SCHOOL OF MEDICINE
DEPARTMENT OF OBSTETRICS & GYNECOLOGY

STANDARD OPERATING PROCEDURE- POLICY

CORDOCENTESIS (PUBS: PERCUTANEOUS UMBILICAL BLOOD SAMPLING)

SCOPE/APPLICABILITY:
Cordocentesis is a diagnostic procedure that consists in obtaining fetal blood after 20 weeks of Gestation.

PURPOSE:
Cordocentesis is indicated in the following conditions:

1. Cytogenetic Studies
2. Rapid karyotyping on a fetus with a fetal structural anomaly
3. Confirmation of a non-conclusive cytogenetics results in amniotic fluid (Ex. Mosaics)
4. Hydrops fetalis
5. Prenatal diagnosis of Fanconi's Anemia
6. Risk of monogenic disease with a late consult
7. Ultrasound markers of fetal infection such as CMV
8. Suspicion of fetal anemia: isoimmunization
9. Infection by Parvovirus B19
10. Death of a monochorionic cotwin.
11. Suspicion of fetal thrombocytopenia
    a. Alloimmune thrombocytopenia.
    b. Severe autoimmune thrombocytopenia

NOTE: CORDOCENTESIS IS CONTRAINDICATED IN CASES OF INFECTIOUS HEPATITIS B, C AND HIV.

PROCEDURE:
The procedure consists of the following steps:

1. Sign informed consent
2. Obtain blood type and RH, HIV, HB, HC, Maternal CBC
3. Field asepsis is practiced and fitted with surgical preparation of the operators. Sleeve is used for sterile sonographic and gel probes.
4. Percutaneous puncture is performed with a 20G ultrasound-guided needle continuously, according to the "free-hand" technique, which allows us to reconsider the direction of the needle at all times. The place chosen is preferably placental insertion of the cord (with the exception of isoimmunization), and if this is difficult to access, a cord-free loop, fetal insertion or the intrahepatic course of the umbilical vein can be punctured. A maximum of 3 punctures are performed in a total period of 20 minutes of puncture. Fetal immobilization with vecuronium (0.1 mg / Kg fetal weight e.v.) in case of complex procedure or transfusion
5. 3 to 5 mL of blood are removed. The first blood sample is aspirated into a 1mL syringe and collected in an EDTA tube to perform a fetal blood count. For the cytogenetic study and

the fetal blood gas, blood will be collected with sodium heparin, while for biochemistry and serology, only fetal serum will be needed (tube with nothing).

6. The most frequent complications are hemorrhage of the cord or the placenta (which usually self-limited in less than 3 minutes), and bradycardia. If the bradycardia is persistent, the procedure should be suspended. The risk of fetal loss is around 3%, and above all it affects the earliest procedures. In viable gestations (≥ 26 weeks) an emergency fetal extraction must be prepared, and after the procedure an NST is performed. Gamma globulin is administered if the pregnant woman is RhD negative not sensitized before 72 h. 24 hours of post-procedure rest are recommended. Antibiotic should be given in cases of complicated procedures (cefazolin 2g e.v. in serum of 100 mL).
7. The fetal origin of the extracted blood will be confirmed with the first blood count that will be taken immediately. Macrocytosis and relative lymphocytosis are characteristic of fetal blood. A manual formula for erythroblasts counting and determination of HbF (or Kleihauer's test) will be done.
8. In case of a cytogenetic study, it is available after 3 days. In our center, ultrasound is done every week, when the written report is delivered. The reliability of a cytogenetic diagnosis in fetal blood is very high, but it is a function of being able to avoid maternal and amniotic fluid contamination.

APPROVALS:

SOP Owner:	Luis Izquierdo, MD, MBA/Conrad R. Chao MD	Date:4/8/20
Chair Approval:	Eve Espey	Date: 7/17/2020
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