



## Macroscopic decidualosis in pregnancy is finally a common entity



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### ABSTRACT

**Objective:** The primary aim of our study was to determine the prevalence of macroscopic decidualosis found randomly in Cesarean sections and the secondary objective to determine the association with any obstetrical complications or adverse effects.

**Methods:** This is a unicenter prospective study from 01/08/2011 to 01/02/2014. During the study period 307 consecutive Cesarean sections were performed with 31 biopsy proven cases of macroscopic decidualosis in the ovary, uterine and fallopian tube serosa.

**Results:** The mean age of the patients was  $31.2 \pm 5.4$  years (range 13–43), the mean Body Mass Index was  $26.3 \pm 5.8$  (range 15–48)  $\text{kg}/\text{m}^2$ , the mean term of Cesarean was  $270 \pm 25$  days, and the mean fetal weight was  $3094 \pm 809$  g. The majority of patients were Caucasian ( $n = 175$ , 57.0%). Patients with decidualosis had a greater BMI ( $28.4 \pm 5.3$   $\text{kg}/\text{m}^2$  vs  $25.7 \pm 5.8$   $\text{kg}/\text{m}^2$ ,  $p < 0.05$ ). The presence of pain was more frequent in the decidualosis group (10.1%, OR 5.78, 95% CI [2.41–13.87],  $p < 0.001$ ).

**Conclusion:** Decidualosis is a benign lesion during pregnancy that is not correlated with obstetrical complications. Our study has shown that this physiological phenomenon is more frequent than originally thought, being present in 10% of the Cesarean sections, and is associated with abdominal pain during pregnancy.

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### Introduction

Ectopic decidua or decidualosis is defined as the extrauterine location of decidual tissue [1] and can occur in the cervix, vagina [2,3] and various abdominal organs like the ovary [4], omentum [5], appendix [6], peritoneum, the pelvic lymph nodes [7]. Other rare sites with decidualosis include the kidneys [8], the lungs [9] and even the skin [10]. This is a well-known phenomenon that happens during pregnancy and was described for the first time in 1887 by Walker et al. [1]. Decidualization is a physiological process during pregnancy, under the influence of ovarian and placental steroid secretion [11], with total involution in the four to six week post partum period [5].

Butner et al. performed systematic biopsies of the omentum during Cesarean section or during coelioscopy and found that

decidual cells were present in the omentum in 100% of the patients described in their cohort [5]. Decidualosis is usually asymptomatic and remains undetected throughout pregnancy. However, decidualized tissue can grow during pregnancy and can acquire a gross appearance that macroscopically might mimic a malignant tumor [11]. A biopsy is necessary for establishing the diagnosis and to exclude the presence of mesothelioma, metastatic carcinoma, or peritoneal tuberculosis.

In Current bibliography a few cases only are reported which are associated with different complications, during pregnancy. But with is the real frequency? Is there an association with high risk pregnancies?

The aim of our study was to determine the prevalence of macroscopic decidualosis in Cesarean sections. Our secondary objective was to study the association with any obstetrical complications or adverse effects.

### Materials and methods

This was a prospective study approved by the ethics committee patients were recruited from 01/08/2011 until 01/02/2014 at the

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single tertiary obstetrical and gynecologic center of “René Dubos Hospital” in Pontoise, France. All 307 consecutive cesarean sections were performed by a single operator (MG) and 31 biopsies were taken from macroscopic lesions. The biopsies were realized when focal lesions were observed macroscopically in the uterus, ovaries and/or fallopian tubes. There were no systematic biopsies in the absence of macroscopically visible lesions since it was already been reported by Büttner et al. [7] that during pregnancy decidual cells were present in 100% of the biopsies performed in the omentum. No further visual or surgical investigations were made in the peritoneal cavity in order to avoid operative complications and prolonged operative time. The lesions had the Macroscopic appearance of small vegetations or of a small yellow or white nodule in the serosa of the fallopian tubes, in the ovaries, and in the stroma of the uterine portio (Fig. 1). Patient demographic data were obtained from clinical records. All patients with decidual tissue had a follow up visit 2 months after delivery and a clinical examination.

#### Definitions of obstetrical complications or adverse effects

Postpartum Hemorrhage was defined as an estimated blood loss in excess of 1000 mL following cesarean birth [12].

The term fetal growth restriction was used to describe fetuses with an estimated fetal weight of less than the 10th percentile for gestational age [13].

Pre-eclampsia was defined as a new hypertension presenting after 20 weeks with significant proteinuria [14].

For gestational diabetes (GDM) the one step strategy was used with a 75-g Oral Glucose Tolerance Test with Plasma glucose measurement at fasting and at 1 h and 2 h, at 24–28 wks in women not previously diagnosed with overt diabetes according to the ADA 2014 criteria. The OGTT was performed in the morning after overnight fast ( $\geq 8$  h). GDM diagnosis made if plasma glucose values met or exceeded: Fasting: 92 mg/dL (5.1 mmol/L), 1 h: 180 mg/dL (10.0 mmol/L), 2 h: 153 mg/dL (8.5 mmol/L).

Pelvic pain is a typically symptom of pregnant women. In our study we were considered significant when the patient consulted for emergency pelvic pain.

#### Histology

The tissue samples were fixed in a 10% Formaldehyde solution, embedded in paraffin and sectioned with a 5  $\mu$ m microtome. In microscopy the Decidual cells appear as large cells with an eosinophilic cytoplasm, and round nuclei with prominent nucleoli. These cells formed a group following the interlobular septa but could infiltrate the peritoneal fat, mimicking malignancy especially since atypical, binuclear cells and necrotic alterations could be observed (Fig. 2A).

#### Immunohistochemistry

In the presence of typical decidual cells no further staining was performed, immunohistochemistry staining was used when decidual tissue presented pseudo-tumoral or infiltrative characteristics (8 out of 31 samples) in order to exclude a peritoneal mesothelioma or a primary or metastatic peritoneal cancer. Immunohistochemistry staining was performed with the Roche-Ventana automated system. The Ki-67 protein (clone SP6, and SP6, Roche Ventana) was a cellular marker for proliferation. Ectopic decidual cells did not stain with calretinin (clone SP13, Microm, Labvision, Fig. 2B) or cytokeratine (clone KL1, Immunorech, Beckman Coulter, Fig. 2C) a marker expressed in mesothelial cells. The CD10 (clone 56C6, Novocastra, Fig. 2D) marker was positive as a membrane stain.

#### Statistical analysis

Data were analyzed with the SPSS statistical program (version 13.0). The results are expressed as mean  $\pm$  SD (standard deviation of

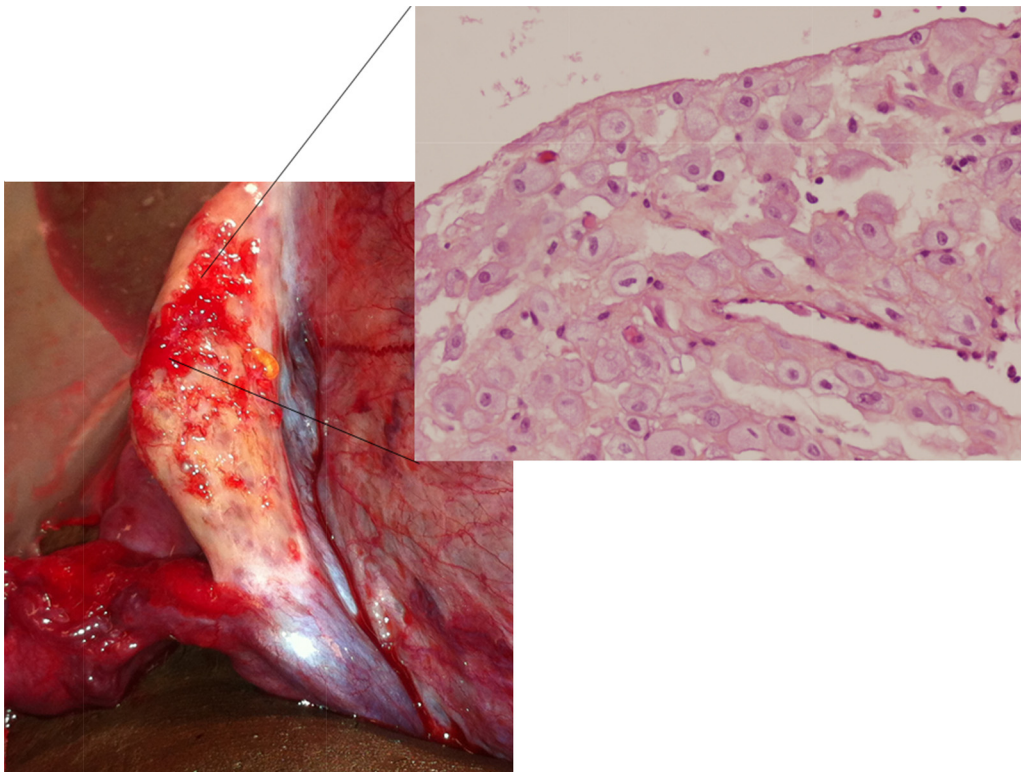


Fig. 1. Macroscopic appearance and histological section of decidual tissue.

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