
6'0"
5'6"
5'0"
4'6"
72"
66"
60"
64"
Urology in the ER
Christopher Hoover MD
Urologist

Obstetrics & Gynecology in the ER

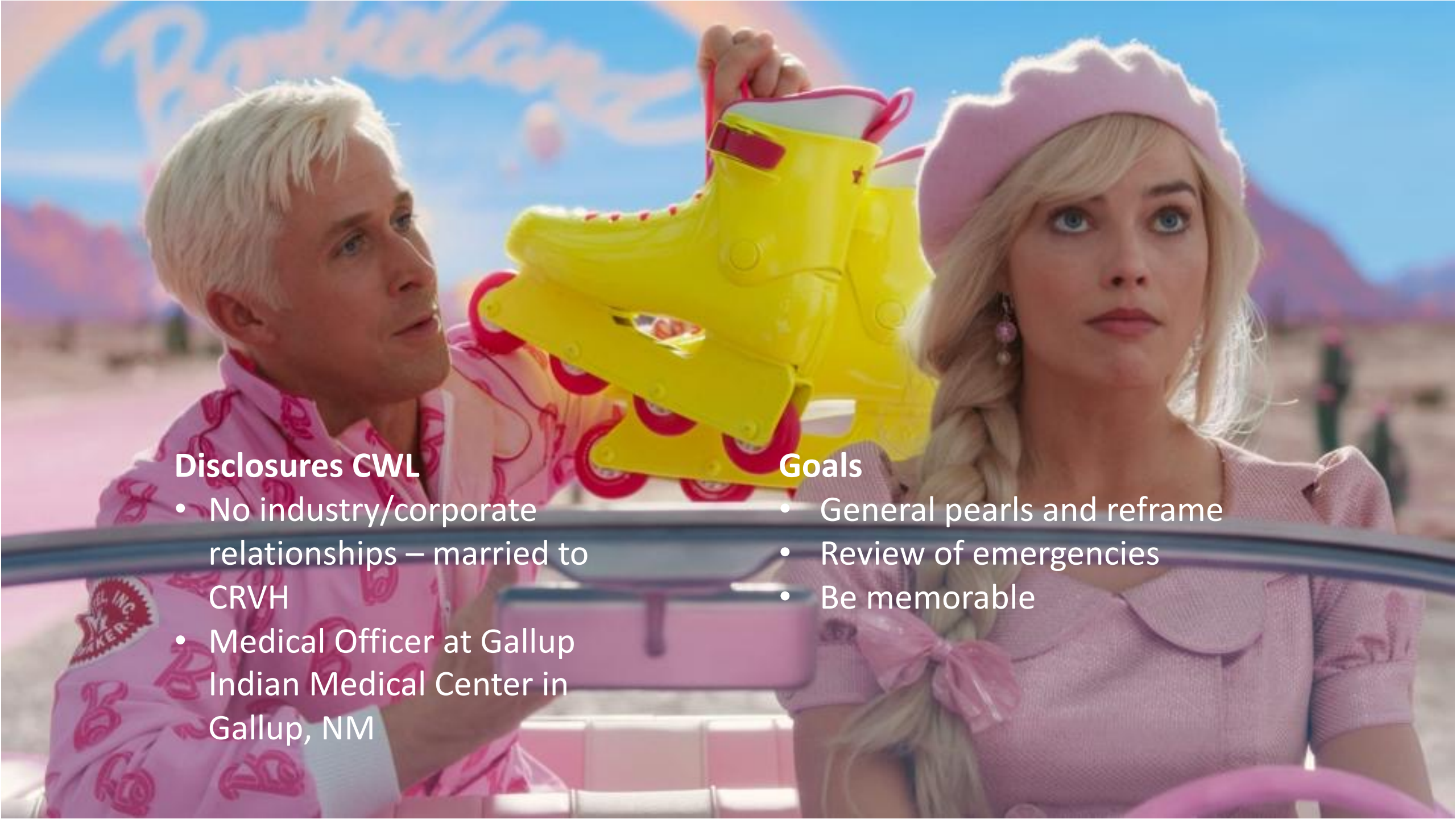
Connie Liu, MD/PhD
FACOG, Generalist OB/GYN

Disclosures CRVH

- No industry/corporate relationships – married to CWL
- Urologist at Rehoboth McKinley Christian Healthcare Services in Gallup, NM
- IT Director, Board member at Gallup Community Health (FQHC LAL)

Goals

- Practical advice
- Brief literature review
- Not be boring

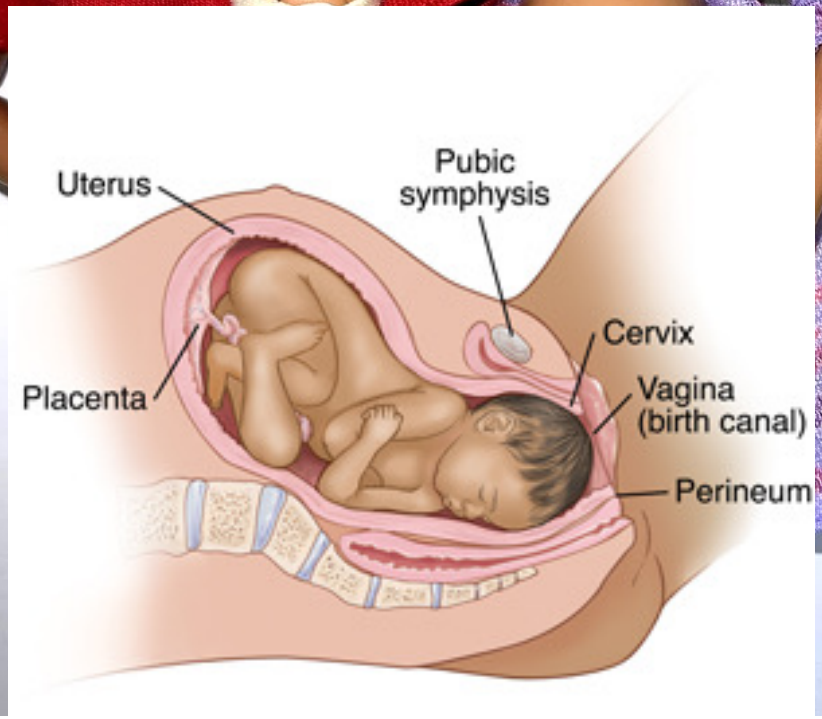


Disclosures CWL

- No industry/corporate relationships – married to CRVH
- Medical Officer at Gallup Indian Medical Center in Gallup, NM

Goals

- General pearls and reframe
- Review of emergencies
- Be memorable



When a Pregnant Patient Walks In:

ASK:

1. Parity
2. Gestational age
3. Prenatal care vs no prenatal care
4. The Big Four: Contractions? Rupture of membranes? Bleeding? Fetal Movement?

EVALUATE:

1. Palpable contractions?
2. Vaginal exam – Cervix, Presenting Part?
3. Ultrasound - Position (vertex?)
4. Ultrasound vs. stethoscope vs. doppler – 2 minute FHR

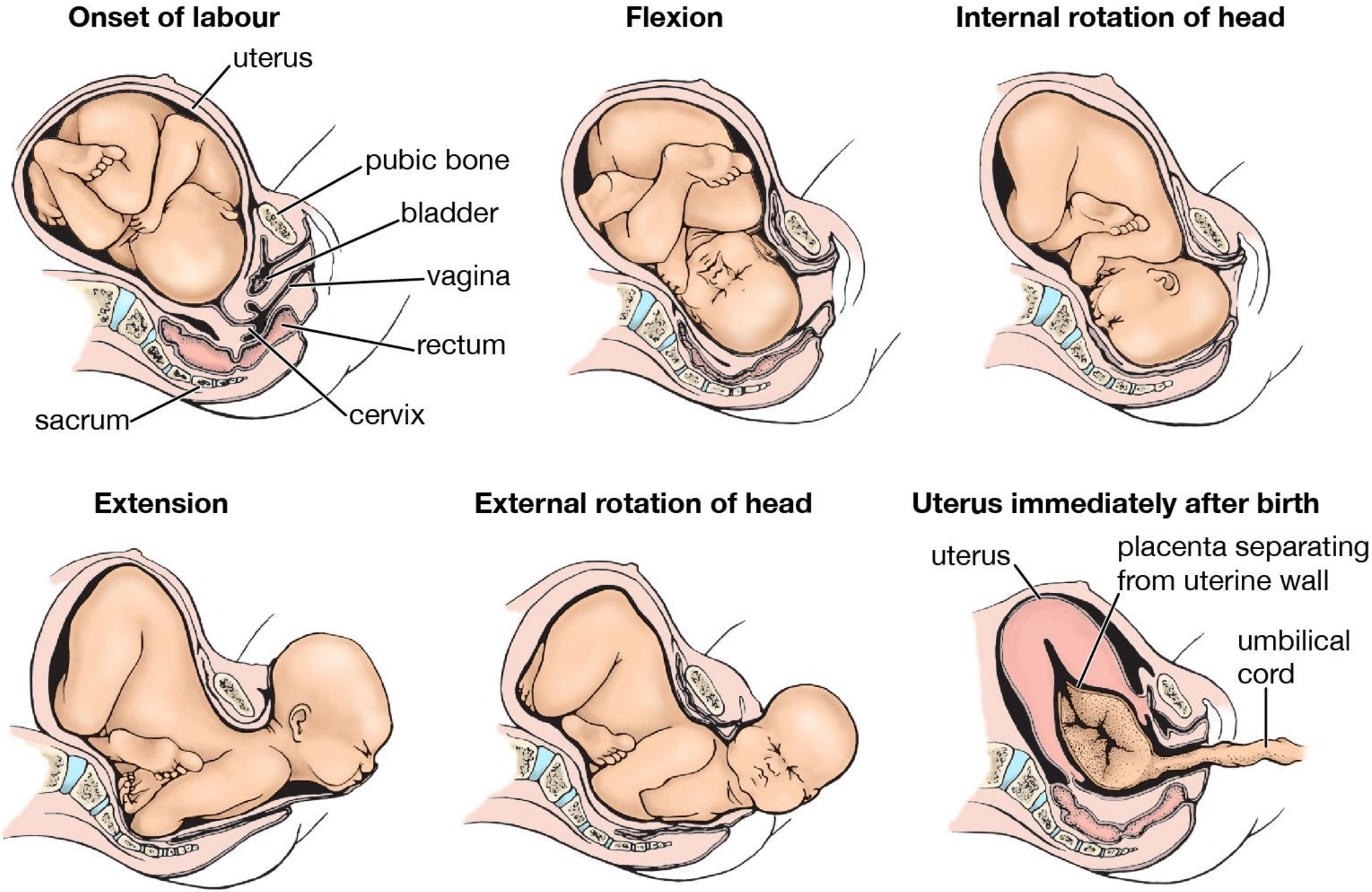
Is Delivery Imminent? – Where is my kit?

Prepare for Mom

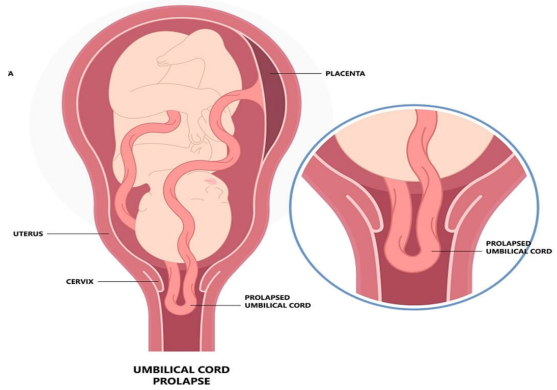
Sterile gloves and gown
Sterile towels
2 umbilical clamps/kellys
Sterile scissors
Hemorrhage meds

Prepare for Baby

Blankets
Suction
Cardiorespiratory monitor
Airway equipment



EMERGENT DELIVERY PEARLS

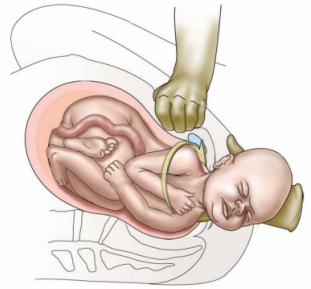


Cord Prolapse – the cord is compressed by the presenting part

Decompress the cord	- Hold the presenting part above the cord

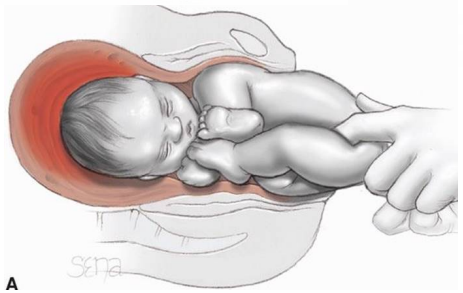
Should Dystocia: baby's shoulder is stuck under the pubic bone

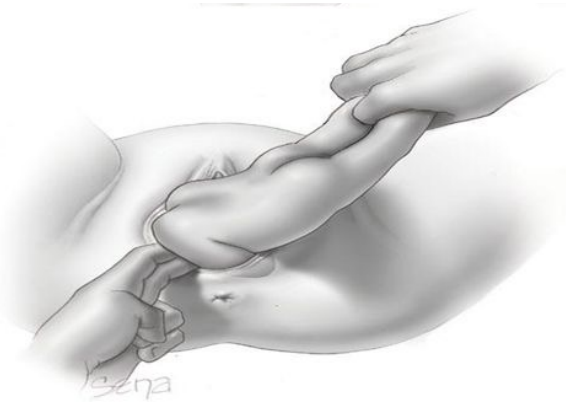
Remove anything that blocks your way	- Deep flexion of hips (McRoberts) - Suprapubic pressure - Empty the bladder
Move the baby	- Rotate the baby by pushing the shoulder - Deliver the posterior arm



Breech Delivery

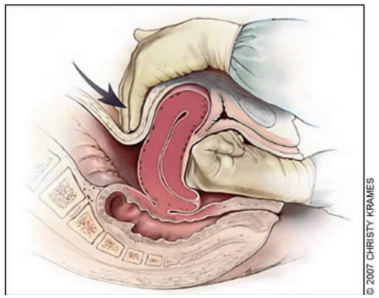
Deliver the limbs Baby delivers face-down	- Deliver limbs by sweeping across the body - Support the body to gently deliver





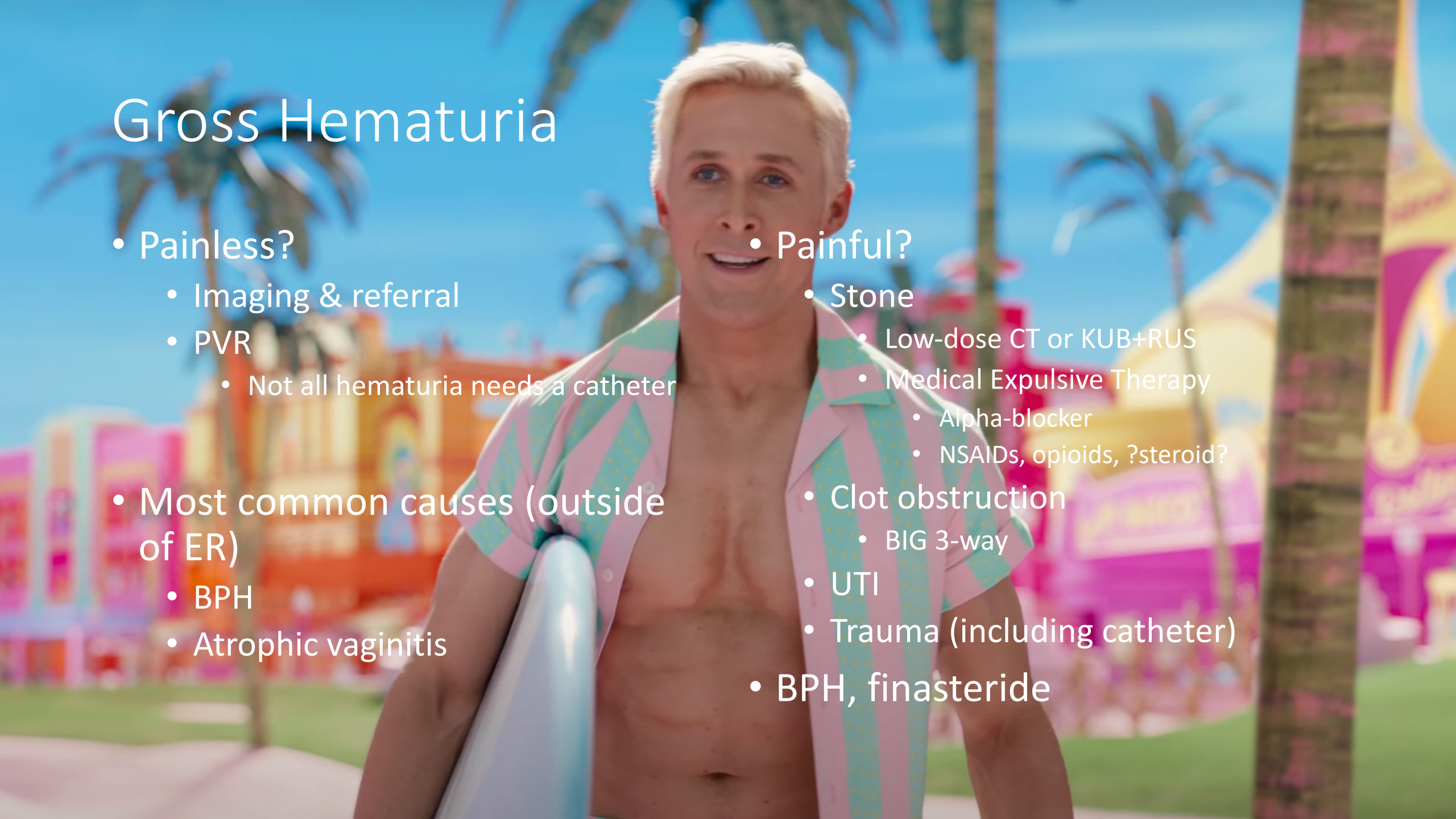
Postpartum Hemorrhage – where is my algorithm?

Contract uterus Fix other causes Replete volume	- **MECHANICAL** - Uterine fundal massage - Bakri balloon, Bimanual massage - **ACTIVATE MASSIVE TRANSFUSION PROTOCOL**	- **MEDS** - Oxytocin 10U IM (NOT IV PUSH) v. bolus; - TXA 1g qhr; - Methergine 10 mg IM (q2 min) - ~~HTN~~ - Hemabate 250 mcg (q 15 min) – ~~asthma~~ - Misoprostol 800 mcg buccal vs. rectal



Obstetric Hemorrhage Flowsheet

	Stage 1	Stage 2	Stage 3
	QBL **>1000 mL** or **VS changes** (by>15% or HR≥110, BP≤85/45, O2 sat <95%	QBL **>1000 mL** and **continued bleeding** but **<1500 mL**	QBL **>1500 mL** or **>2u pRBCs** given or **VS unstable** or suspicion of **DIC**
Assessment	Notify charge **RN, CNM** Place **pulse ox** VS, O2 sat Q5min Weigh + record **cumulative blood loss** Q5-15m **Careful inspection** w/ good exposure of vagina, cervix, uterus, placenta	Call **MD** Call **Obstetric Hemorrhage Response Team**-SVD Continue cumulative **QBL** STAT **CBC, coags** Move **US** machine to room Consider moving to **OR** and **calling anesthesia** Consider **amniotic fluid embolism, uterine inversion**	Call **Obstetric Hemorrhage Response Team** –C-section Consider calling **OR staff** Consider calling **2nd MD** **Repeat STAT CBC, coags, draw ABG** Consider central line
Meds/ Procedures	IV access: at least **18g** Bolus pitocin bag, may repeat x1 Repeat fundal massage **Methergine 0.2mg IM x1** unless hypertensive (May rpt x1 if good response, otherwise move on to 2nd line uterotonic) Place foley	2nd line uterotonics: **hemabate 250mcg IM** OR **misoprostol 800mcg SL** **TXA 1g/100cc NS over 10 min, may rpt x1 after 30m** Place **2nd IV** **Vaginal:** Repair lacs, D&C for retained placenta, consider Bakri **CS**: Inspect broad ligament, posterior uterus, retained placenta; consider B-lynch, Bakri	Consider activating **massive transfusion protocol** Consider **laparotomy** with B-lynch or hyst Give warmed fluids, warm blankets to upper body, SCDs
Blood bank	**Crossmatch 2u pRBCs**	**2u pRBCs to bedside**, transfuse per VS - **USE RAPID TRANSFUSER**-transfusion rate per provider **Order 2 FFP & crossmatch additional 2u pRBCs** **RN to bring blood up from blood bank**	**Transfuse aggressively** **1:1 pRBCs:FFP**



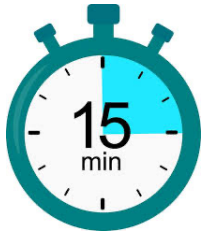
Gross Hematuria

- Painless?
  - Imaging & referral
  - PVR
    - Not all hematuria needs a catheter
- Most common causes (outside of ER)
  - BPH
  - Atrophic vaginitis
- Painful?
  - Stone
    - Low-dose CT or KUB+RUS
    - Medical Expulsive Therapy
      - Alpha-blocker
      - NSAIDs, opioids, ?steroid?
  - Clot obstruction
    - BIG 3-way
  - UTI
  - Trauma (including catheter)
- BPH, finasteride

PRE-ECLAMPSIA
Make an algorithm (ACOG)

More than 20 weeks up to six weeks postpartum

Blood Pressure
Every 15 min



MILD = >140/90

SEVERE= >160/>110

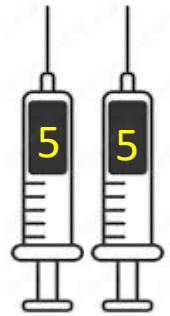
Symptoms (+ = possible severe)
Headache
Visual changes
RUQ/epigastric pain
Oliguria
Edema/pulmonary edema

Labs/Images (abn = possible severe)
CT SCAN? (Consider stroke)
CBC (platelets)
CMP (AST/ALT, Cr)
Urine dip, Protein/Creatinine (proteinuria)

When to Consult:
Mild-range BP: Admit vs. Follow-up
Severe preeclampsia: Admit vs. Transfer

Severe Treatment
Magnesium sulfate

IV



IM

Antihypertensives

Nifedipine (NOT ER)	***Labetalol***
10 mg PO	20 IV
(BP in 20 min)	(BP in 10 min)
10 mg PO	40 IV
(BP in 20 min)	(BP in 10 min)
20 mg PO	80 IV
(BP in 20 min)	(BP in 10 min)

Transport is delayed…

Watch for Magnesium Toxicity
Magnesium level q4h (goal = 4.9 to 8.5)
Symptoms (depression of DTR, respiration) – rx calcium gluconate

Monitor BPs after treatment
q10 – 1 hour, q15 – 1 hour, q30 – 1 hour, q1 hour – 4 hours

ECLAMPTIC SEIZURE - make an algorithm (ACOG)

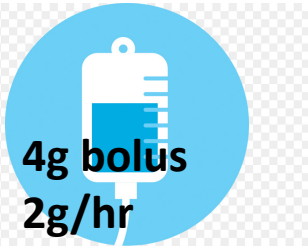
MMEDIATELY:
sual Seizure Care
et the uterus off the SVC (left decub, head of bed own)
itiate therapy

IEDS:
tart with magnesium first

SEIZURES PERSIST > 5 MIN OR RECUR:
nti-seizure medications (diazepam, lorazepam)
onsider intubation
onsult maternal fetal medicine/neurology/critical are/anesthesia

Do We Need Emergent Delivery?
Not necessarily!

Severe Treatment
Magnesium sulfate



IV

I

Antihypertensives

Nifedipine (NOT ER)	*Labe*
10 mg PO	20 IV
(BP in 20 min)	(BP i
10 mg PO	40 IV
(BP in 20 min)	(BP i
20 mg PO	80 IV
(BP in 20 min)	(BP i

Transport is delayed…
Watch for Magnesium Toxicit
Magnesium level q4h (goal =
Symptoms (depression of DT
– rx calcium gluconate
Monitor BPs after treatment
q10 – 1 hour, q15 – 1 hour, q3
q1 hour – 4 hours

Eclampsia Management

- ☐ Call for assistance
  - ☐ RRT (x71200)
  - ☐ MD
  - ☐ Anesthesia
- ☐ Designate
  - ☐ Team leader
  - ☐ Checklist reader/recorder
  - ☐ Primary RN
- ☐ Ensure side rails up
- ☐ Protect airway and improve oxygenation:
  - ☐ Maternal pulse ox
  - ☐ Supplemental O2
    - ☐ Left lateral decubitus position
    - ☐ Bag-mask ventilation available
    - ☐ Suction available
- ☐ Continuous fetal monitoring
- ☐ Place IV, draw pre-eclampsia labs
- ☐ Administer mag sulfate
- ☐ Administer anti-hypertensives if appropriate
- ☐ Develop delivery plan
- ☐ Debrief patient, family, OB team

Eclampsia Medications

- **4-6g magnesium sulfate bolus**→2g/hr OR **repeat 2-4g bolus** if already on magnesium
- If no IV, **10g IM** magnesium sulfate (5g in each buttock)
- If seizure lasts >5 minutes or recurrent seizures, consider **lorazepam** 2-4mg IV (may rpt x1 after 10-15min) OR **diazepam** 5-10mg IV Q5-10min (max 30mg)

Magnesium Toxicity

Therapeutic range 5-9 mg/dL but **clinical signs** are more important for detecting toxicity (decreased/absent reflexes, altered mental status, muscle weakness, respiratory depression)

If mild toxicity suspected or serum mag >9.6mg/dL, stop infusion and recheck serum mag Q2 hours. Mag can be restarted at lower rate when serum mag <8.4mg/dL.

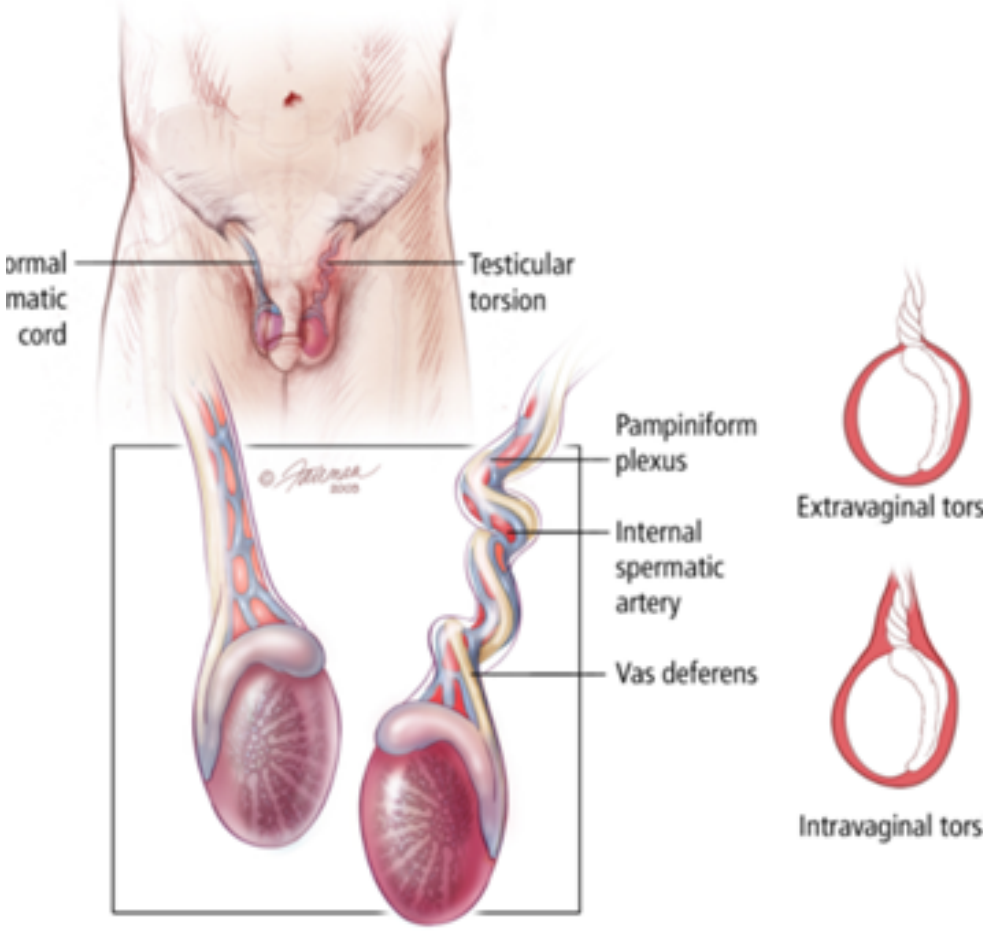
If risk of impending respiratory depression, administer calcium gluconate 10%, 10mL IV over 3 minutes + furosemide 20mg IV and notify anesthesia for potential intubation

Testicular Torsion

- Flow vs none
  - US Tech vs POCUS
- Open book
- OR
- Intermittent?

Testicular Torsion

- "Acute scrotum"
  - Torsion: acute/quick; sleep/video games
    - Presentation 15%[1]-38%[2]
    - Incidence 3.8/100k[3]
  - Epididymo-orchitis: gradual (?)
- Risk up: history of undescended testis or inguinal surgery
- **Clinical diagnosis** 🤷‍♂️
  - Normal cremasteric reflex *strongly associated* with intact blood flow
  - Absent cremasteric reflex *associated* with torsion
  - Ipsilateral scrotal elevation



https://auau.auanet.org/core

[1]*Scand J Surg. 2007;96(1):62-6. PMID: 17461315.*
[2]*J Urol. 2011 Nov;186(5):2009-13. PMID: 21944120.*
[3]*Urol Ann. 2018 Jan-Mar;10(1):20-23. PMID: 29416270.*

Testicular Workup for ISchemia and Torsion

- TWIST 2013[4] *(15%)*
  - 0: no follow-up
  - 2-5: u/s
  - 6-7: OR 🤷‍♂️
- J Urol 2016[5] *(34%)*
  - 0: Nothing
  - 1-5: u/s
  - 6-7: OR 🤷‍♂️
- Urol Ann 2018[6] *(38%)*
  - 0-2: 50%; 5-7 24%
  - NPV 0-2 96%
  - PPV 5-7 93%
- Int Urol Nephrol 2021[7] *(50%)*
  - 0-2: nothing
  - 3-5: 90% PPV
  - 6-7: 100% PPV

TWIST PARAMETER	SCORE IF PRESENT
Testicular swelling	2
Hard testicle	2
High-riding testis	1
Absent cremasteric reflex	1
Nausea or vomiting	1
Total score	_/7

TWIST—Testicular Workup for Ischemia and Suspected Torsion. Data from Barbosa et al[13] and Sheth et al.[14]

[4]*J Urol. 2013 May;189(5):1859-64. PMID: 23103800.*
[5]*J Urol. 2016 Jun;195(6):1870-6. PMID: 26835833.*
[6]*Urol Ann. 2018 Jan-Mar;10(1):20-23. PMID: 29416270.*
[7]*Int Urol Nephrol. 2021 Jan;53(1):7-11. PMID: 32844355.*

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Diagnosing with a TWIST: Systematic Review and Meta-Analysis of a Testicular Torsion Risk Score

Kirby R. Qin [1,2,3*†] and Liang G. Qu [1,3*]

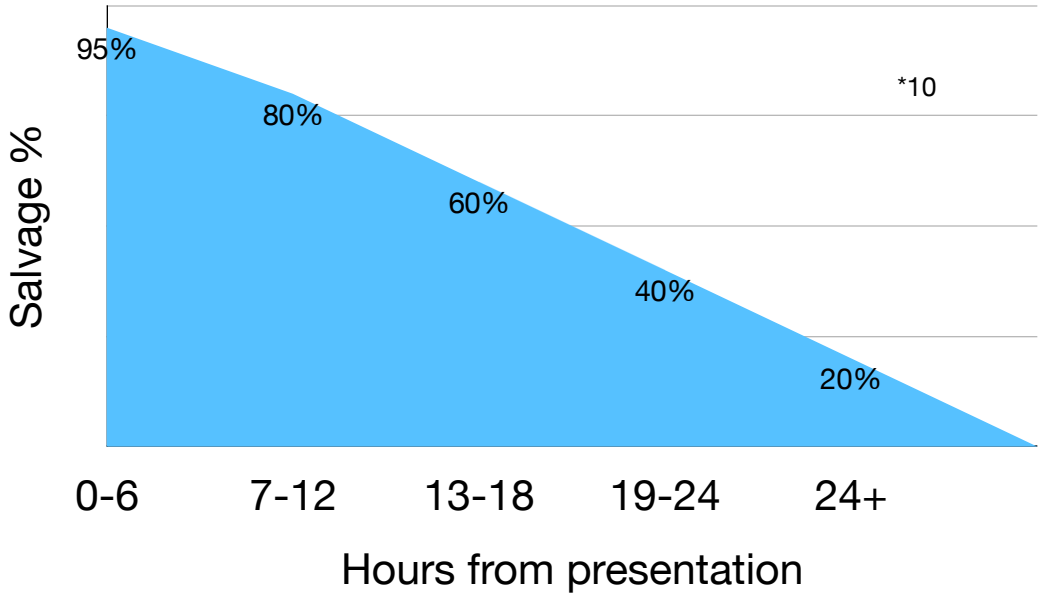
July 2022[8]

"Perfect" sensitivity could not be achieved in the low-risk group as there were 17 cases of TT among 785 presentations. This raises medicolegal concerns regarding the potential for missed torsion. Orchiectomy secondary to misdiagnosed torsion is an active area for litigation and one of the most common malpractice suits among young males.[32] It is unlikely that any single test or clinician can achieve 100% sensitivity, as exceptional cases are unavoidable. There were 2 cases of TT with scores of 0,[20,23] suggesting an absence of physical signs

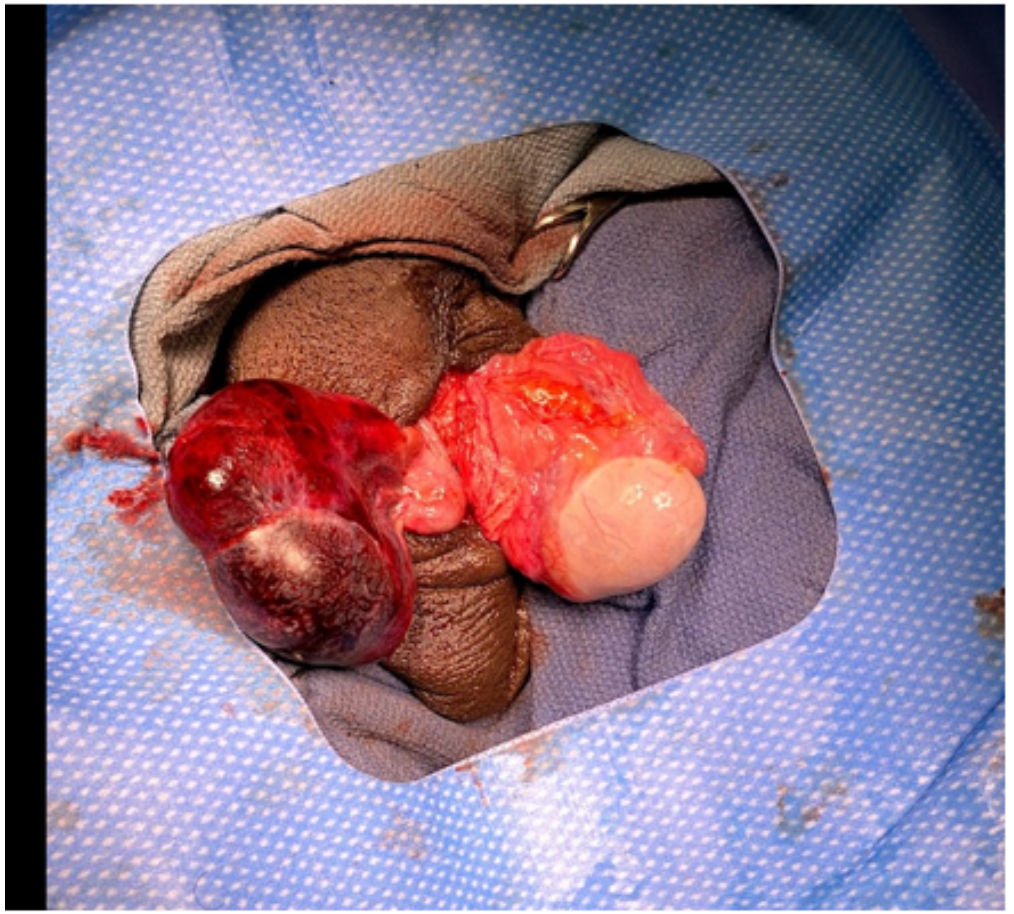
[8]J Urol. 2022 Jul;208(1):62-70. PMID: 35238603.

Predictors of Salvage

- Time “<4h”
  - 6h 100%, 6-12h 50%[1]



- Use of TWIST **and** Doppler u/s[9]
  - Increased finding 18-53%



[1]*Scand J Surg. 2007;96(1):62-6. PMID: 17461315.*
[9]*J Pediatr Urol. 2023 Aug;19(4):474-476. PMID: 37080795.*
[10]*BJU Int. 2003 Aug;92(3):200-3. PMID: 12887467*

OVARIAN TORSION

History

Risks: known adnexal mass, pregnancy, premenopausal

Pelvic pain (90%) – presentation varies

- Colicky → persistent
- Sudden, acute, severe pain
- Sometimes dull, sometimes sharp
- Often radiating – flank, back, groin

Nausea, sometimes vomiting (47-70%)

Fever (2-20%)

Physical Exam

Tender (absent in as many as 1/3 patients)

Low-grade fever (sometimes)

Laboratory findings

Mild leukocytosis (sometimes)

Imaging

Ultrasound

CT scan (esp if other etiologies are on ddx) vs. MRI

Postmenopausal patients

Continuous dull pain more common vs. acute-onset sharp pain

Pediatric Patients

Most frequent sign: sudden onset abdominal pain (97.5%) with nausea (67%) and/or vomiting (62%) – mostly lower abdomen

Abd tenderness (88.4%)

Palpable mass (24%)

Imaging variability sensitive for ovarian torsion

- Abdominal ultrasound 79%
- CT scan 42%

Premenarchal patients – less likely to have adnexal mass, more like on US to have asymmetric ovaries and loss of Doppler flow.

Rey-Bellet Gasser C, Gehri M, Joseph JM, Pauchard JY. Is It Ovarian Torsion? A Systematic Literature Review and Evaluation of Prediction Signs. Pediatr Emerg Care. 2016 Apr;32(4):256-61.

Prieto JM, Kling KM, Ignacio RC, et al. Premenarchal patients present differently: A twist on the typical patient presenting with ovarian torsion. *J Pediatr Surg*. 2019;54(12):2614-2616.

Aviad Cohen, Solomon, B Almog, Y Cohen, Z Tsafrir, E Rimon, I Levin, Adnexal Torsion in Postmenopausal Women: Clinical Presentation and Risk of Ovarian Malignancy, Journal of Minimally Invasive Gynecology, Volume 24, Issue 1, 2017, Pages 94-97,

Ovarian Torsion

- CT SCAN and MRI
  - Enlarged ovary (most common finding, > 4 cm)
  - Twisted pedicle (seen best with IV contrast)
  - Deviation of uterus to side
  - Fallopian tube thickening

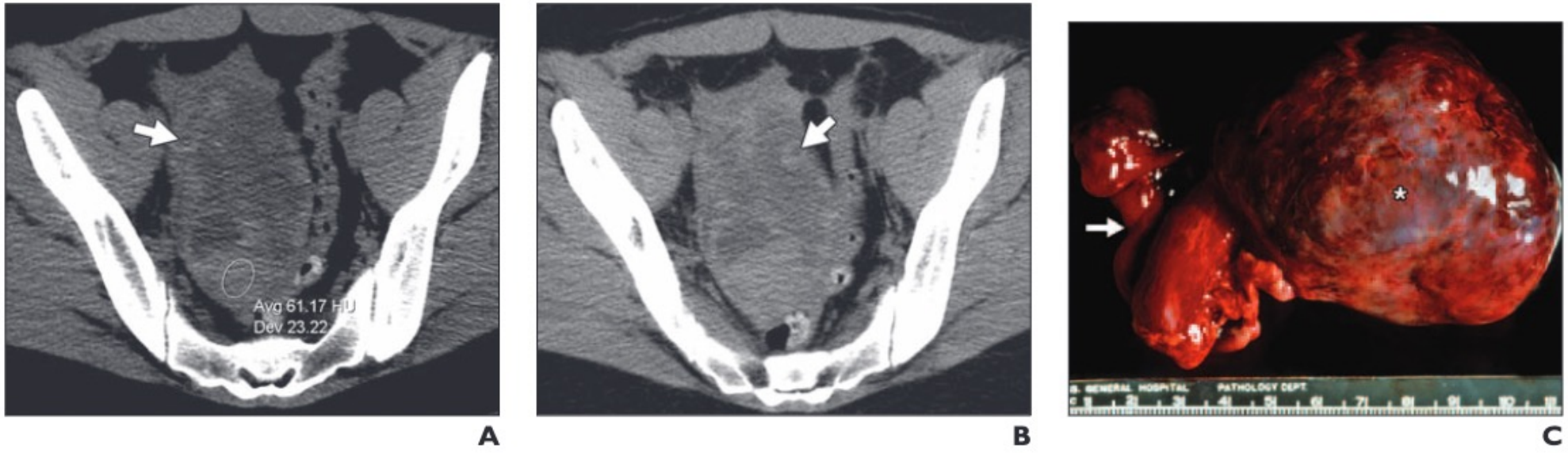


Fig. 9—31-year-old woman with hematoma in torsed right ovary.
A and **B,** CT without IV contrast agent shows 9-cm right ovary containing high-density material consistent with blood (*circle*, **A**). Note peripheral location of follicles (*arrow*, **A** and **B**) with central afollicular stroma. Twisted pedicle was not identified.
C, Gross pathologic examination shows hemorrhage within enlarged ovary (*asterisk*) and twisted fallopian tube (*arrow*).

Suprapubic Tubes

- It’s just a catheter
- The tract is like a piercing
- They probably still have a urethra

- Stuck balloon

- SP tap

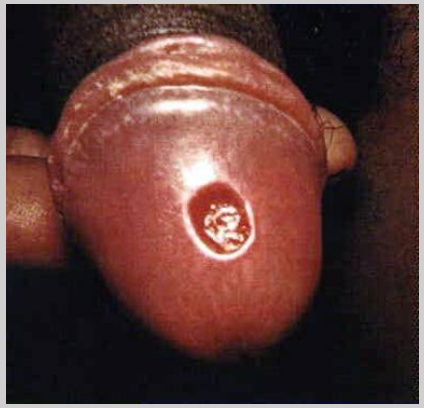
Paraphimosis

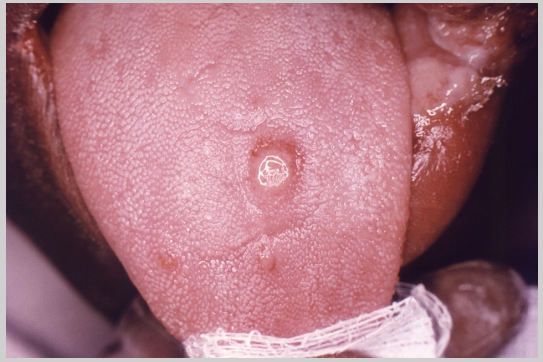
- Squeeze
- Incise
- Penile block
  - Dorsal
  - Ring
- Don’t let it happen in the first place
  - PUT IT BACK
  - Circumcision

SYPHILIS

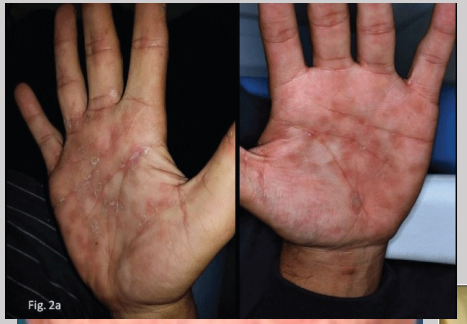
Pictures courtesy of CDC

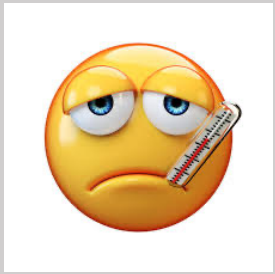
PRIMARY – classic chancre is single painless BUT
Can be MULTIPLE PAINFUL lesions

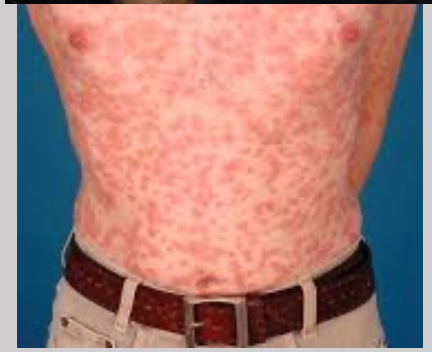


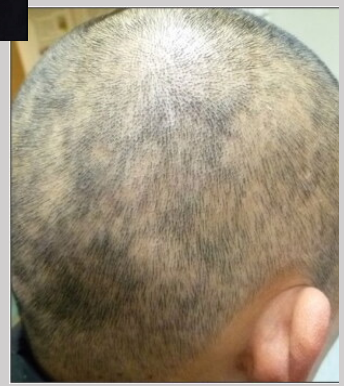


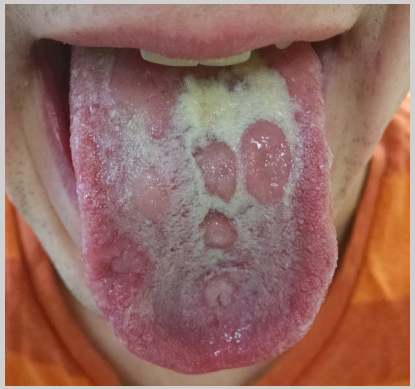
SECONDARY – plantar, palmar, disseminated skin rash with flat discoloration. Look for mucocutaneous lesions, lymphadenopathy, alopecia, leukoplakia.



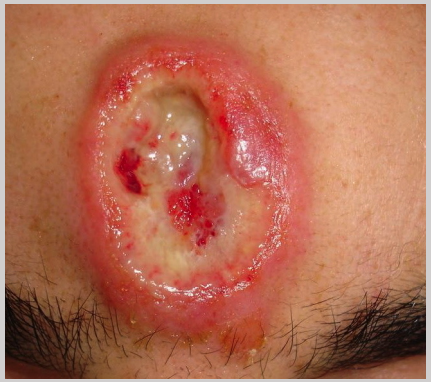








TERTIARY – gummas, cardiovascular syphilis, psych manifestations, or late neurosyphilis.



At Any Time

Neurosyphilis: Early can resemble aseptic meningitis (h/a, fever, stiff neck, cranial nerve 2/6/8

Otosyphilis: Tinnitis, hearing loss, vertico

Oculosyphilis: vision change, uveitis

Mohammad K Shalabi M, Burgess B, Khan S, Ehrsam E, Khachemoune A. Alopecia syphilitica, from diagnosis to treatment. Proc (Bayl Univ Med Cent). 2022 Jan 26;35(2):180-183. doi: 10.1080/08998280.2021.2021761. PMID: 35261446; PMCID: PMC8865268.

Sugaya N, Migliari D (2018) Syphilis: A Tricky Disease that may Pose Some Diagnostic Challenges - A Case Report. J Infect Dis Epidemiol 4:058. doi.org/10.23937/2474-3658/1510058

Stone + UTI

- Risk up
  - Female[1,8]
  - Fever, CRP[2]
  - Leukocytosis[8] >15?[1]
  - NITR+, LE+[7]
  - Pyuria >9? >150?/hpf[1,8]
  - Pregnant[4]
    - Less likely to get intervention
    - More likely to have delay to intervention
  - Stone size <5 or >7?[6]
- Timing
  - Delayed decompression (>2d), higher mortality[3]
- Treatment
  - ER → OR v IR
  - ER → inpatient/obs
  - ER → outpatient GU
  - Antibiotics? Choice?[5]

1. Shah, J Endourol 2022
2. Boeri, World J Urol 2023
3. Shah, J Urol 2020
4. Shah, Int J Urol 2023
5. Haasen, Am J Emerg Med 2019
6. Andruchow, J Urol 2021
7. Shockley, J Endourol 2018
8. Hu, PLoS One 2018

Development and validation of a risk-prediction nomogram for patients with ureteral calculi associated with urosepsis: A retrospective analysis – Hu et al, PLoS One, 8/2018

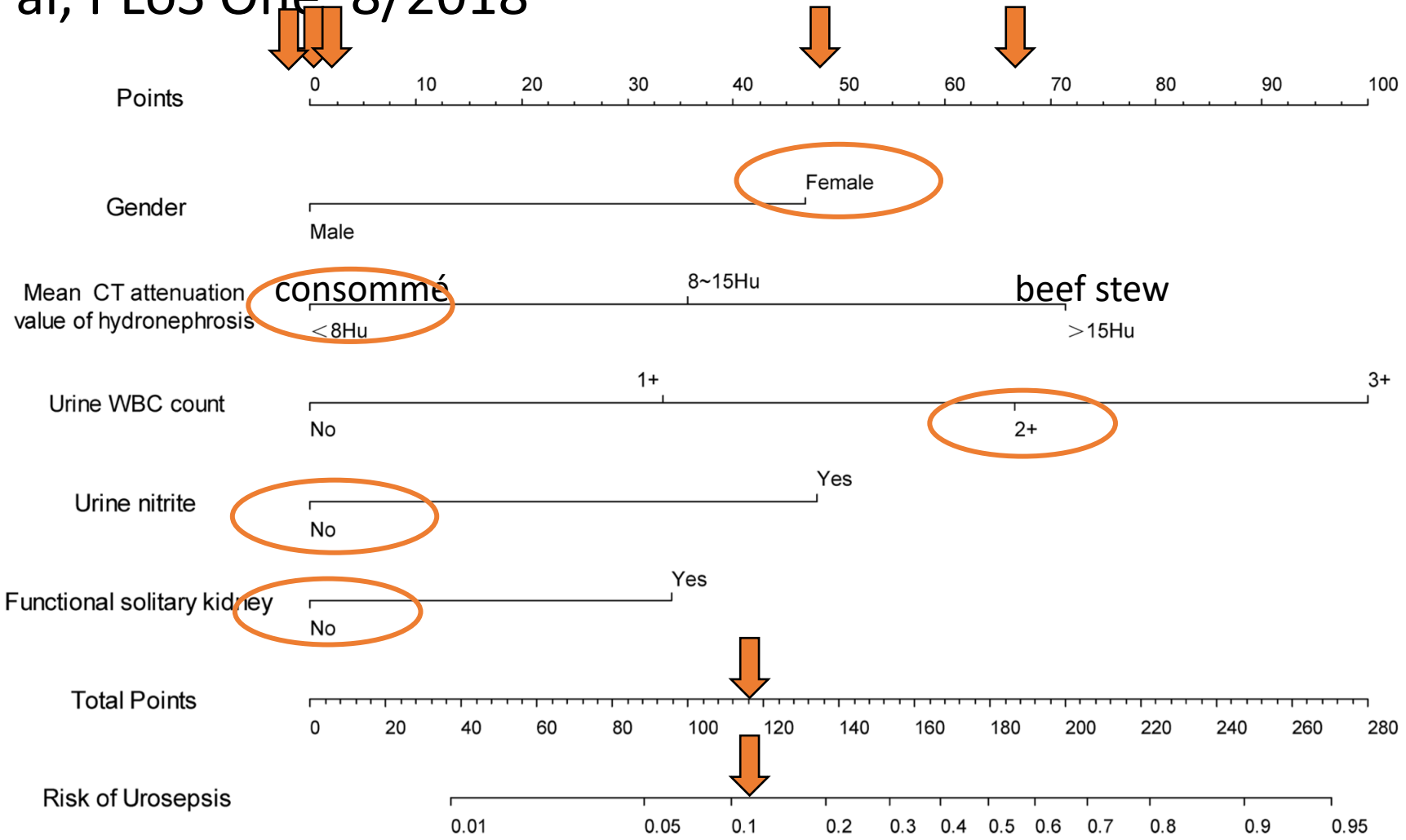


Fig 1. Nomogram to predict the probability of urosepsis in the patient with ureteral calculi.

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Acute Urinary Retention

- Coudé ≠ fellowship-trained Urologist (or specialty Nurse)
- Can you put in a central line?
- Stricture/meatal stenosis
  - 5Fr feeding tube
- CATH SECURE!
  - Stat-lock™ etc.
- Duration/Follow-up
- BPH meds
  - Alpha-blocker
  - Finasteride
- Anticholinergics

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