



What the ...?! OK, now what?

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Outline

- ▶ " She seems to have 2 vaginas"
- ▶ " Ummm... is that placenta?"
- ▶ " Where is that blood coming from?"



“She seems to have 2 vaginas”



Case Presentation

- ▶ 19yo G1P0 at 39w gestation in office for routine prenatal visit desiring membrane stripping
- ▶ On examination, redundant tissue seemed to persistently be present between my fingers
- ▶ Speculum examination was normal at first, but again at exam the tissue felt abnormal
- ▶ Speculum was performed with the blades positioned laterally



Diagnosis:
Longitudinal Vaginal Septum



Case presentation

- ▶ The septum was approximately 5mm in thickness and extended from the introitus to approximately 1cm below the cervix
- ▶ Further examination revealed 2 cervices, and the presenting part was palpable above the right cervix
- ▶ Membranes were stripped



Case presentation

- ▶ The patient entered labor spontaneously, but failed to progress beyond 6 cm
- ▶ Septal resection was performed
- ▶ The patient did not progress despite resection and required Cesarean Section



Longitudinal Vaginal Septum

- ▶ Many are asymptomatic (>50%)
- ▶ Presenting symptoms may include
 - ▶ Dyspareunia
 - ▶ Difficulty with bypassing, inserting, or removing tampons
- ▶ High association with uterine anomalies (88%)
 - ▶ This has greater impact on obstetrical outcomes and mode of delivery
 - ▶ Follow up of anatomy, especially renal, should be arranged



Longitudinal Vaginal Septum diagnosed in labor

- ▶ Does not preclude vaginal delivery
- ▶ Management depends on
 - ▶ the thickness and elasticity of the septum and whether it is causing mechanical obstruction
 - ▶ any associated uterine anomaly
- ▶ May stretch or rupture to allow delivery
- ▶ May obstruct labor if thick enough
 - ▶ Infiltrate with local and separate with scissors in the midline
 - ▶ Suture the anterior and posterior aspects separately



“Ummm... is that placenta?”



Case Presentation

- ▶ 27yo G6P3 with limited prenatal care presents at approximately 26 weeks gestation with acute abdominal pain
- ▶ Fetal heart tracing normal
- ▶ Maternal hypotension and tachycardia
- ▶ Acute abdomen
- ▶ She is taken for emergency laparotomy



Case Presentation

- ▶ Hematoperitoneum is noted upon entry
- ▶ Placental tissue is visible on the exterior of the uterus
- ▶ Cesarean Hysterectomy is performed




Management of Invasive Placenta

- ▶ Cesarean Hysterectomy
 - ▶ Recommended as part of multidisciplinary approach
 - ▶ Risks to ureters, bladder and any adjacent/affected organs
- ▶ Conservative Management
 - ▶ May preserve fertility
 - ▶ Risk of ongoing or recurrent hemorrhage




Conservative Management of Invasive Placenta

- ▶ Enter uterus away from placental bed if possible to deliver the fetus
- ▶ Leave placenta in situ and ligate cord at insertion
- ▶ Do not administer a prophylactic uterotonic (may lead to partial placental separation)
- ▶ Close hysterotomy
- ▶ Stabilize and transfer to tertiary care hospital



Conservative Management of Invasive Placenta

- ▶ Other measures to control bleeding should not be performed prophylactically, but attempted if patient is bleeding:
 - ▶ Uterotonic drugs
 - ▶ Compression sutures
 - ▶ Intrauterine balloons
 - ▶ Uterine artery ligation/embolization
- ▶ Methotrexate has *not* been shown to be of benefit
- ▶ Tranexamic Acid not listed in management, but I would



Conservative Management of Invasive Placenta

- Risks
 - Death 0.3%
 - Severe vaginal bleeding 53%
 - Sepsis 6%
 - Secondary hysterectomy 19%
 - (median 39 days later)
- Subsequent pregnancy 67%
 - Recurrent invasive placenta 20%



“Where is that blood coming from?”



Case Presentation

- ▶ 32yo G2P0 @ 39w4d in spontaneous labor
- ▶ Uncomplicated pregnancy
- ▶ Epidural at 4cm dilation - comfortable
- ▶ Obstetrics consulted for a deep complicated deceleration
- ▶ Good recovery of fetal heart - followed expectantly
- ▶ Failure to progress beyond 4cm and epidural no longer providing maternal comfort = C/S



Case Presentation

- ▶ Normal entry and hysterotomy
- ▶ Fetus delivered atraumatically
- ▶ Some excess bleeding, but uncomplicated uterine closure
- ▶ Upon checking adnexa and cleaning pelvic gutters, a football sized clot removed from left side of the abdomen



Case Presentation

- ▶ Uterus exteriorized and examined thoroughly
 - ▶ No active bleeding noted
- ▶ Ongoing collection of fresh blood, not in keeping with pooling of old blood
- ▶ Maternal hypotension and tachycardia noted by anesthesia
- ▶ General surgery consulted
- ▶ Pfannenstiel T'd for midline incision



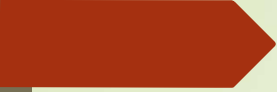
Dx: Splenic Rupture

- ▶ Atraumatic or spontaneous splenic rupture
 - ▶ Accounts for 3-4% of all splenic ruptures
 - ▶ Most common cause: Malaria
 - ▶ Second most common cause: Pregnancy
- ▶ Occurs more commonly in
 - ▶ Third trimester or post partum
 - ▶ Multiple gestation
 - ▶ Advanced maternal age
 - ▶ Multiparity



Unclear Etiology of Spontaneous Splenic Rupture

- ▶ Changes in pregnancy that may predispose to rupture
 - ▶ Hypervolemia
 - ▶ Hypertension
 - ▶ Splenic enlargement
 - ▶ Diminished peritoneal cavity volume
 - ▶ Structural changes secondary to estrogen/progesterone
- ▶ Most cases require splenectomy



Principles of managing abdominal hemorrhage

- ▶ Identify source
 - ▶ Need exposure
 - ▶ Move systematically
- ▶ Stem flow
 - ▶ ? Cautery
 - ▶ ? Sutures
 - ▶ ? Clips
 - ▶ PRESSURE



Have a Plan!

- Massive Hemorrhage Protocol
 - Consensus paper originating out of Ontario was published in the CMAJ Open in 2019
- Pack and Send



Massive Hemorrhage Protocol

- ▶ “A regional massive hemorrhage protocol developed through a modified Delphi technique” by Jeannie L. Callum et. al.
 - ▶ Identifies key evidence-based principles for the development of a standardized regional MHP
 - ▶ Consensus paper originating out of Ontario
 - ▶ Published in the CMAJ Open in 2019
 - ▶ Series of 42 recommendations and 8 quality indicators



MHP Consensus Paper Recommendations

- ▶ All hospitals should have a Massive Hemorrhage Protocol developed by a multidisciplinary team
- ▶ The protocol should consider available resources at the institution
 - ▶ Guidelines on which patients should be transferred to other facilities for definitive management and how this should be achieved



MHP Consensus Paper Recommendations

- ▶ A single protocol for all patients is recommended with guidelines for specific populations
 - ▶ Eg/ Obstetrical patients should be given fibrinogen earlier than later
- ▶ The protocol should be reviewed every 3 years
- ▶ If MHP is activated as an overhead announcement it should be called "Code Transfusion"
- ▶ Participating team members should have access to formal training and drills



MHP Consensus Paper Recommendations

- ▶ The protocol should have activation and termination criteria
 - ▶ Note is made that no criteria performs well at predicting need for massive transfusion
- ▶ The protocol should identify team members
 - ▶ How the lead physician is identified
 - ▶ Who will be responsible for blood component/sample transfer



MHP Consensus Paper Recommendations

- ▶ The lab(s) should be notified of MHP activation
 - ▶ Critical results and coagulation parameters should be communicated verbally to the team
 - ▶ Priority should be given in testing to typing and screening to not exhaust type O blood supply



MHP Consensus Paper Recommendations

- ▶ Suggestions to simplify MHP
 - ▶ Prelabelled uncrossmatched RBC units ready for immediate transfusion
 - ▶ Preprepared lab sample collection kits
 - ▶ Administration of PCCs and fibrinogen concentrate rather than plasma and cryoprecipitate



MHP Consensus Paper Recommendations

- ▶ Uncrossmatched RBCs should be available at the bedside within 10 minutes of activation of MHP
 - ▶ There is no threshold of units of O RBCs above which a switch to group-specific blood cells is prohibited
 - ▶ Switch to group specific blood products as soon as possible
 - ▶ Every 1 minute delay to the first pack of RBCs is associated with a 5% increase in the odds of mortality
- ▶ Only give Rh negative blood to women of reproductive age if blood type is unknown



MHP Consensus Paper Recommendations

- ▶ Tranexamic Acid 1g should be administered as soon as IV access is achieved
 - ▶ Reduces mortality in both trauma and PPH
- ▶ Initial management of the rapidly bleeding patient should begin with immediate RBC transfusion and then transfusions at an RBC:plasma ratio of 2:1



MHP Consensus Paper Recommendations

- ▶ The protocol should state the minimum lab targets
 - ▶ Hgb >80 g/L
 - ▶ INR <1.8
 - ▶ Fibrinogen >1.5 g/L
 - ▶ Platelets >50x10⁹L
 - ▶ Ionized calcium >1.5 mmol/L



MHP Consensus Paper Recommendations

- ▶ Patients should have their temperature measured every 15 minutes and measures in place to prevent hypothermia $<36.0\text{ }^{\circ}\text{C}$
 - ▶ IV fluids should be warmed
- ▶ The protocol should include a reversal strategy for commonly used oral anticoagulants
- ▶ Metrics should be tracked and reviewed for quality assurance

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- ▶ Initial management of the rapidly bleeding patient should begin with immediate RBC transfusion and then transfusions at an RBC:plasma ratio of 2:1

Standard Protocol

- ▶ Box 1 should contain 4 PRBCs
- ▶ Box 2: 4 PRBCs and 4 plasma
- ▶ Box 3: 2 PRBC, 2 plasma, and fibrinogen replacement (10U cryoprecipitate or 4g fibrinogen concentrate)
- ▶ Platelets (when stocked) should be transfused based on platelet counts

Simplified Approach

- ▶ Box 1 should contain 4 PRBCs
- ▶ Box 2: 4 PRBCs, 2000 IU Prothrombin Complex Concentrate, and 4g fibrinogen concentrate
- ▶ Box 3: As per standard approach?
- ▶ Box 4: Get platelets?



Resources

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