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References

- 1) American College of Obstetricians and Gynecologists. Obstetric aspects of trauma management. **ACOG Educational Bulletin #252**. Washington, DC: ACOG, 1998. *The general approach to management of abdominal gunshot wounds involves exploratory laparotomy, although laparotomy can be used selectively. Although stab wounds that do not appear to penetrate beyond the abdominal wall have been managed nonoperatively, evidence of peritoneal penetration usually requires exploratory laparotomy, practically if there are signs of intraperitoneal hemorrhage or bowel perforation. The indications for tetanus prophylaxis do not change in pregnancy, and appropriate candidates should be vaccinated.*
- 2) Recommendation for the immunization practices advisory committee (ACIP) diphtheria, tetanus, and pertussis: Guidelines for vaccine prophylaxis and other preventative measures. **MMWR 1985;34:405-14, 419-26**. *For other wounds, a booster is appropriate if the patient has not received tetanus toxoid within the preceding five years. If passive immunization is needed, human tetanus immune globulin (TIG) is the product of choice. The currently recommended prophylactic dose of TIG for wounds of average severity is 250 units IM. When tetanus toxoid and TIG are given concurrently, separate syringes and separate sites should be used.*
- 3) Williams JK, McClain L, Rosemurgy AS, Colorado NM. Evaluation of blunt abdominal trauma in the third trimester of pregnancy; maternal and fetal consideration. **J Obstet Gynecol 1990;75: 33-7**. *Retrospective review 84 women with “major” blunt abdominal trauma >25 weeks gestation between Jan 1985 – June 1987. 39% falls, 35% MVA, 26% assaults. 20% of patients had uterine contractions. Only two patients with abruption – one of these with uterine rupture and fetal demise. Testing at time of delivery revealed no evidence of fetomaternal bleeding. The authors advocate for shorter periods of post-trauma monitoring. Current standard of care was 48 hours – their average was 30 hours – and they suggested discharge “within hours” for women without evidence of PTL or abruption.*
- 4) Dhanraj D, Lambers D. The incidences of positive Kleihauer-Betke test in low-risk pregnancies and maternal trauma patients. **Am J Obstet Gynecol 2004; 190:1461-3**. *Case-control study: 100 patients had a K-B stain drawn at time of their glucola. 151 historical controls had K-B done at time of trauma. Matched for gestational age. Incidence of positive K-B test was not different between groups. No positive tests were noted when trauma was severe enough to cause fetal distress.*
- 5) Pak L, Reece EA, Chan L. Is adverse pregnancy outcome predictable after blunt abdominal trauma? **Am J Obstet Gynecol. 1998; 179: 1140-4**.
Prospective observational study of 85 women with “noncatastrophic” blunt abdominal trauma. Labs (CBC, fibrinogen, fibrin split products, KB test) were normal for all patients.
- 6) Pearlman M, Tintinalli J, Lorenz R. A prospective controlled study of outcome after trauma during pregnancy. **Am J Obstet Gynecol 1990;162:1502-10**. *Four hours of cardiotocographic monitoring used as a screening tool was found to be an extremely sensitive but nonspecific indicator of immediate adverse outcomes. Patients with contractions every 10 to 15 minutes were admitted for a minimum of 24 hours. Of the 60 women in the study, all had a live birth.*



- 7) Schiff MA, Holt VL. The injury severity score in pregnant trauma patients: Predicting placental abruption and fetal death. **J Trauma** 2002; 53:946-9.

Retrospective chart review of 294 women: injury severity score (ISS) ranged from 1 – 34. The commonly used ISS for differentiating major trauma is 9. Abruption occurred in 20 patients (6.8%); there were 10 (3.4%) fetal deaths. The median ISS for women with abruption was 4. The median ISS for women with fetal death was 4.5. ROC analysis cut point for ISS was 2 with a sensitivity of 71%, specificity 61%, PPV 11%, and NPV 97%. Conclusion: even minor trauma can result in adverse maternal and fetal outcomes.

- 8) Kady DE, Gilbert WM, Anderson J, Danielson B, Towner D, Smith LH. Trauma during pregnancy: an analysis of maternal and fetal outcomes in a large population. **Am J Obstet Gynecol** 2004; 190:1661-8. *Retrospective cohort study (LA County database) including 10,316 women. Significant maternal and fetal morbidity occurred even with low injury severity scores (<9). Women sustaining trauma who delivered at the initial hospitalization had worse outcomes. Women sustaining trauma who remained pregnant had higher incidence of abruption, preterm delivery and low birth weight infants. Fetal outcomes correlated better with gestational age than injury type, mechanism or severity of trauma. Prematurity + injury = worse outcome.*

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Notification to Users

These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur during pregnancy. They should not be interpreted as a standard of care, but instead represent guidelines for management. Variation in practices should take into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities.

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