



## ABSENCE OF WHARTON'S JELLY: REPORT OF A CASE

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Article Received on 01/01/2024

Article Revised on 22/01/2024

Article Accepted on 12/02/2024

### ABSTRACT

Wharton's jelly is a type of embryonic mucoid connective tissue present in the umbilical cord, it is composed mainly of mucopolysaccharides and water, it provides structural support and certain elasticity to the blood vessels and structures of the umbilical cord, thus contributing to protect the umbilical vessels from possible pressure throughout intrauterine life. Umbilical arteries lacking Wharton's jelly are more prone to compression. A complete absence is most often associated with fetal death.

**KEYWORDS:** The umbilical arteries; umbilical cord; Wharton's jelly.

### 1. INTRODUCTION

Wharton's Jelly which takes its name from its discoverer, Thomas Wharton; is a mucoid connective tissue, elastic and avascular, highly hydrated, deriving from the extraembryonic mesoblast and gives the cord its tone. It contains a large quantity of amorphous ground substance, rich in hyaluronic acid which helps give it the consistency of a gel. Collagen and reticulin fibers constitute a very small part of its volume and the cellular elements present are spindle or stellate fibroblasts rich in polysaccharides.

Wharton's jelly plays the role of protection against the umbilical vessels by preventing their compression.

We report a case described at the Souissi maternity ward in which part of the umbilical cord is devoid of the Wharton's jelly, while its insertion was normal, - the first case of absence of Wharton's jelly was described in 1961 by Bergman et al. - Labarrere et al described, in 1985, a particularly lean virtually devoid of Wharton's jelly around the umbilical arteries, as a cause of death fetal or neonatal while the length and insertion of the umbilical cord were normal and there was no known risk factor.

### 2. OBSERVATION

A 29-year-old patient, primiparous primigravida, with no particular history, she presented to the emergency room on 16/12/2023 for premature rupture of the membranes with the release of a liquid puree of weight and the beginning of work in a context of overcoming the term. The examination on admission found an afebrile patient, normocardial normotensive, BMI at 23, HU at 31cm,

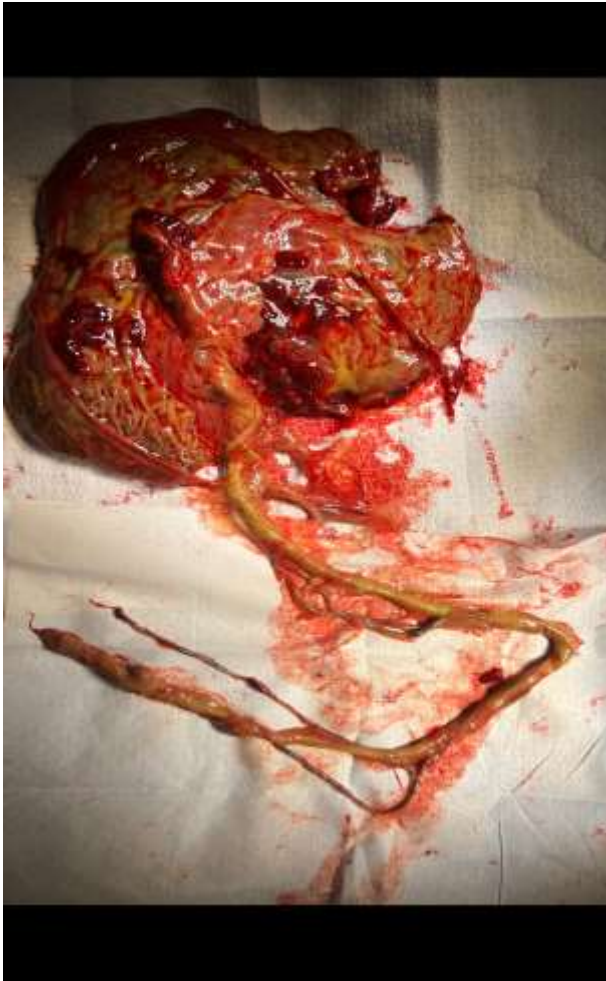
positive and regular BCF, on vaginal examination a cervix open at 80% 2 fingers in cephalic presentation with a broken water bag and meconium amniotic fluid.

Obstetric ultrasound reveals a progressive single-fetal pregnancy in cephalic presentation, estimated fetal weight at 3300g, fundic placenta, amniotic fluid quantity decreased.

Indication for emergency cesarean section for amniotic fluid weight loss at the start of labor in a term overrun context.

At the time of delivery we noted an umbilical cord devoid of its Wharton's jelly on almost its entirety except at the level of its insertion. (**Figure 1**)

The newborn was hospitalized in neonatal intensive care for respiratory distress at 4/10, declared discharged at day 2 of his hospitalization with good progress.



**Figure 1: Cordon Ombilical Dépourvu De Sa Gelée De Wharton Sur Presque Sa Totalité.**

### 3- DISCUSSION

The umbilical cord is composed of two arteries and a vein, reaching varying lengths between 50.0 and 60.0 cm and a diameter between 1.5 and 2.0 cm. The blood vessels are embedded in Wharton's jelly, a specialized connective tissue composed of myofibroblasts and extracellular matrix, mainly composed of proteoglycans, glycosaminoglycans and hyaluronic acid.<sup>[4]</sup> Myofibroblasts are mesenchymal cells exhibiting the characteristics of smooth muscle cells and fibroblasts arranged in the middle of the contents of an extracellular matrix whose main component (approximately 70%) is hyaluronic acid, an important molecule for diffusion and osmosis mechanisms in the umbilical cord.<sup>[1,4]</sup>

This structure gives elasticity to the umbilical cord, so the main function of the jelly is Wharton is the protection of umbilical blood vessels, neutralizing the influence of external pressure on blood flow between the placenta and the fetus.<sup>[4]</sup> Structural abnormalities of the umbilical cord are conditions increasingly recognized in the literature as being associated with in utero fetal death.<sup>[3,5]</sup>

Sun *et al.* (1995)<sup>[5]</sup> studied 25 cases of fetal death associated with structural abnormalities of the cord

umbilical cord which revealed that there was no correlation between these causes of fetal death and the age of women pregnant, their state of health or their obstetric history.<sup>[2,5]</sup>

Umbilical cord abnormalities that can harm fetal well-being including rupture and thrombosis umbilical vessels, umbilical artery agenesis and cord stenosis/obliteration/constriction, the insertion of velamentous cords and the absence of Wharton's jelly. These structural changes are strongly associated with intrauterine growth restriction, fetal death and increased rates cesarean delivery.<sup>[2,3,5]</sup>

Proposed theories about the pathogenesis of Wharton's jelly absence are linked to a possible degeneration, incomplete and premature fusion of amniotic and mesenchymal umbilical tissue, or hypoplasia of the amnion and secondary loss of Wharton's jelly.<sup>[5]</sup> However, none A clear explanation for this rare anomaly is not known.

Studies on Wharton's jelly, both qualitative and quantitative, are still rare in the literature, representing an open field of research for possible correlations with obstetric problems, such as intrauterine hypertension, fetal growth restriction.<sup>[6]</sup>

In the case of our patient, the pregnancy was carried out until the term was exceeded without complications. type of intrauterine fetal death or intrauterine growth retardation; she nevertheless presented a rupture of the bag of waters with emission of meconium fluid.

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