Role of transabdominal cerclage in fetal membranes histology after term elective cesarean sections

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ABSTRACT

OBJECTIVE : The success rate of transabdominal cerclage is high but still unexplained. Our objective was to evaluate fetal membranes histology after term elective cesarean sections in normal pregnancies with and without transabdominal cerclage.

STUDY DESIGN : Membranes were collected after term elective cesarean sections. Membranes from women with transabdominal cerclage (n=10) were compared to control membranes from women without cerclage (n=10). Chorioamniotic layers were stained with hematoxylin eosin for biometric analysis. The area of membranes overlying the cervix was compared to an area located far from the lower uterine segment. Gene expression and protein localization of the key prostaglandins metabolizing-enzyme hydroxyprostaglandin dehydrogenase (HPGD1) and toll-like receptor-2 (TLR-2) in membranes were evaluated. *HPGD1* and *TLR-2* relative mRNA expression was assessed by real-time quantitative polymerase chain reaction. Distribution of HPGD1 and TLR-2 proteins in membranes was evaluated by immunofluorescence. Membrane senescence was also evaluated by detection of the β-galactosidase enzyme.

RESULTS : The mean thickness of membranes was significantly decreased in the supracervical area compared to the distal area ($p<0.001$). In the supracervical area, the chorion thickness was significantly increased in cerclage membranes compared to controls ($p=0.01$) (fig. 1). *HPGD1* and *TLR-2* mRNA expressions were significantly higher in cerclage membranes compared to controls (fig. 2). Immunofluorescence showed that HPGD1 and TLR-2 proteins were mainly contained in the chorion (fig. 3). Their expression was increased in cerclage membranes. Membrane senescence was significantly decreased in cerclage membranes.

CONCLUSIONS : In the thick chorion of cerclage membranes, the high *HPGD* expression could be responsible for a lower concentration of prostaglandins and ensure the quiescence of myometrium. The high *TLR-2* expression could improve the innate immunity at the feto-maternal interface. The labor would not be initiated by the decreased senescence. Our results suggest that transabdominal cerclage could play a favorable role on membranes.

Figures 1. Mean thickness (µm) of fetal membranes in cervical area. **2.** Relative *HPGD1* and *TLR-2* mRNA expression by qPCR.

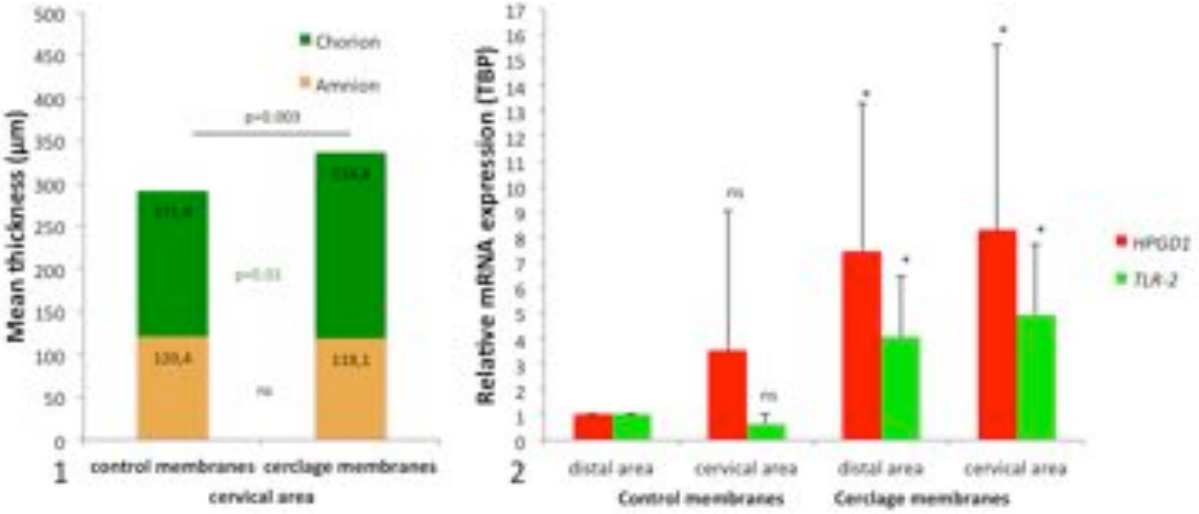
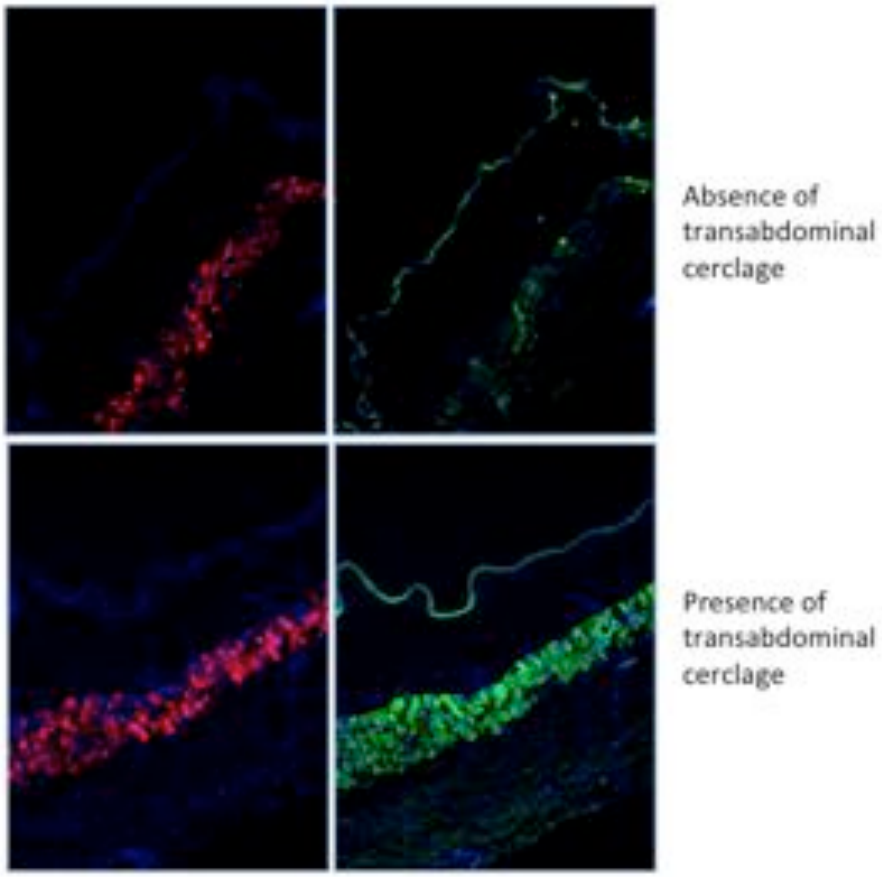


Figure 3. Immunofluorescence and localization of HPGD1 (red) and TLR-2 (green) proteins in fetal membranes (cervical area).



Recent publications

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Biography

Dr Patricia Steenhaut is an obstetrician, hospital practioner in obstetrics at Cliniques universitaires Saint-Luc in Brussels, Belgium. She is a student PhD and studies etiopathogenic mechanisms in membranes in pregnancies with cervical insufficiency and abdominal cerclage. She is also a specialist in the Fetal Medicine Unit.

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