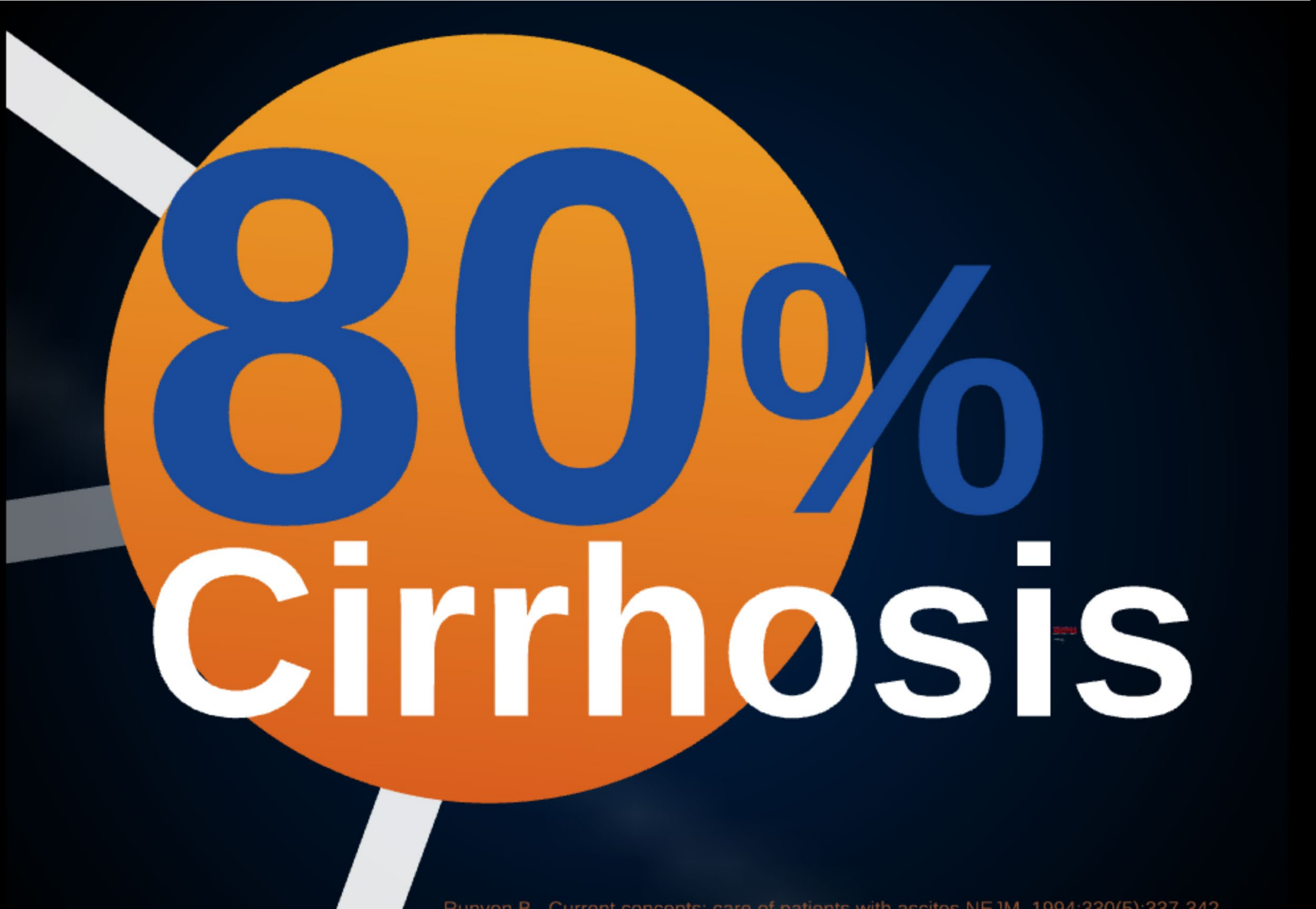
INTRACTABLE ASCITES

are we considering all options?

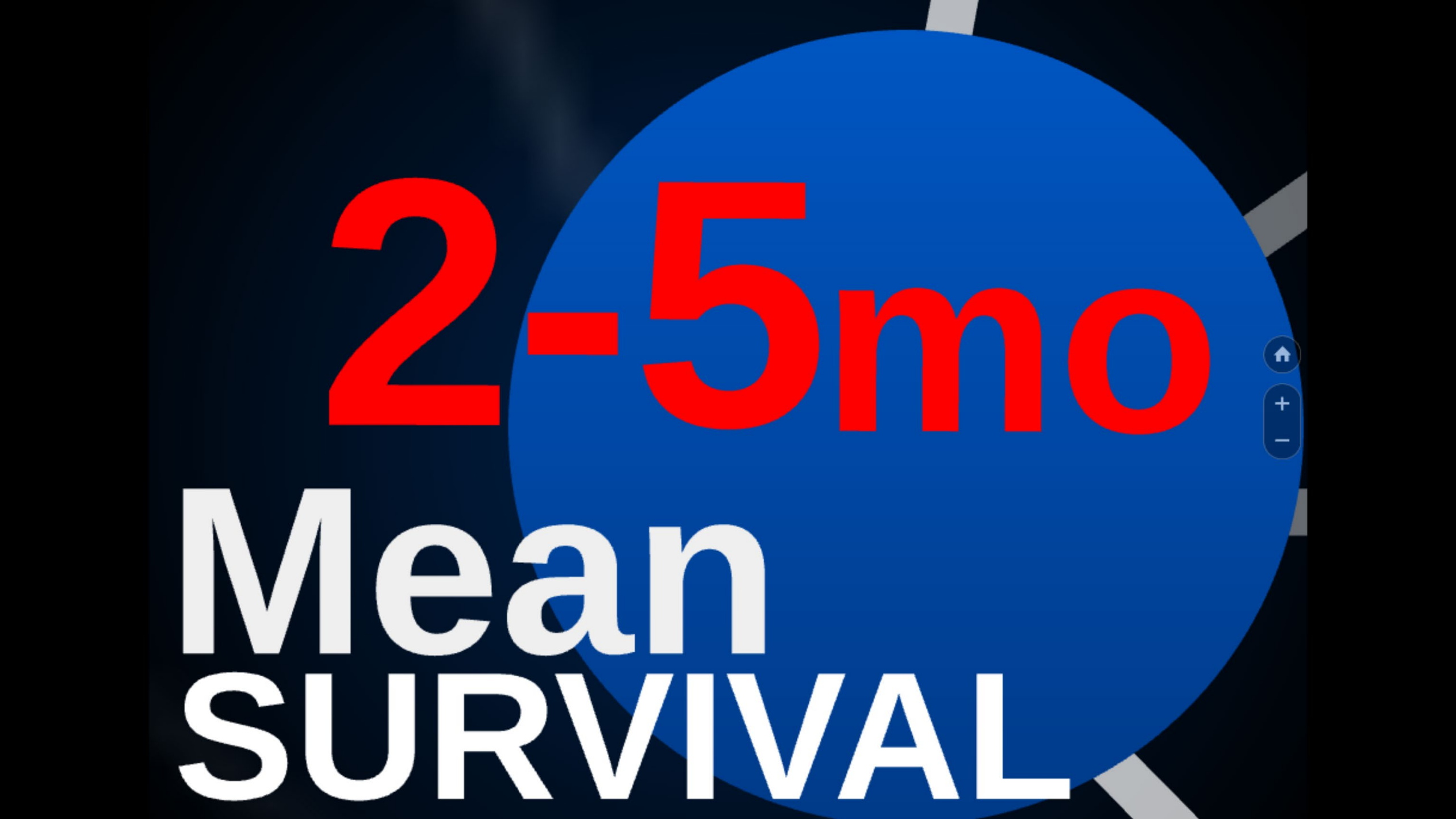
GEORGE BEHRENS
Interventional Radiologist
Vascular and Interventional Radiology



Runyon B. Current concepts: care of patients with ascites N E J M. 1994;330(5):337-342


50%@2y
Overall
SURVIVAL


10%
Cancer


2-5mo
Mean
SURVIVAL


2%
HEART
Failure


50%@2y
Overall
SURVIVAL


Cancer
VS
Cirrhosis

Cancer
VS
Cirrhosis

Cirrhosis

PORTAL HYPERTENSION

SCARRING
Fibrosis
CIRRHOSIS
End result of chronic liver disease

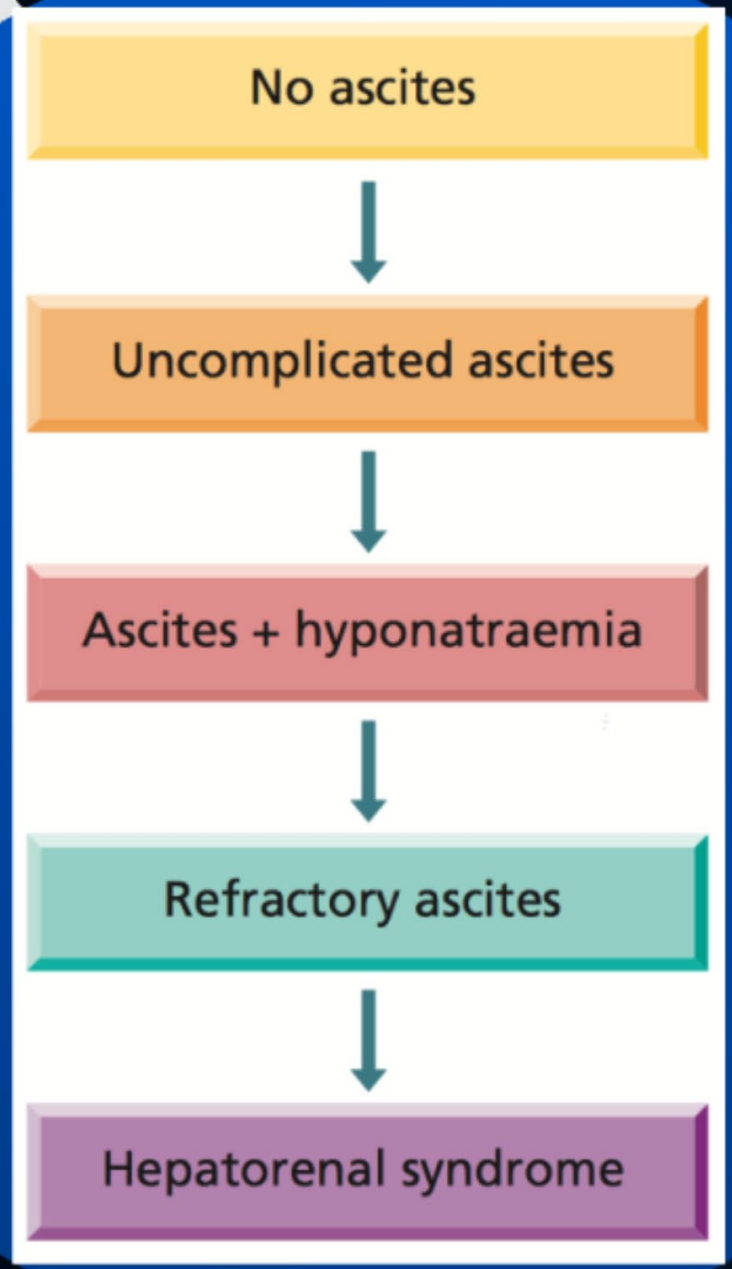
PORTAL
HYPERTENSION
ascites
bleeding
encephalopathy

Natural
PROGRESSION
Disease


PORTAL
HYPERTENSION
ascites
bleeding
encephalopathy

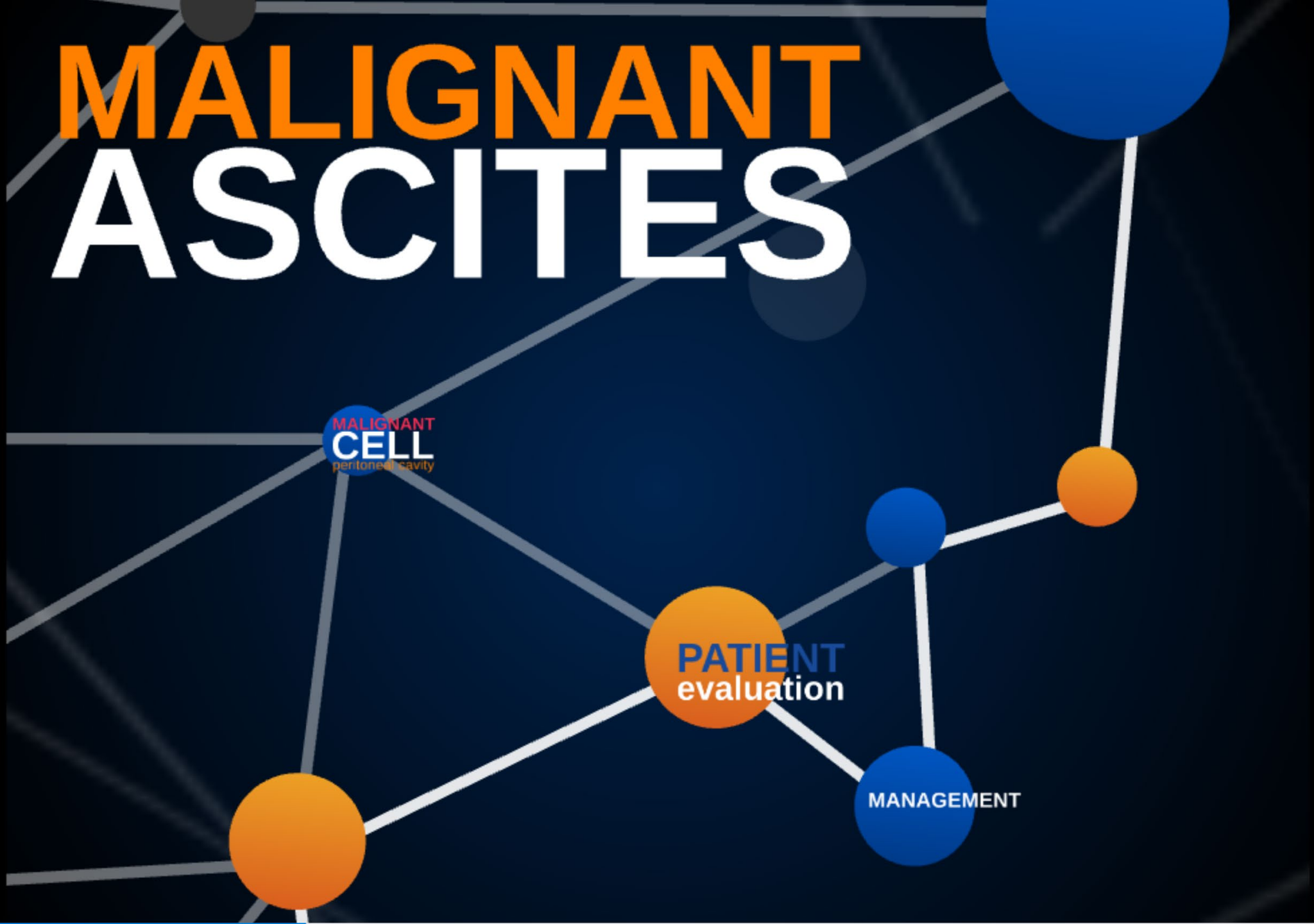
PORTAL HYPERTENSION

ascites



Natural PROGRESSION Disease

MALIGNANT ASCITES




MALIGNANT
CELL
peritoneal cavity

Malignant Ascites

Malignant ascites
Poor prognosis

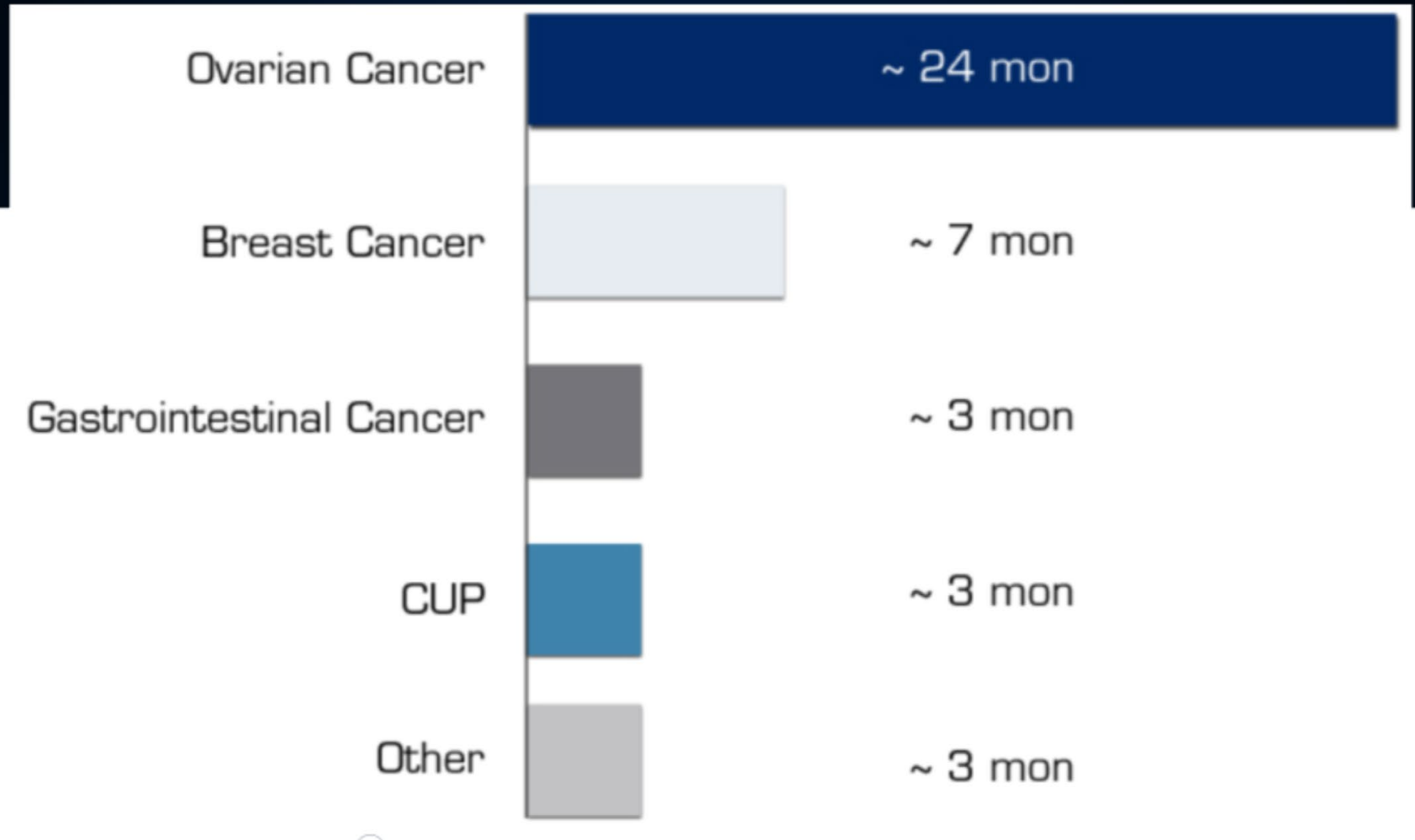
Except ovarian cancer

50% has peritoneal carcinomatosis

13% of patients are due portal hypertension

Malignant Ascites

Prognosis



PATIENT evaluation

Fluid Analysis Malignant Ascites

Albumin and Protein

Serum-Ascites Albumin Gradient (SAAG)

SAAG: > 1.1 g/dL = portal hypertension

SAAG: <1.1 g/dL = no portal hypertension

Total protein in the ascitic fluid

< 2.5 g/dL = cirrhosis or nephrotic syndrome

> 2.5 g/dL = malignant or TB

Cytology

50 mL of fresh warm ascitic fluid for optimal yield

Sensitivity: 82.8% with 1 sample up to 96.7% with 3 samples

MANAGEMENT

Basic of Treatment

Chemotherapy
Hyperthermia lavage, intra-abdominal chemo…

Peritoneo-venous shunt (Denver Shunt)

PleurX catheter (short life span)


DENVER
shunt
WHY
Refractory ascites associated with high mortality
Direct indication of the need of liver transplantation
WHEN
PALLIATION
MALIGNANT ASCITES
PALLIATION
PORTAL HYPERTENSION
CHYLOUS ASCITES
HOW
WHEN NOT

Refractory ascites associated with high mortality

50% of the patients die in 1 year

Median survival: 6 months

Direct indication of the need of liver transplantation

MELD and Child-Pugh scores underestimate mortality

Reliable factors to predict poor prognosis

Hyponatremia, >Cr, <UNa, <BP

WHY

Improves

Renal perfusion
Diuresis
Decrease chances or worsening HRS

Retained nutrients and proteins
Improve nutritional status

Significant symptomatic relief

WHEN NOT

Sepsis or bactermia
Peritonitis
Loculated ascites

Severe portal hypertension with large varices
Recent variceal bleed

HOW

History and physical

Labs (Child-Pugh, MELD)

- Albumin

Hemodynamic evaluation and TJLBx

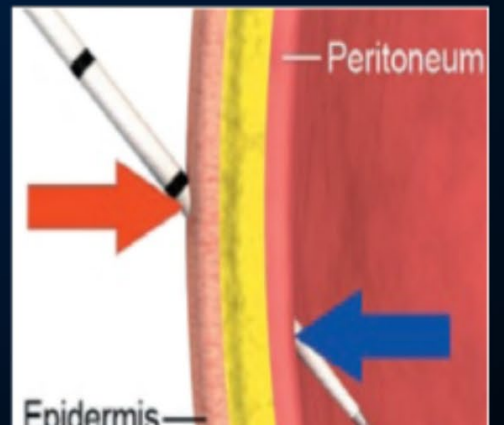
- Low gradient : <12 mmHg
- High gradient: >12-15 mmHg

Triple phase CT / MR

- Vascular and liver anatomy
- HCC or malignancy

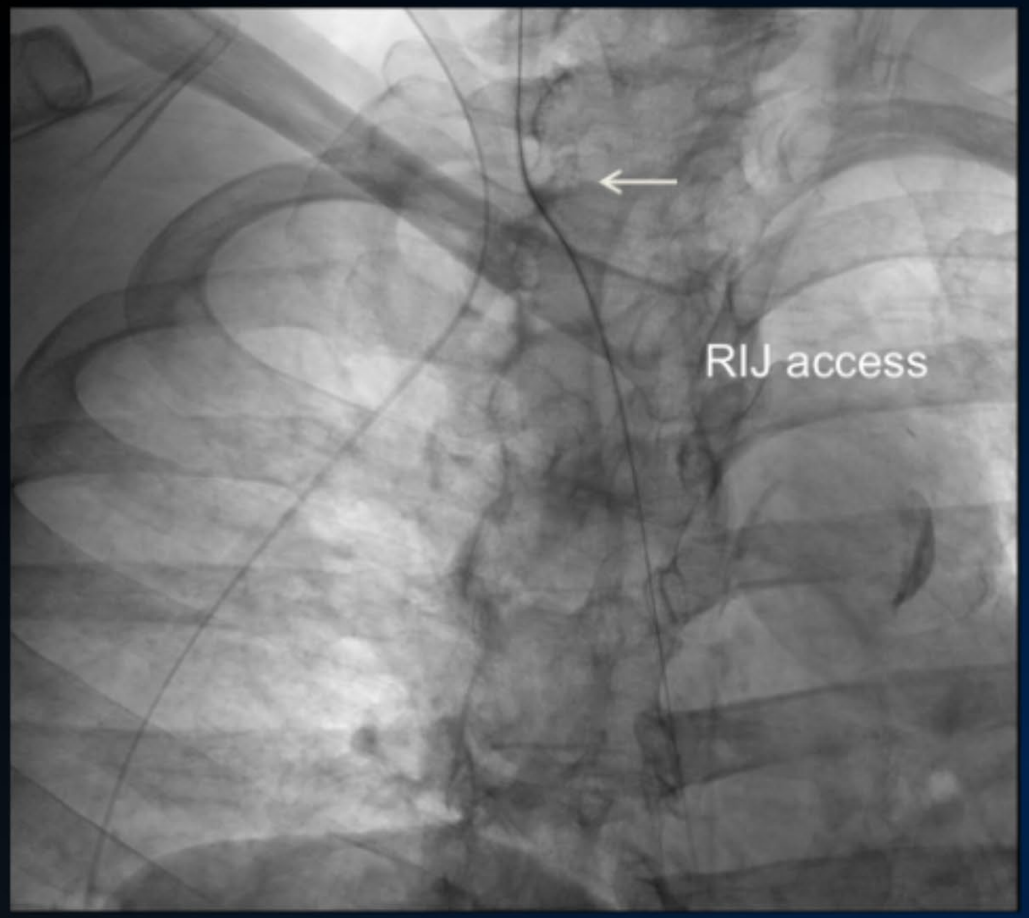
HOW

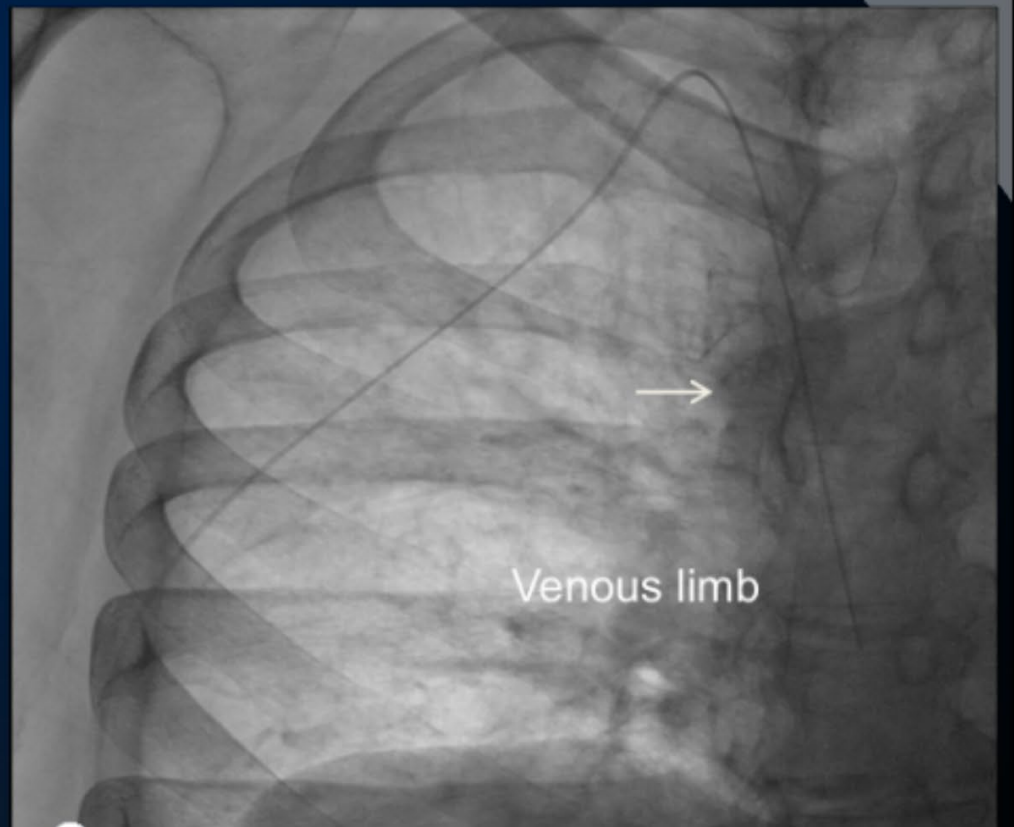
Conscious sedation
Prophylactic Antibiotics
US guided access
Consider purse-string
Drain all ascitic fluid
Tip of the venous limb at the proximal RA




Peritoneal access
16-Fr Peel-a-way sheath
R
23 cm
15.5-Fr catheter
R
Valve shunt

HOW





HOW

HOW

HOW

Full admission
Sequencial compression device
Bed at 30-45 degree for 24 hrs.
Pump reservoir 20 times b.i.d

CBC, PT/INR, PTT and Fibrinogen
Hematology consult

Follow-up in the clinic in 2 weeks

HOW

Technical success: 100%

Clinical success: 95%

- Symptomatic relief 83-100%
- Improvement of quality of life: >95%
- Primary patency: 91-100% at 30d; 57-92% 5-6m
- Secondary patency: >95%

Complications: 3-15%

- DIC: 3-6%
- Infection: 2-5%

HOW

Early complications

Pulmonary edema: 15-20%

Disseminated Intravascular Coagulopathy

Sub-clinical (asymptomatic): 40-60%

Clinical DIC (symptomatic): 3-5%

Late complications

Infection: 2-18%

Occlusion: 30-80%

Venous, Peritoneal limbs, or Chamber

Bleeding: 20%

Unknown: Likely related to portal hypertension

DISSEMINATED INTRAVASCULAR COAGULOPATHY

HOW

Systemic activation of the coagulation system

Consumption of coagulation factors and platelets (hemorrhage)
Leading to thrombus formation

Subclinical DIC

Labs abnormalities with no symptoms

Clinical DIC

Bleeding and/or thrombotic symptoms

TROUBLESHOOTING

Subclinical DIC

PLT: <50; Fibrinogen: <100, elevated INR

- Bed at 45 degrees
- Paracentesis
- Occlusion of the shunt with suture at the skin

Clinical DIC

Shunt removal


PLEURX
CATHETER
WHY
ASCITES
Paracentesis
Frequent visits to hospital

WHY

MALIGNANT ASCITES

Median survival = 11.1 weeks

Poor prognosis factors

- Peripheral edema, liver metastases
- Serum albumin / total proteins

Goal of therapy

PALLIATION

MALIGNANT PLEURAL EFFUSION

Median survival = 3-12-months

Lung cancer (shortest)

Ovarian cancer (longest)

WHY

Diuretics

Effective in few patients

Spironolactone 150-400mg/day

Patients with Portal Hypertension

High doses =

Volume depletion, renal dysfunction

ASCITES

Paracentesis

No durable effect = recurs every 3 days

Frequent visits to hospital

WHY

Thoracentesis

Cancers with quick respond to chemo

Extremely short life expectancy

98% recurs at 30 days

EFFUSION

Chemical Pleurodesis

Poor response in trapped lung or loculations

Painful procedure

50% failure to control

WHY

Decrease

Number of para or thoracentesis
Visits to hospital

Can be performed at home
Safe and effective vaccum

Significant Symptomatic Relief

Infection rate: <3%
Occlusion rate: <5%

Used for PleureX assisted pleurodesis

WHEN

MALIGNANT ASCITES

Symptomatic ascites in cancer patients
Prior to Hospice

MALIGNANT PLEURAL EFFUSION

Symptomatic effusions
Failed medical therapy (chemo/RT)
Terminal patients

WHEN NOT

Sepsis

Bacteremia

Peritonitis or empyema

Severe or uncorrectable coagulopathy

Loculated effusions or peritoneal fluid

HOW

History and physical

Labs

- CBC, PT/INR
- Fluid Cultures

Pre-operative imaging

- CT and/or US
- Evaluate for loculations and distribution of fluid

HOW

Conscious sedation

Abx. prophylaxis

US guided peritoneal/pleural access

Consider purse-string at tunnel site

HOW

PleurX Catheter

Diameter

15.5-Fr.

Pleural

66-cm

Abdominal

71-cm

Valve

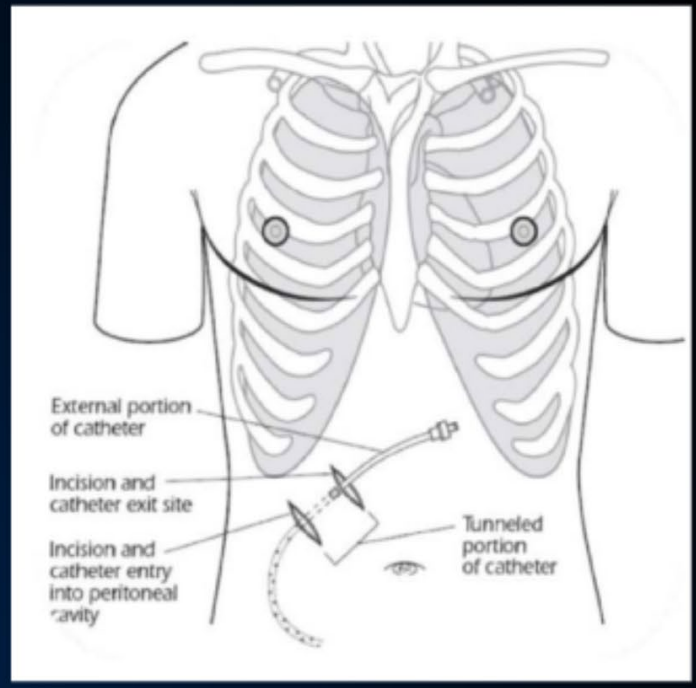
Prevent passage of air or fluid through the catheter

Polyester cuff

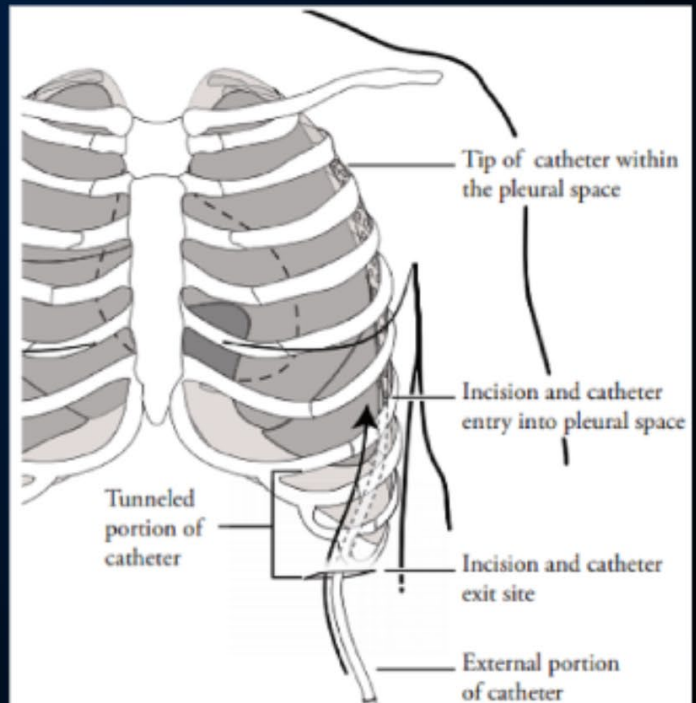
Promote tissue ingrowth to reduce infection

HOW

Abdominal



Pleural



Case

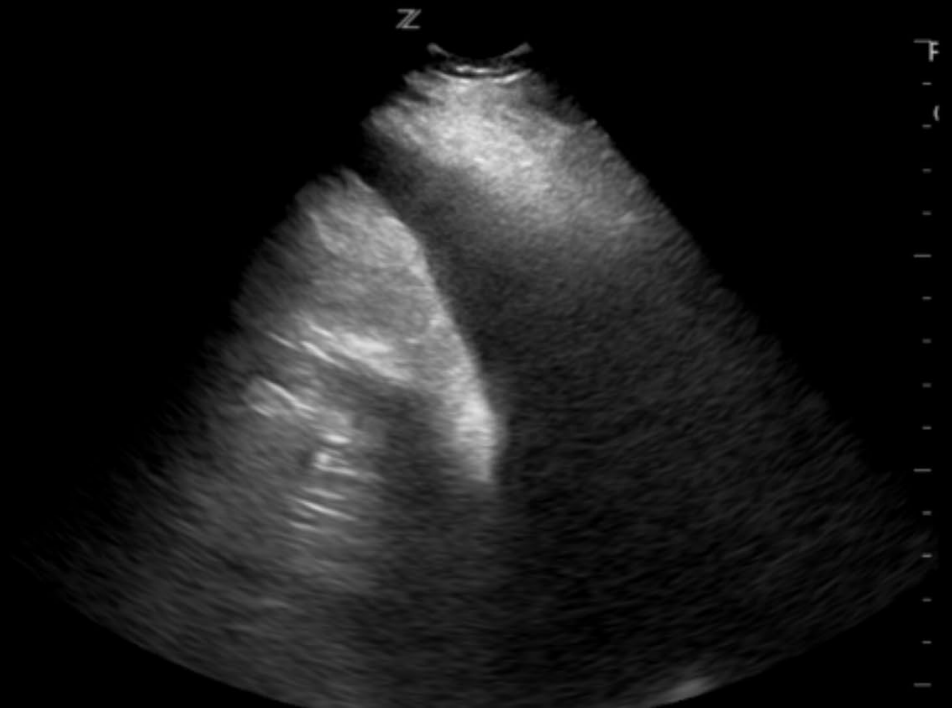
73 year-old female with peritoneal carcinomatosis and recurrent ascites

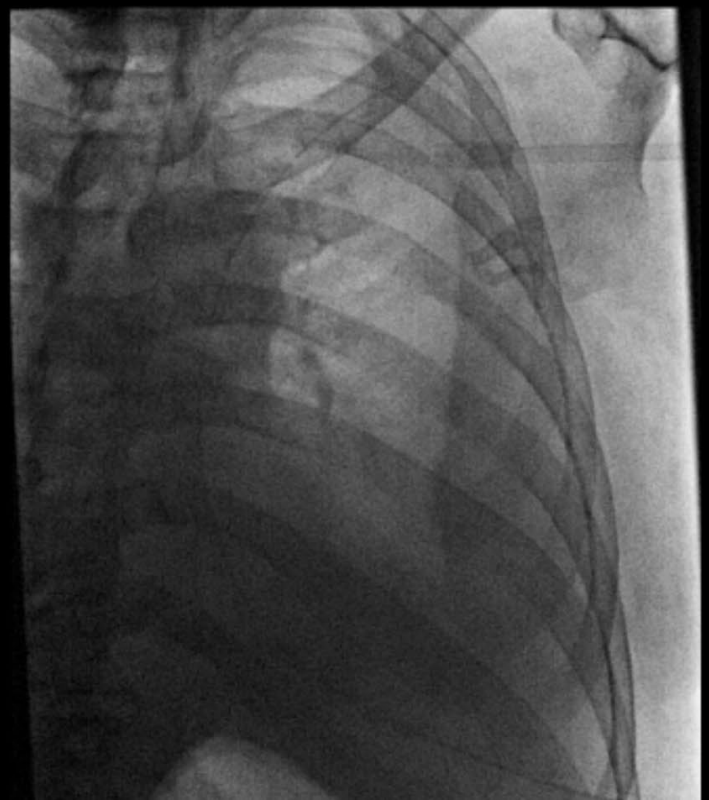
- Patient requires 3 Lts paracentesis Q week for symptomatic relief

Case

67 year-old male with cough and SOB. Images shows large left effusion and pneumonia

- Thoracentesis was performed. Cytology: + for AdenoCa
- No primary was identified
- Several thoracentesis were performed for symtomatic relief





HOW

Out-patient procedure

Post procedure

Monitoring for 2 hours

Supplies

Start-up kit comes with 4 bottles and instructions
Fill out form for more bottles to be shipped

Education

Home health consult or nurse education

Technical success: 100%

Clinical success: >95%

Pleural:

>95%

Placement to removal 29-41 d (<50cc/day)

58.6% removed prior death

Abdominal:

91% without repeat intervention

9% removed or replaced

Complications:

Pleural:

Infection: <2%

Occlusion: <4%

Abdominal:

Infection: <3%

Leakage: 5-2%

HOW

TROUBLESHOOTING

Fluid leakage

- Usually at the incision site
  - Purse-string suture around the catheter
  - Large volume paracentesis or thoracentesis

Low output

- Contrast injection under fluoroscopy
  - Clogged catheter or loculated fluid
    - tPA injection – 4-6mg TPA in 30cc, dwell 1 hour

Infection

- Fevers, change in character of fluid
- Fluid sample to cultures
  - If positive, remove catheter

THANK YOU

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THANK YOU

Picasso, 1948

SHE goat

Created in his studio in Vallauris after Spanish civil war

After deciding to sculpt a goat, Picasso searched the yard for discarded materials that could suggest parts of the animal's body

He crafted a skeleton with these objects

MOMA-NEW YORK