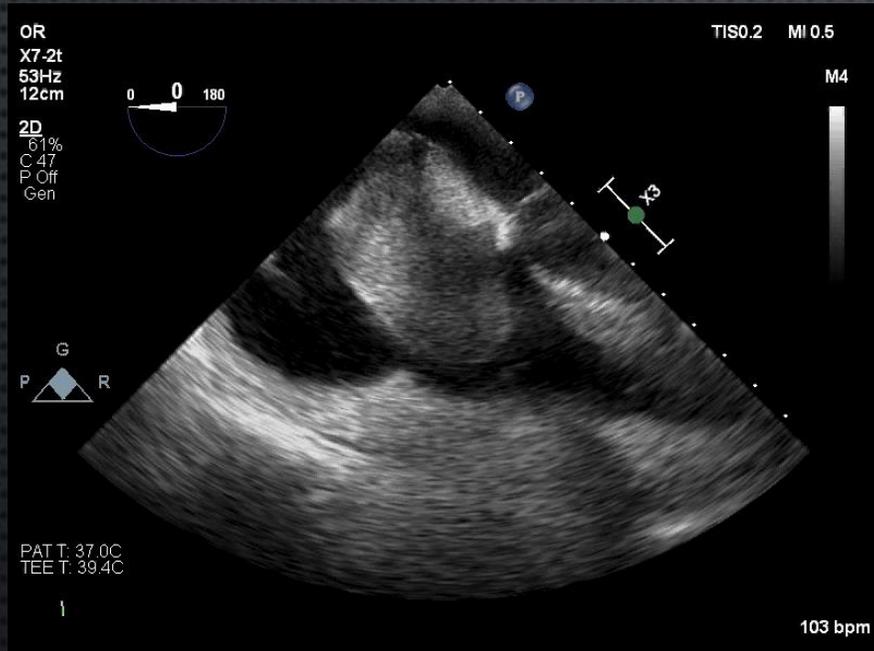
- ASYMPTOMATIC
- DYSPNEA: EXERTION AND POSITIONAL
- EMBOLISM: TIA, STROKE, CORONARY EVENTS
 - 1/3 EVIDENCE OF EMBOLIC EVENTS



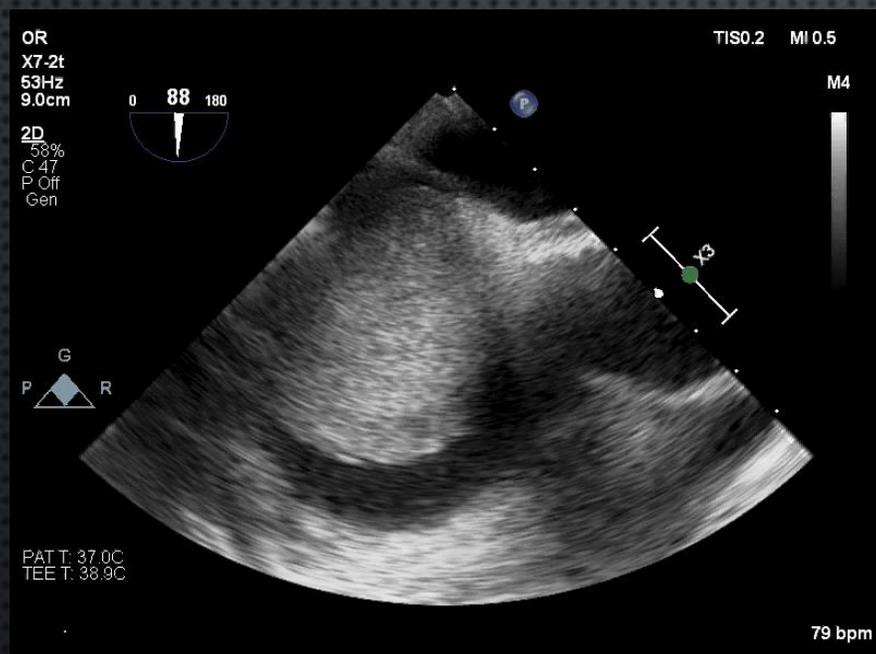
CASE 6

- 55A, FEMALE
- RECURRENT PLEURAL EFFUSIONS
- PLANNED SURGERY: EXCISION INTRACARDIAC MASS

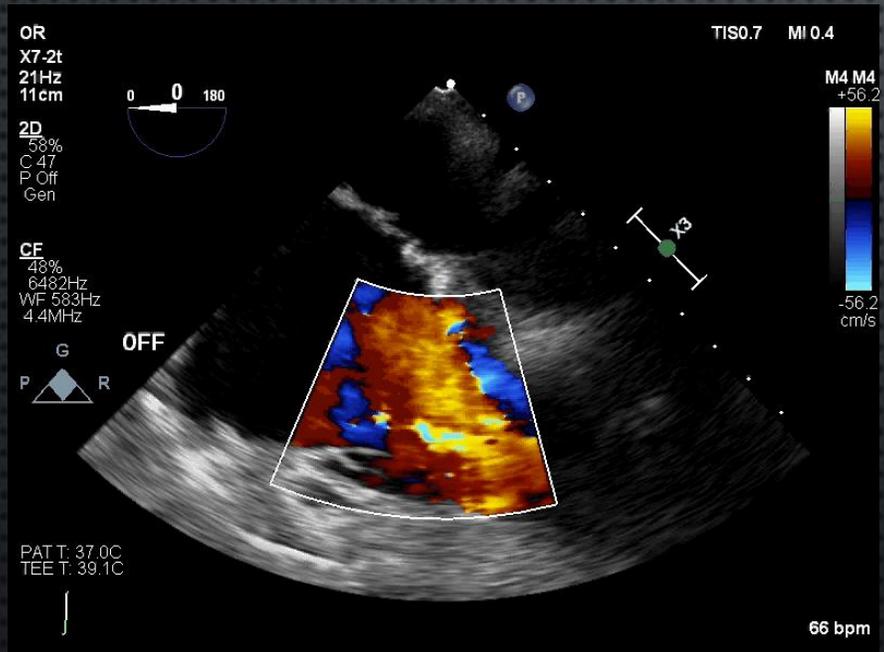
CASE 6 PRE CPB



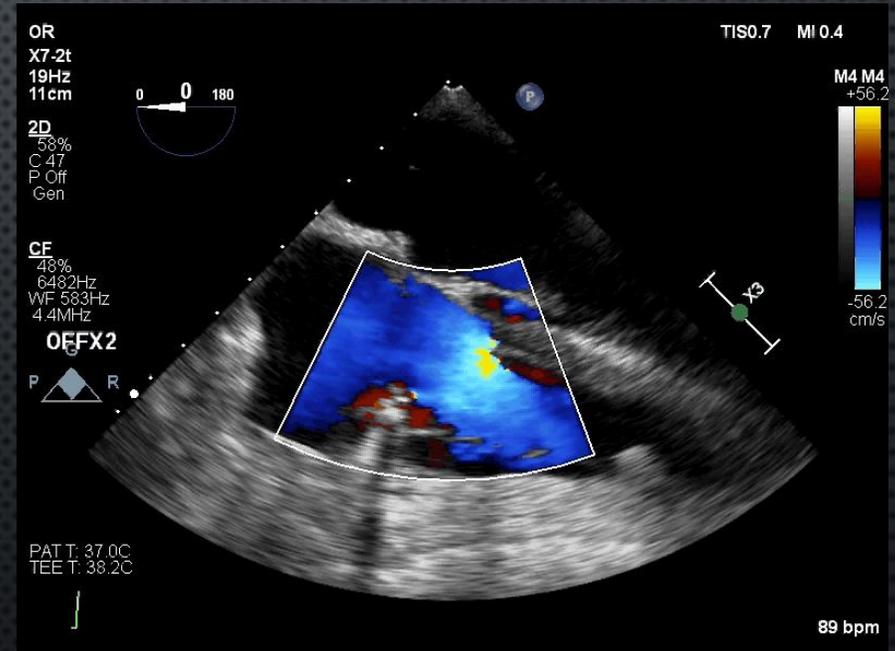
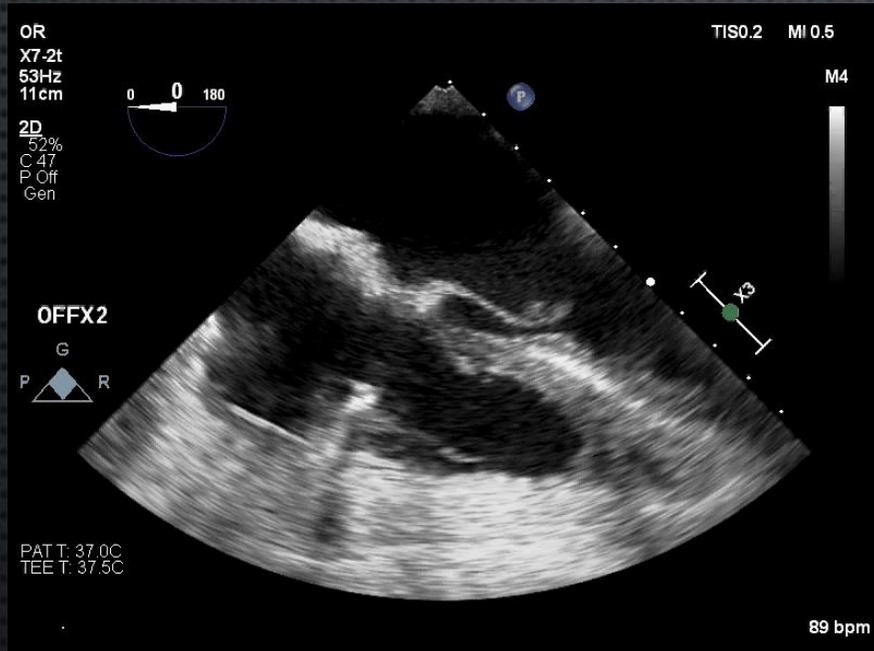
CASE 6, PRE CPB



CASE 6 POST CPB



CASE 6 POST CPB 2

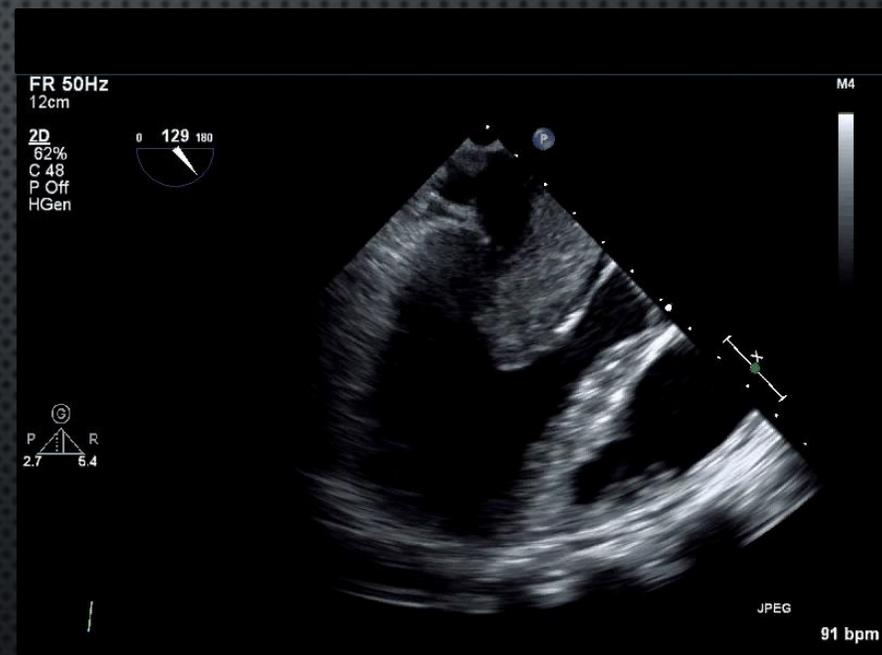
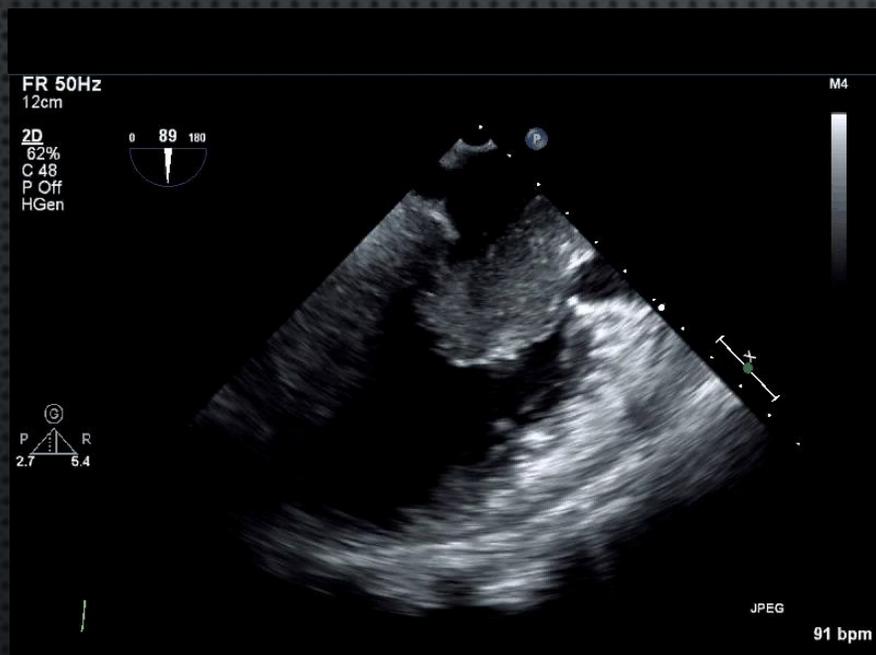


CASE 7

- 46A FEMALE
- PERSISTENT COUGH
- POSITIONAL DYSPNEA, CHEST TIGHTNESS

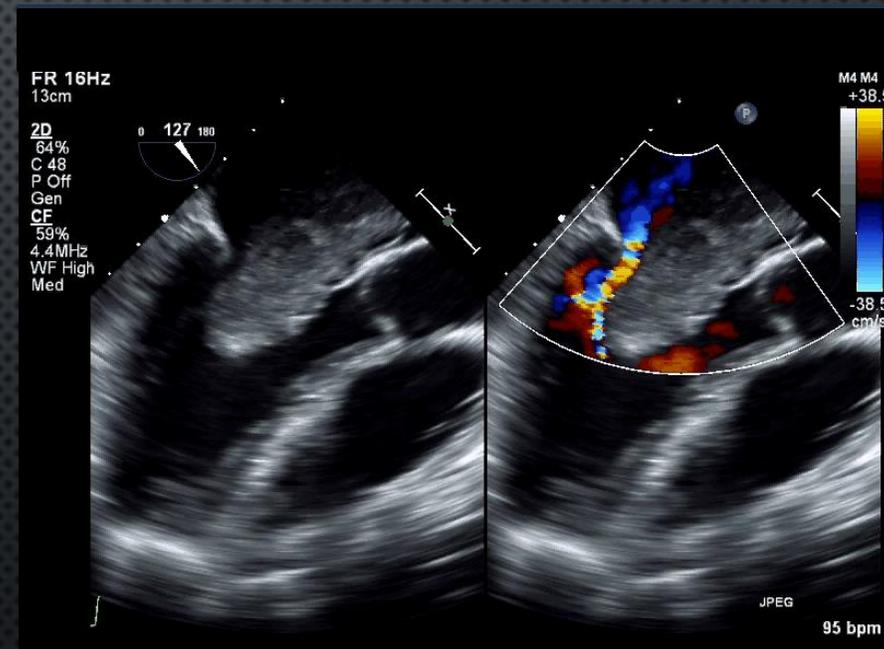
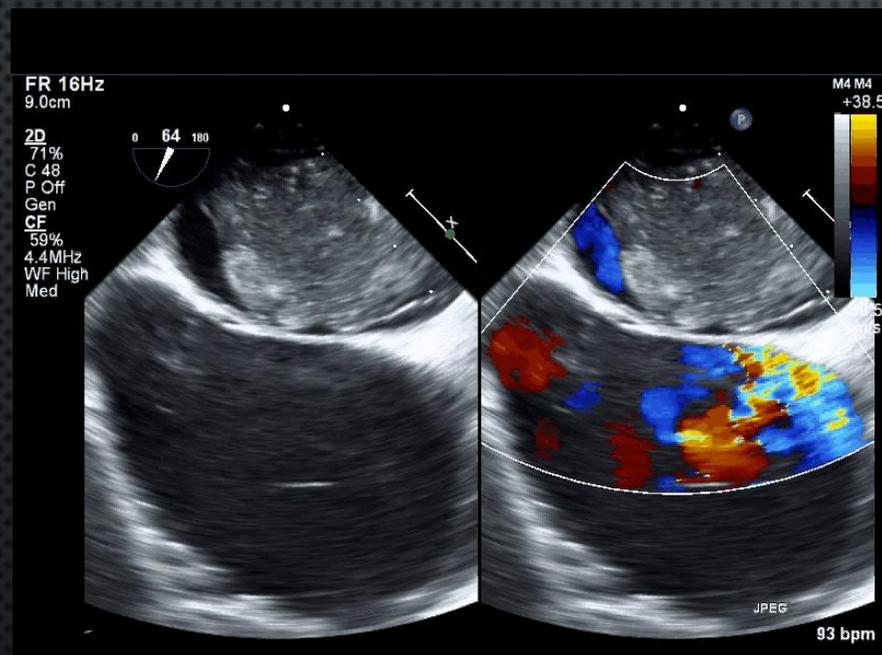
CASE 7

PRE CPB

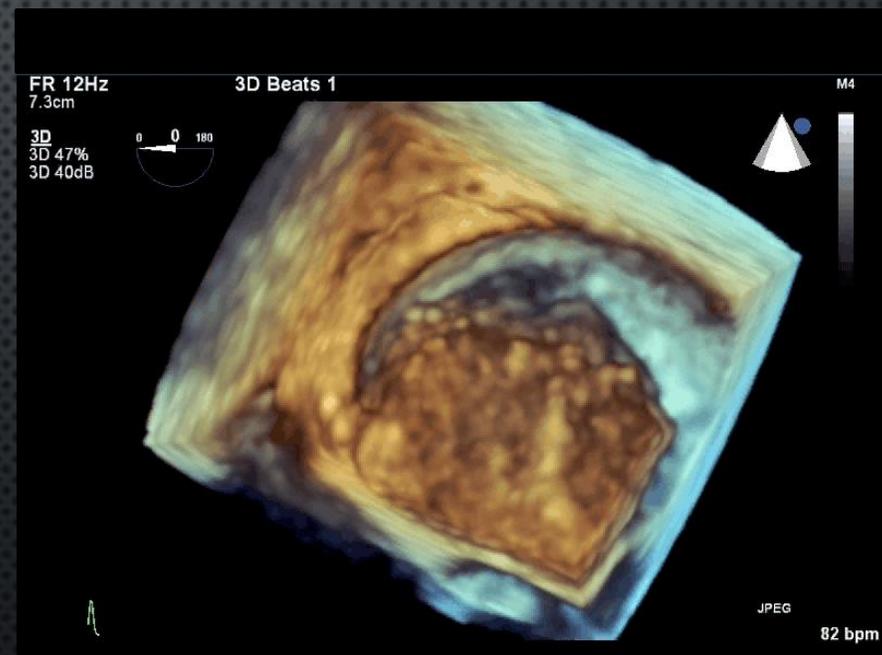
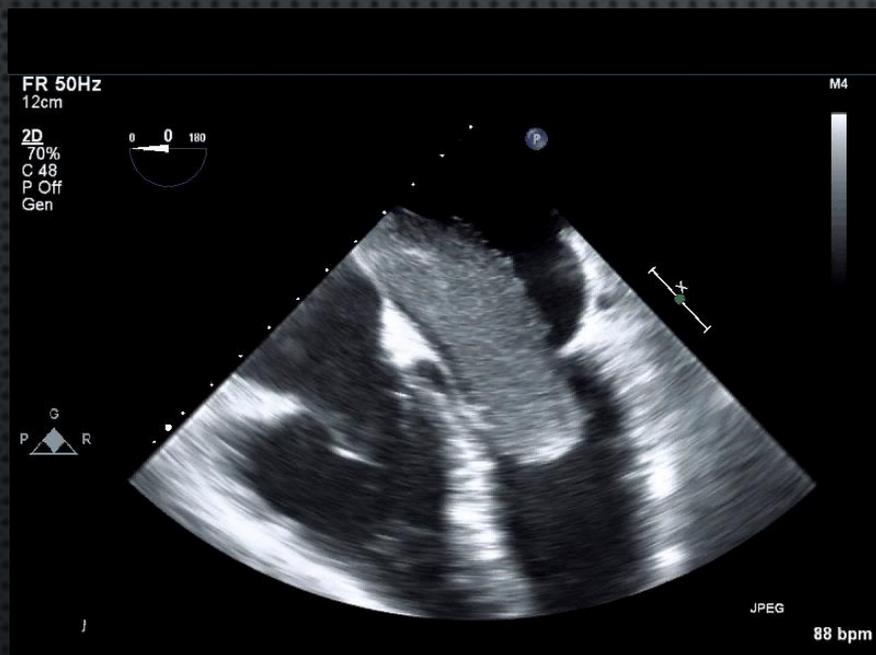


CASE 7

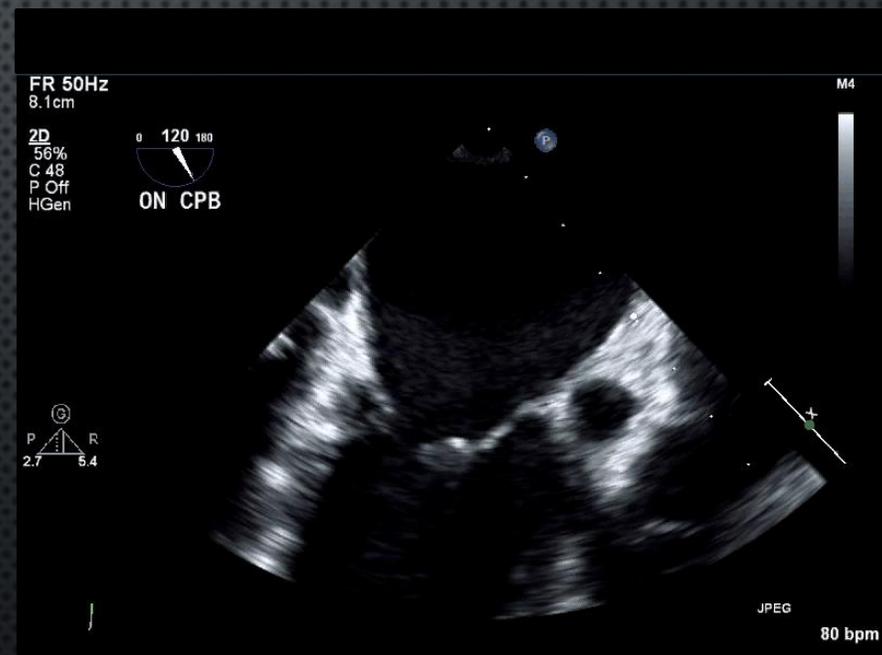
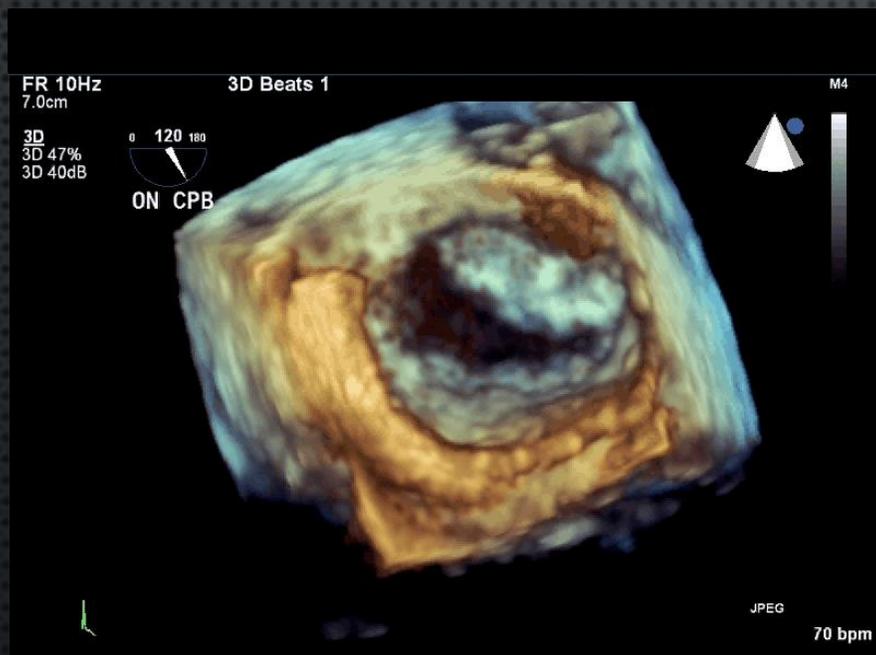
PRE CPB



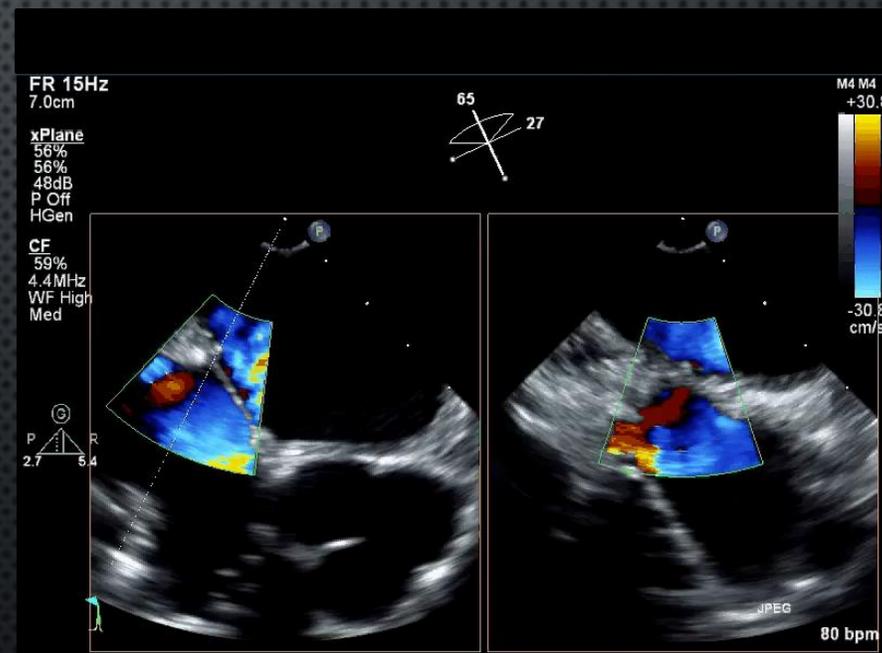
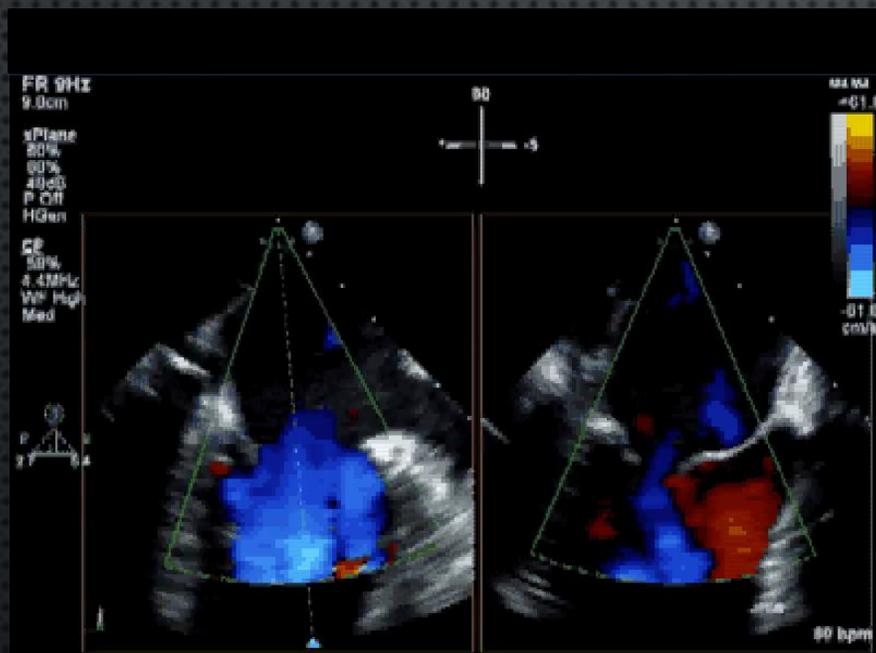
CASE 7, PRE CPB



CASE 7 POST CPB



CASE 7 POST CPB



THANK YOU
QUESTIONS