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# Decidual Cast

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A 14-year-old girl presented to her pediatrician with a 1-day history of abdominal pain and vaginal bleeding. She reported that she had expelled a “mass” per vaginam a few hours ago, and she brought that mass with her to the clinic (**Figure**).



**Figure.** Decidual cast expelled per vaginam.

**History.** Menarche had been at 13 years of age. She had had menorrhagia with her first and second menstrual cycles. during which she had become severely anemic. with a hemoglobin level of 7.0 g/dL.

She had been started on depot medroxyprogesterone acetate (DMPA) for her menorrhagia. Her menstrual bleed had stopped 3 to 4 days after having received DMPA. Since then, she had been receiving DMPA injections every 3 months. At the time of expulsion of vaginal mass, she had received a total of 3 doses of DMPA.

She had a medical history of hypoplastic left heart syndrome, for which she had undergone multiple cardiac procedures. She also had a history of intestinal malrotation and had undergone a Ladd procedure at 6 years of age. She had been gastrostomy tube–dependent until 7 years of age. Her history also was significant for vertebral segmentation anomalies, kyphoscoliosis, lymphopenia, global cerebral atrophy, developmental delay, and high-arched palate. No identifiable genetic syndrome had been identified as of yet despite numerous investigations.

Her medications included aspirin and furosemide. Her family history was unknown, given that she had been adopted. There was no history of excessive bleeding from any other sites. She reported that she is not sexually active. Her abdominal pain and vaginal bleeding had resolved after the passage of the mass.

**Physical examination.** At presentation, her vital signs were stable. Physical examination showed a healthy-appearing girl in no obvious distress. There were multiple surgical scars on the precordium and abdomen from prior cardiac and abdominal surgical procedures. Vaginal examination showed scant blood without any evidence of trauma. Examination findings from all other systems were otherwise normal. She was Tanner stage IV for pubic hair and breast development.

Examination of the tissue expelled per vaginam showed 4.0 × 2.8 × 2.0-cm, pink-purple, focally hemorrhagic soft tissue mass.

**Diagnostic tests.** Results of a complete blood count, prothrombin time, activated partial prothrombin time, international normalized ratio, and bleeding time were all within normal ranges. Urine pregnancy test results were negative. Abdominal, uterine, and ovarian sonograms were normal, with no mass lesions or ectopic pregnancy.

Sectioning of the tissue revealed a 3.0 × 2.0-cm cavity with tan-pink smooth walls, and a red-brown spongy tissue adjacent to this cavity. Histopathology results showed extensively decidualized endometrial tissue with minimal glandular structures lined by low cuboidal epithelium, consistent with a uterine or decidual cast. No chorionic villi were identified in the entire tissue. Results of myogenin staining, a specific marker for rhabdomyosarcoma, was negative. Desmin antibody staining highlighted the vascular smooth muscle. The diagnosis of decidual cast as a cause of membranous dysmenorrhea was made.

**Outcome of the case.** Follow-up of the patient for up to 2 years after the passage of the decidual cast has been uneventful with regard to her reproductive system. She received 3 more doses of DMPA followed by oral progesterone during this interval without experiencing another passage of tissue per vaginam.

**Discussion.** The decidua is a modified endometrium that is hormonally prepared for pregnancy. The appearance of the normal lining of the uterus, by the effect of progesterone, can become decidualized, when the endometrial cells become highly specialized and vascular. When an area of decidua is shed, it is called a decidual cast, which frequently takes the shape of the uterine cavity.<sup>1</sup>

Some of the other differential diagnoses of expulsion of mass per vaginam include spontaneous abortion, benign polyp, rhabdomyosarcoma, and retained tampon or other foreign bodies. Besides being a primary cause of membranous dysmenorrhea, decidual casts also have a well-known association with ectopic pregnancies. They have also been reported in nonpregnant women who are taking human menopausal gonadotropin, human chorionic gonadotropin, and progesterone for various reasons. It is uncommon to see a decidual cast with the use of standard-dose combined oral contraceptive pills only.<sup>2</sup>

In membranous dysmenorrhea, a complete cast of the uterine cavity is expelled, accompanied with pain during the menstrual period. It causes intense pain as a result of the passage of an intact endometrial cast through an initially undilated cervix.<sup>3</sup>

Some of the theories proposed for the formation of decidual cast include predominantly hyperprogesteronism, and an overall increase in the secretion of both progesterone and estrogen, with subsequent thickening of the endometrium resulting in complete desegregation with expulsion of tissue. Another theory is excessive development of the spiral arteries, with subsequent vasodilatation followed by vasoconstriction, and then shedding of this overdeveloped endometrium.<sup>4</sup>

In summary, decidual cast is the most common cause of membranous dysmenorrhea, a condition when cramping pain occurs with the passage of the cast. It should be suspected in a nonpregnant girl taking progesterone with history of painful passage of a tissue per vaginam. A pregnancy test is important, since the decidual cast can occur in ectopic pregnancy and may be mistaken for an intrauterine gestational sac on a sonogram.

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