An autopsy was performed on the body of **Jennifer L. Morbelli** at the Office of the Chief Medical Examiner for the State of Maryland on the 8th day of **February 2013.**

EXTERNAL EXAMINATION:

The body was that of an unclad, edematous, well-developed, well-nourished white female accompanied with a cut, black sports bra. The body weighed approximately 147 pounds and was approximately 5'2" in height, appearing compatible with the reported age of 29 years. The body was cold. Rigor was present to an equal degree in all extremities. Lividity was present and fixed on the posterior surface of the body, except in areas exposed to pressure. The scalp hair was long and brown. The irides appeared brown in color. The corneae were clear. The conjunctivae were pale without evidence of petechial hemorrhages. The sclerae exhibited diffuse hemorrhages. The external auditory canals were unremarkable; the external nares and oral cavity were free of foreign material and abnormal secretions. The earlobes appeared pierced. The nasal skeleton was palpably intact. The lips were without evident injury. The teeth were natural. The neck organs were midline and appeared unremarkable. The chest was unremarkable. No injury of the ribs or sternum was evident externally. The abdomen was distended and exhibited a fluid wave on palpation. Puncture marks, surrounded by red ecchymoses were on the left side of the abdomen. A healed surgical scar was noted on the top of the left foot. The extremities were symmetrical without absence of digits. The fingernails were intact. A tattoo was noted on the left lower quadrant of the abdomen. Needle tracks were not observed. The external genitalia were those of a normal adult female and exhibited prominent edema and gray-blue discoloration of the labial folds. The posterior torso was without note; the anus was unremarkable.

EVIDENCE OF THERAPY:

Endotracheal and orogastric tubes emerged from the mouth. Intravascular access catheters were in the bilateral antecubital fossae, the bilateral femoral regions and the back of the left hand. A pulse oximeter tab was on the left index finger. Venipuncture sites were on the ankle regions. EGK leads were on the anterior torso.

EVIDENCE OF INJURY:

There was no evidence of significant recent injury.

INTERNAL EXAMINATION:

BODY CAVITIES:
The body was opened by the usual thoraco-abdominal incision and the chest plate was removed. Three liters of serous fluid was in the abdominal cavity. No significant adhesions were present in any of the body cavities. All body organs were present in the usual anatomical position. There was no internal evidence of blunt force or penetrating injury to the thoraco-abdominal region.

HEAD: (CENTRAL NERVOUS SYSTEM)
The scalp was reflected. The calvarium of the skull was removed. The dura mater and falx cerebri were intact. A thin (<1 ml) fresh subdural hemorrhage covered the left convexity. The leptomeninges were congested, thin and delicate. The cerebral hemispheres were symmetrical. The structures at the base of the brain, including cranial nerves and blood vessels, were intact. Coronal sections through the cerebral hemispheres, the brainstem and cerebellum were unremarkable. The brain weighed 1210 grams.

NECK:
Examination of the soft tissues of the neck, including strap muscles and large vessels, revealed no abnormalities. The hyoid bone and larynx were intact.

CARDIOVASCULAR SYSTEM:
The pericardial surfaces were smooth, glistening and unremarkable; the pericardial sac was free of significant fluid or adhesions. The coronary arteries arose normally, followed the usual distribution and were widely patent, without evidence of significant atherosclerosis or thrombosis. The valves were unremarkable. The chambers exhibited the usual positional relationship. The left ventricular free wall measured 0.6 cm, the interventricular septum 1.0 cm, the right ventricle 0.3 cm in thickness, and the left ventricular cavity 4.0 cm in diameter. The trabeculae of the right ventricle extended into the apex. The myocardium was red-brown and flaccid and exhibited patchy epicardial hemorrhage. No gross evidence of fibrosis or necrosis was identified. The atrial and ventricular septa were intact. The aorta and its major branches arose normally, followed the usual course and were widely patent, free of significant atherosclerosis and other abnormality. The venae cavae and their major tributaries returned to the heart in the usual distribution and were free of thrombi. The heart weighed 330 grams.

RESPIRATORY SYSTEM:
The upper and lower airways were clear of debris and foreign material; the mucosal surfaces were smooth, yellow-tan and unremarkable. The pleural surfaces were gray-pink, smooth, glistening and unremarkable bilaterally.

The pulmonary parenchyma was congested and red-purple, exuding moderate amounts of frothy fluid; no focal lesions were noted. The pulmonary arteries were normally developed, patent and without thrombus or embolus. The right lung weighed 710 grams; the left 510 grams.

LIVER & BILIARY SYSTEM:
The hepatic capsule was smooth, glistening and intact, covering red-brown, congested parenchyma with no focal lesions noted. The gallbladder contained yellow-green-brown, mucoid bile; the mucosa was velvety and unremarkable. The extrahepatic biliary tree was patent, without evidence of calculi. The liver weighed 2280 grams.

ALIMENTARY TRACT:
The tongue exhibited no evidence of recent injury. The esophagus was lined by gray-white, smooth mucosa. The gastric mucosa was arranged in the usual rugal folds; the lumen contained 40 ml. of watery, brown fluid. The mesenteric soft tissue and the serosal and luminal surfaces of the small and large bowel were unremarkable. The pancreas had a normal tan-pink lobulated appearance and the ducts were clear. The appendix was unremarkable.

GENITOURINARY SYSTEM:
The renal capsules were smooth and thin, semi-transparent and stripped with ease from the underlying flaccid, red-brown cortical surfaces. The cortices were delineated from the medullary pyramids, which were red-purple and unremarkable. The calyces, pelves and ureters were unremarkable. The urinary bladder was empty; the mucosa was gray-tan and smooth. The intact, recently gravid uterus weighed 1210 grams. The cervix, lower uterine segment and uterine cavity were shaggy and red-brown. No blood clots or grossly identifiable fetal parts were identified. A corpus luteum of pregnancy was identified in the right ovary. The right kidney weighed 150 grams; the left 140 grams.

RETICULOENDOTHELIAL SYSTEM:
The spleen had a smooth, intact capsule covering red-purple, moderately firm parenchyma; the lymphoid follicles were unremarkable. The regional lymph nodes appeared normal. The spleen weighed 270 grams.

ENDOCRINE SYSTEM:
The thyroid and adrenal glands were unremarkable. The pituitary gland exhibited physiological enlargement and a focal, 0.5 cm area of red-brown discoloration.

MUSCULOSKELETAL SYSTEM:
Muscle development was normal. No palpable bone or joint abnormalities were noted.

MICROSCOPIC EXAMINATION:

Lungs: definitive amniotic debris (on H & E stain) in pulmonary vessel; numerous fibrin thrombi; reactive pneumocytes; patchy areas of hyaline membrane formation; congestion; increased numbers of circulating cytotrophoblasts
Heart: congestion; foci of epicardial and interstitial hemorrhage; scattered fibrin/platelet thrombi; contraction band necrosis
Liver: congestion
Kidney: congestion; numerous fibrin thrombi in glomerular capillaries; early tubular necrosis
Adrenal gland: marked congestion
Pancreas: congestion
Pituitary gland: focal infarct; physiological hyperplasia
Stomach, large and small bowel: congestion; autolysis
Thyroid gland: congestion; numerous fibrin thrombi
Uterine lining: fragments of decidua with mixed inflammatory infiltrate; one possible involuted villous structure associated with infiltrate of eosinophils
Uterus, lower uterine segment, cervix: denuded; mixed inflammatory infiltrate of decidualized stroma; involuting blood vessels
Brain: marked congestion; patchy hypoxic-ischemic neuronal changes

PATHOLOGIC DIAGNOSES:

I. Disseminated Intravascular Coagulation due to Amniotic Fluid Embolus following Medical Termination of Pregnancy due to Fetal Anomalies
   A. Amniotic debris in pulmonary blood vessel
   B. Intravascular fibrin thrombi in lungs, heart, kidney, thyroid gland
   C. Pituitary infarct
   D. Early diffuse alveolar damage, lungs
   E. Acute tubular necrosis, kidneys
   F. Biventricular dilation, heart
   G. Serous ascites
   H. Intact uterus and cervix with post surgical changes
   I. Vascular congestion of organs; no evidence of exsanguination

OPINION:

This 29 year old, white female, **Jennifer L. Morbelli**, died of Disseminated Intravascular Coagulation (DIC) due to Amniotic Fluid Embolus following Medical Termination of Pregnancy due to Fetal Anomalies. The autopsy findings were consistent with the presence of amniotic material in the blood initiating the coagulative/consumptive phase of DIC and resulting in dysfunction of multiple organs. There was no evidence at autopsy of uterine injury or massive blood loss. The manner of death is **Natural**.

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Date signed: 3/4/2013