Case for Septic/Infected Abortion Review Course

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Clinical Case

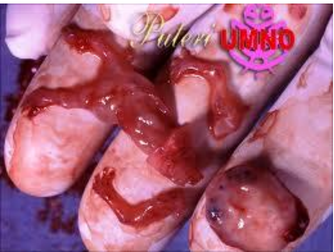
AD, a 18 year old G1P0 comes to the OB ER because of fever and decrease in sensorium. She has a history of instrumentation 1 week prior to admission. Amenorrhea is 11 weeks. She has been having on and off fever for the past 5 days with bleeding soaking 2 pads per day.
1 day prior to admission, her T= 39 °C with chills, nausea and vomiting.
On PE, BP is 80/50, CR is 110 bpm, RR 24 cpm, T = 38.9 °C. The abdomen is soft and non-tender. On pelvic exam, the cervix is closed and the uterus is 8 weeks size.

1. Give your primary consideration (diagnosis) and your basis.

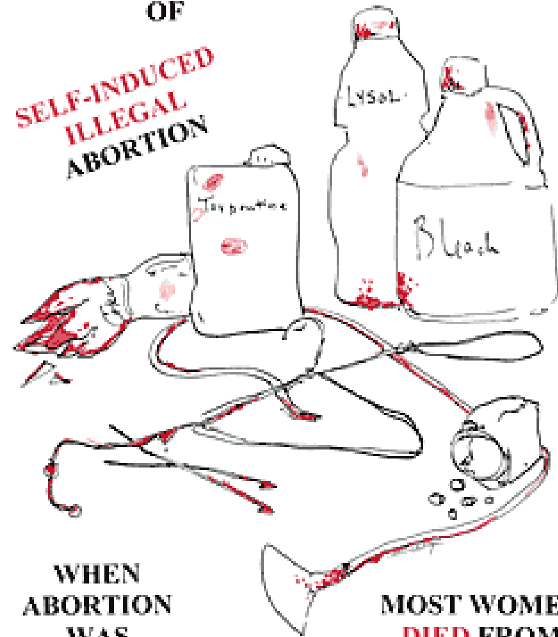
Septic/Infected Abortion

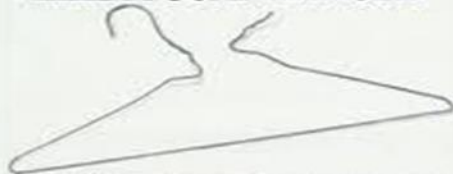
- Definition
  - expulsion/passage of the products of conception from the uterus before the age of fetal viability, that leads to infection of the female genital tract and to generalized infection
  - may lead to life-threatening complications to the mother

WHO, ACOG 2003



Septic/Infected Abortion (Philippine statistics)



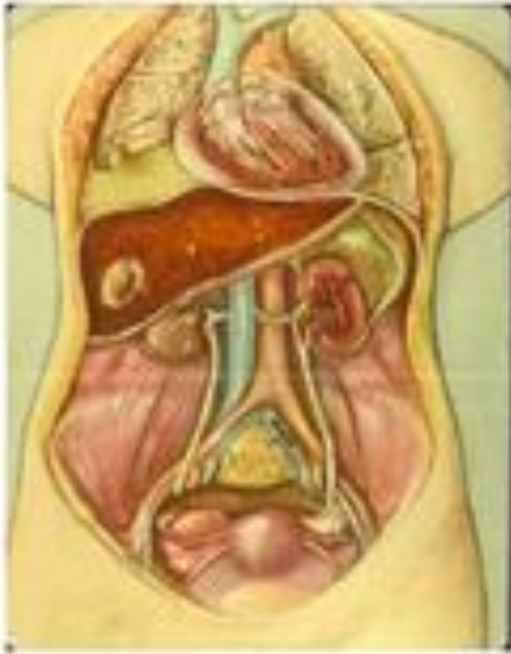


- Methods

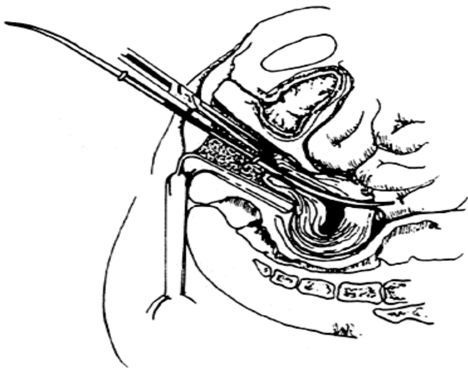
herbs
misoprostol
dilatation & curettage
catheter insertion
insertion of non-surgical implements - knitting needles, clothes hangers *(into the uterus)*

Thapa SR, Rimal D, Preston J (September 2006) "Self induction of abortion with instrumentation". *Aust Fam Physician* 35 (9): 697–698

Septic/Infected Abortion



Can be associated with termination of pregnancy,
less commonly with spontaneous abortion.
This is less common than in years past
when pregnancies were terminated by non medical personnel



Pathophysiology

- ✦Ascending infection –retained products of conception or from operative trauma
  - Perforation of the uterus – severe infection: bowel injury ???
  - Hysterotomy - ↑ infection → necrosis due to foreign body, blood clots, contamination from the lower genital tract, poor drainage of the uterine cavity

Cates W and Grimes DA 1981

Septic/Infected Abortion

- Diagnosis - mainly clinical (history ? patient denial)
  - Symptoms: fever, chills, malaise, abdominal pain, vaginal bleeding, passage of placental tissue

Induced Abortion. November 2008 by the American College of Obstetricians and Gynecologists

Postabortion complication, bacteremia, sepsis, and septic shock in: Sweet RL and RS Gibbs. Infectious Complications of the Female Genital Tract , 5th ed, 2009

Septic/Infected Abortion

- Diagnosis

  Signs

  tachycardia

  tachypnea

  with sepsis: agitation (appears toxic/disoriented)

  lower abdominal tenderness

  absence of fever with leukemoid reaction

  (WBC = 45- 120,000/mm^3)

  fluid sequestration

  hypotension / edema of infected tissues

Lichtenberg, ES, Grimes DA, Paul M. Abortal complications: prevention and management, in: Paul M et al. A Clinician's Guide to Medical and Surgical Abortion. New York; ChurchillLivingstone; 1999

Septic/Infected Abortion

- Diagnosis

Abdominopelvic examination

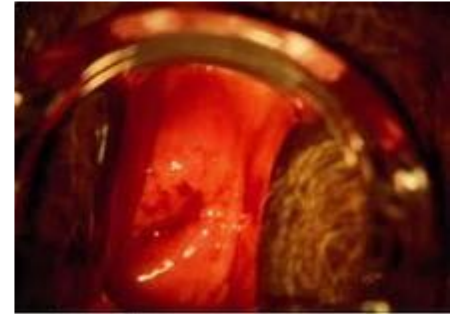
-open cervix with bleeding and foul smelling products of conception or discharge/ *cervical/vaginal lacerations*

-with or without *a catheter*

-bimanual examination: *uterine tenderness*

-with gas gangrene of the uterus: *crepitation* in the pelvis

-abdominal tenderness, *guarding, and rebound*



A. Masinde & B. Gumodoka : Management Of Post Abortion Complication. *The Internet Journal of Gynecology and Obstetrics.* 2010 Volume 12 Number 2

Clinical Case

1. Give your primary consideration (diagnosis) and your basis.

   Septic Shock secondary to Induced Abortion/Infected Abortion

Basis:

Septic shock – decreased sensorial changes
hypotension
fever, tachycardia
GI symptoms: nausea and vomiting

Induced/Infected Abortion - history of instrumentation, signs and symptoms of fever with chills, tachycardia, vaginal bleeding

Clinical Case

2. Give your differential diagnoses.

Clinical Case

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Appendicitis (ruptured)

Dysfunctional Uterine Bleeding

Early Pregnancy Loss

Ectopic Pregnancy (ruptured)

Ovarian new growth, in complication

Pelvic Inflammatory Disease (severe)

Urinary Tract Infection (pyelonephritis, in sepsis)

Septic Shock

Clinical Case

3. What diagnostic examination would you request?

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- Diagnosis (laboratory)

Examination	Reference	Level of evidence/Grade of recommendation
CBC - recommended	**Stone CK et al. 2008** **Monif G. et al. 2008**	**Level III Grade A**
Culture and gram stain of cervical material for *Chlamydia trachomatis* and *N. gonorrhea*	Monif G. et al. 2008	**Level III Grade C**
Gram stain/Culture of the endometrium	**Monif G. et al. 2008** **Soper D. Et al. 2001**	**Level III Grade C**
Blood culture (2 sets) - recommended	**Monif G. et al. 2008**	**Level III Grade A**

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Examination	Reference	Level of evidence/Grade of recommendation
Transvaginal ultrasound recommended -	Monif G. et al. 2008 Soper D. Et al. 2001	Level III Grade A
Chest x-ray/ CT Scan/MRI	Monif G. et al. 2008 Soper D. et al. 2001	Level III Grade C
Protime/prothrombin time, serum electrolytes, AST/ALT, BUN, creatinine-recommended	Soper D. et al. 2001	Level III Grade A
If DIC is suspected (fibrinogen, fibrin split products, D-dimer) ?	*NOT USEFUL*	GPP

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Diagnostics:

1. CBC
2. Blood culture
3. Transvaginal ultrasound
4. Protime/prothrombin time, serum electrolytes, AST/ALT, BUN, creatinine

Clinical Case

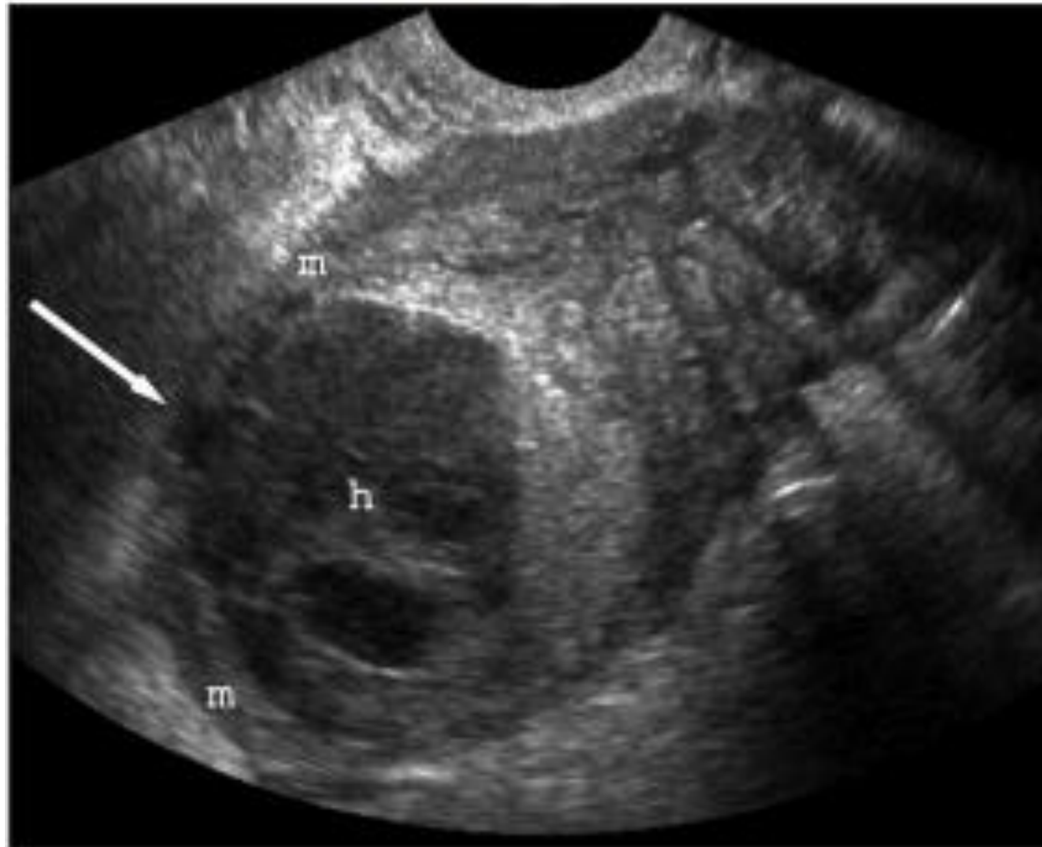
3. What diagnostic examination would you request?

CBC with blood typing
Blood culture
Chest X-ray (if patient is stable)
Transvaginal & abdominal UTZ (if patient is stable, abdominal utz-bowel perforation; use portable machine)
Protime/prothrombin time, serum electrolytes (Na^+, K^+, Ca^{++}, Mg^{++})
ALT, BUN, serum creatinine

Clinical Case

- These are the results of your initial laboratory examination
  - Stat CBC: Hb= 6 g/dl, WBC = 21 (segmenters = 92%), platelets = 113
  - Serum creatinine: 145 umol/L (NV = 45-90 umol/L)
  - Serum K+: 2.8 mEq/L

Transvaginal UTZ of the Patient



Clinical Case

4. What is now your diagnosis?

Clinical Case

4. What is now your diagnosis?
   - Septic shock secondary to induced/infected abortion
   - R/O Uterine perforation
   - Anemia, multifactorial

Clinical Case

5. How will you manage this patient?

RECALL:

18 year old G1P0 :

- decrease in sensorium
- history of instrumentation 1 week PTA
- amenorrhea of 11 weeks
- on and off fever for the past 5 days with bleeding soaking 2 pads/day
- 1 day PRA: T= 39 °C with chills, nausea and vomiting
- BP is 80/50, HR is 110 bpm, RR 24 cpm, T = 38.9 °C
- abdomen: soft and non-tender
- pelvic exam: cervix is closed, uterus 8 weeks size

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- Management

Intervention	References	Level of evidence/Grade of Recommendation
Medical: Periabortal use of antibiotics - recommended	Sawaya GF et al. 1996 (meta-analysis)	Level I/Grade A
Appropriate antibiotic therapy - recommended	Several regimens studied	Level I/Grade A

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- Management

Intervention	**References**	**Level of evidence/Grade of Recommendation**
Duration of antibiotic use; may discontinue: • **T < 37.7°** C • (-) local findings • normal WBC	Monif G et al. 2008	Level III/Grade A
Single vs. multiple dosing (*no need for prolonged administration*)	May W et al. Cochrane 2007	Level I/Grade A

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- Management

Intervention	References	Level of evidence/Grade of Recommendation
Blood transfusion (Hb 7-9 g/dl)	Guinn DA et al. 2007 Dellinger RP 2013	Level III/Grade C

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- SURGICAL Management (Conservative)

Intervention	References	Level of evidence/Grade of Recommendation
Surgical: curettage •clinically warranted •retained products on UTZ *D & C vs. MVA* *Curettage done within 4-8 from admission* no difference in cervical injuries, excessive blood loss, blood transfusion, febrile morbidity, repeat uterine evacuation, duration of operation and women's preference; MVA for < 9wks	Kulier R et al. Cochrane 2001 Forna F et al. Cochrane 2001	Level I/Grade A

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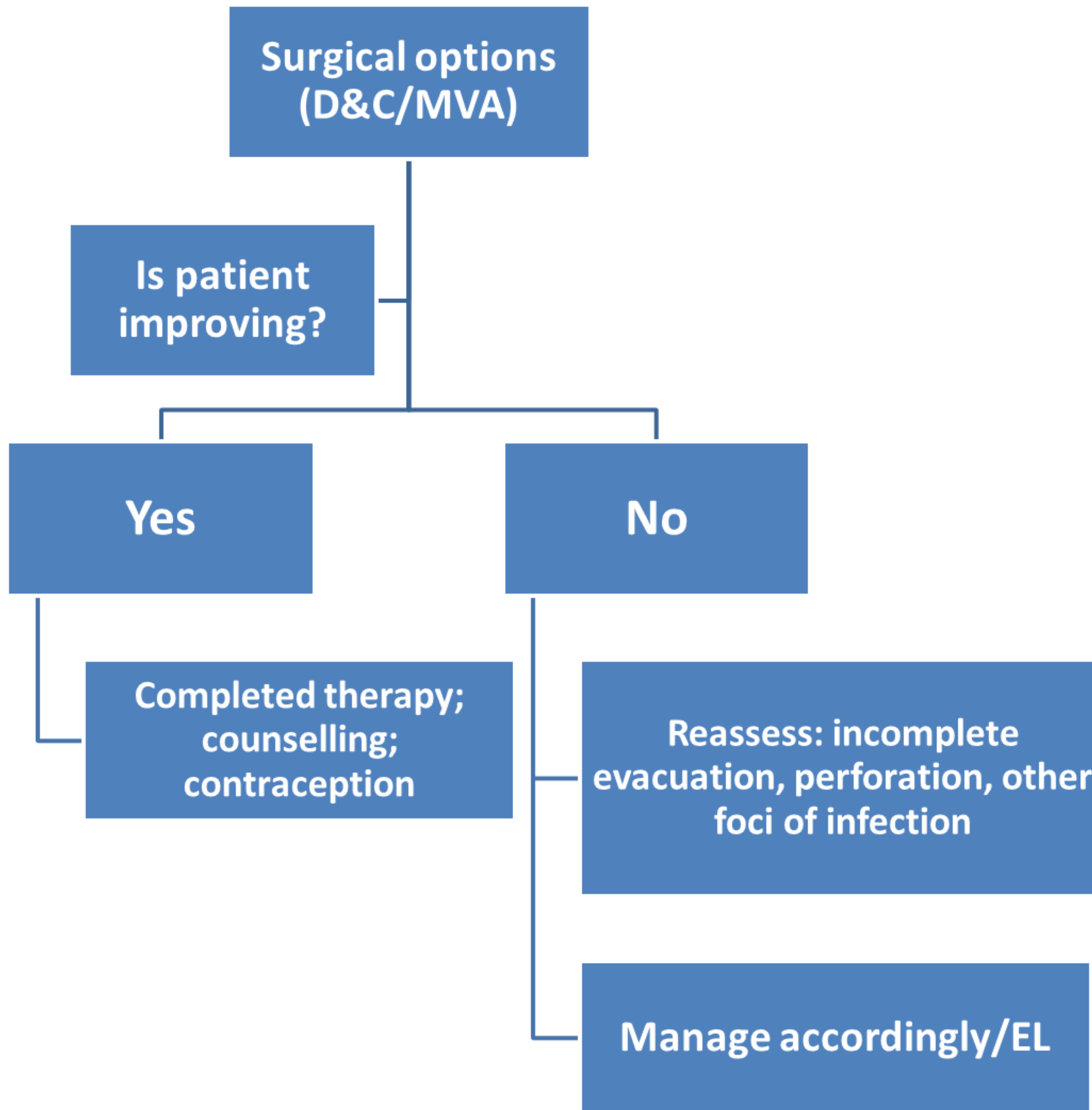
- SURGICAL Management

Intervention	References	Level of evidence/Grade of Recommendation
Surgical: Exploratory laparotomy a. (+) peritoneal s demonstration of g pattern, abscess by CT Scan b. persistent feve after triple therapy evacuation c. Uterine perforation with suspected bowel injury, pelvic abscess, and clostridial myometritis		

Abdominal closure: interrupted technique with Smead-Jones or a running mass ligature including peritoneum, rectus muscles, & fascia



Surgical options (D&C/MVA)
Is patient improving?
Yes
No
Completed therapy; counselling; contraception
Reassess: incomplete evacuation, perforation, other foci of infection
Manage accordingly/EL

Presumed infected abortion[1]

Determine severity[2]

No sepsis[3]:
Penicillin G 4 million units IV q6 hrs

With sepsis[3]: Penicillin G 4 million units IV q6 hrs + Gentamicin 2mg/kg q8 hrs

With severe sepsis[3]:
Penicillin G 4 million units IV q6 hrs + Gentamicin 2mg/kg q8 hrs + Clindamycin 900mg IV q8 or Metronidazole 500mg IV q8 hrs
Alternative4:
Imipenem 500mg IV q6 hrs, Meropenem 500mg-1g IV q8 hrs, Ertapenem 1-2g IV OD, Piperacillin-tazobactam 2.25-4.5g IV q 6 hrs

Supportive therapy: hydration, electrolyte imbalance correction, tetanus vaccination if within 24 hrs from insults5

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Supportive therapy: hydration, electrolyte imbalance correction, tetanus vaccination if within 24 hrs from insult[5]

1. after thorough history taking and physical examination
2. determine severity according to Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012 (Dellinger RP et al. Crit Care Med 2013). See Tables 1 and 2
3. empiric antimicrobial therapy before shifting to culture-guided treatment
4. alternative choice includes clindamycin for penicillin-allergic patients, and other higher-generation beta-lactam antibiotics
5. see Management of Severe Sepsis and Septic Shock for further management of patients with severe sepsis (Dellinger 2013)

Table 1. Diagnostic Criteria for Sepsis

INFECTION, documented, or suspected, and some of the following:
General variables: fever (38.3°C), hypothermia (<36°C), heart rate >90/min, tachypnea, altered mental status, edema, hyperglycemia (plasma glc > 140mg/dl in absence of diabetes
Inflammatory variables: WBC > 12,000 μ/l, WBC < 4μ/l, normal WBC with > 10% immature forms, CRP > 2 SD above normal value, plasma procalcitonin > 2 SD above normal value
Hemodynamic variables: arterial hypotension (SBP < 90mmHg or MAP <70mmHg or SBP decrease >40mmHg)
Organ dysfynction variables: arterial hypoxemia, acute oliguria (UO < 0.5ml/kg x 2 hrs after fluid resuscitation), creatinine increase of >0.5mg/dl, coagulation defect (INR > 1.5 or aPTT >60 s), ileus, thrombocytopenia (platelet < 100,000 μ/l, hyperbilirubinemia
Tissue perfusion variables: heperlactemia (>1 mmol/l, decreased capillary refill or mottling

Dellinger RP et al. Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012. Crit Care Med 2013; 41:580-637

Table 2. Diagnostic Criteria for Severe Sepsis

Severe sepsis definition: sepsis-induced tissue hypoperfusion or organ dysfunction (any of the following thought to be due to infection)
Sepsis-induced hypotension; lactate above upper limits; urine output .5ml/kg/hr x 2 hrs despite resuscitation; acute lung injury with PaO2/FiO2 <250 in absence of pneumonia or <200 in presence of pneumonia as infection source, creatinine >2.0mg/dl (176.8μmol/l), bilirubin >2mg/dl, platelet count <100,000μ/l, coagulopathy (INR>1.5)

Dellinger RP et al. Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012. Crit Care Med 2013; 41:580-637

Clinical Case

5. How will you manage this patient?
(Your diagnosis is Septic Shock 2° Induced/Infected Abortion.)

RECALL:
18 year old G1P0 :

- decrease in sensorium
- history of instrumentation 1 week PTA
- amenorrhea of 11 weeks
- on and off fever for the past 5 days with bleeding soaking 2 pads/day
- 1 day PRA: T= 39 °C with chills, nausea and vomiting
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- abdomen: soft and non-tender
- pelvic exam: cervix is closed, uterus 8 weeks size

Clinical Case

5. How will you manage this patient?

(should be accomplished in first 3 hrs of admission)

1. Admit the patient
2. Start broad spectrum antibiotics after obtaining specimens for culture (clindamycin + gentamicin + penicillin)
3. Hydration (Infuse IV crystalloids at 30 mL/kg)
4. Start vasopressors if refractory to initial fluid resuscitation to maintain MAP of $\geq$ 65 mmHg

4. Start blood transfusion
5. Correct electrolyte imbalance
6. Surgical: EL (repair of uterine perforation, bowel run, lavage, closure of abdominal wall by en-mass or Smead-Jones technique)

Clinical Case

6. How do you follow up and offer counseling to the patient and her family?

Clinical Case

6. How do you follow up and offer counseling to the patient and her family?

- Advise follow up pelvic examination after 2 weeks
- Advise on possible complications like compromised reproductive potential (Asherman syndrome, pelvic adhesions, incompetent cervix)
- Address possible psychologic complications like depression, stress, anxiety and refer to psychological services if needed
- Avoid unplanned pregnancies by providing contraception as needed (education, information dissemination, counseling)