

Lower uterine segment thickness in pregnancy subsequent to cesarean section with double layer barbed fish-bone suture

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CONTEXT

A lower rate of **anterior uterine wall defects** after **cesarean section**, during which **double layer barbed suture** was employed for closing uterine wall, has been preliminary reported (**NCT04825821**).

OBJECTIVE

This study aims to estimate the impact of this suture on **III trimester lower uterine segment (LUS) thickness** in the pregnancy following a cesarean section with double layer barbed suture.

MATERIALS AND METHODS

This **prospective study** (**NCT05166174**) included women undergoing a **previous elective first caesarean section at term**, during which **double layer barbed suture** (“fish-bone” technique¹) or by **double-layer suture with conventional monofilament** (control group) were used for closing hysterotomy.

In the following **pregnancy**, a transvaginal assessment by **3D tomographic ultrasound imaging** of **LUS thickness between 34-38 weeks of gestation** was performed by an **ultrasonographer blinded to clinical data**.

Ultrasound-based axial tomography reconstructions were obtained. Four 5 mm slices of tissue were reconstructed on the transverse uterine plane in the caudocranial direction.

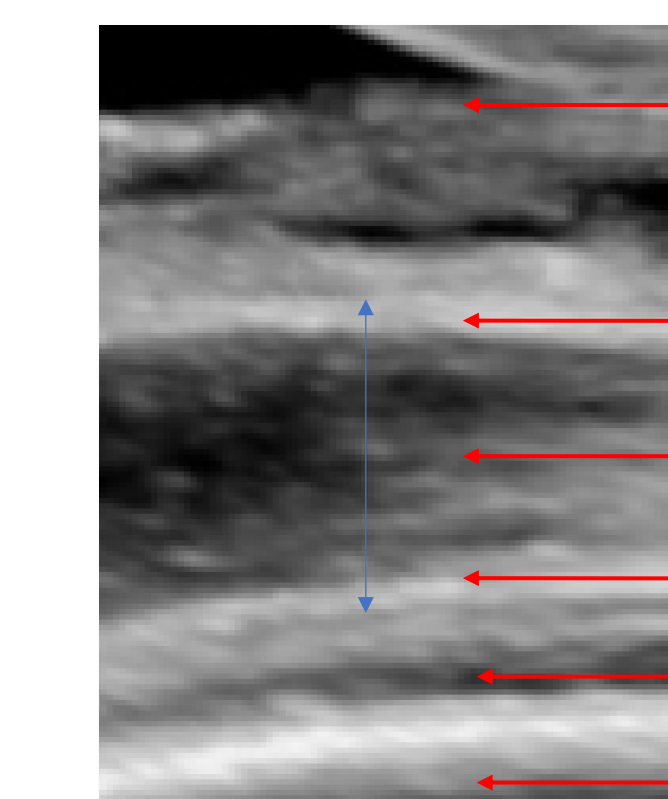
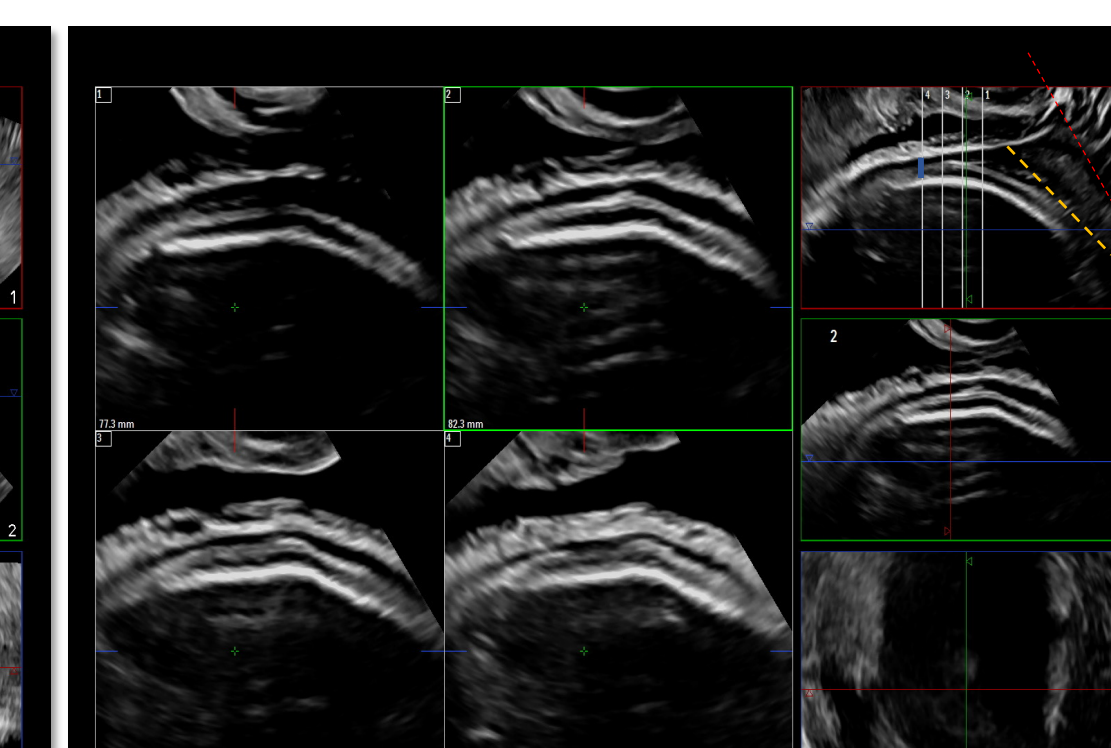
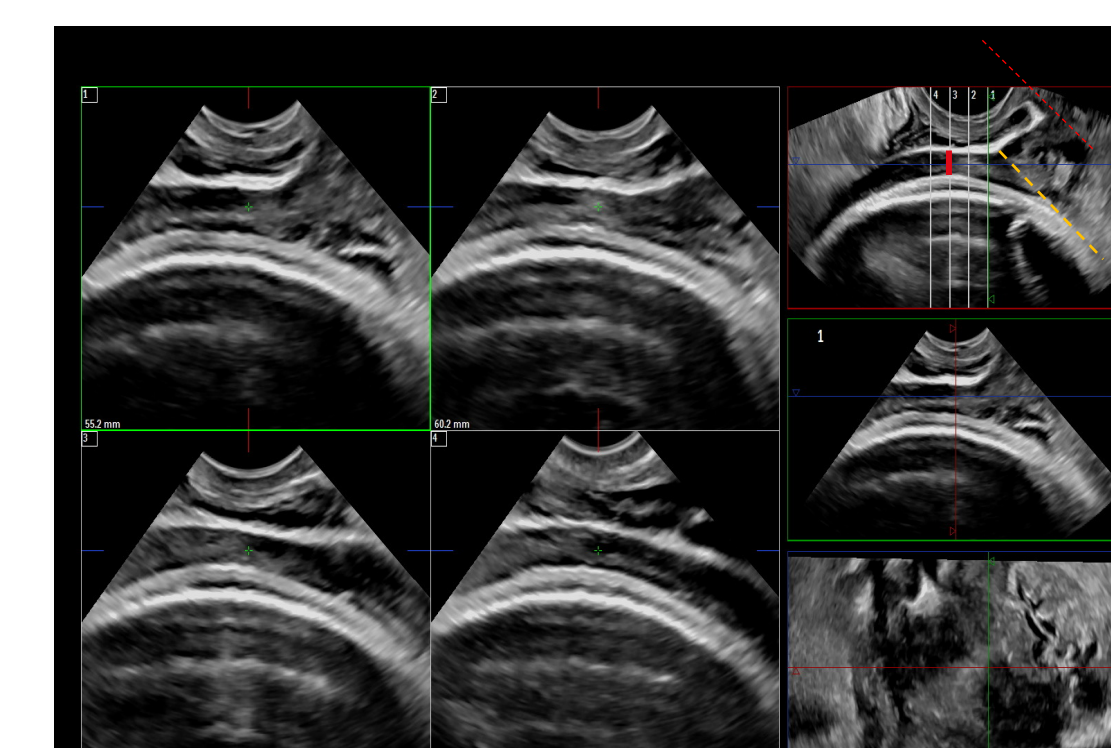
LUS thickness was systematically evaluated for each segment (slice) in the **lateral-lateral direction**. It was considered the point where LUS was **thinnest**.



¹ Alessandri F, et al. Fishbone double-layer barbed suture in cesarean section: a help in preventing long-term obstetric sequelae? Arch Gynecol Obstet. 2021 Sep;304(3):573-576.

Ultrasound-based axial tomography reconstructions.

Normal (A) and reduced LUS thickness (B).



Bladder wall

Uterine serosa

Miometrium

Decidua

Amniotic fluid

Fetal head

RESULTS

Thirty-four (36.6%) and **59** (63.4%) **women** were enrolled in the barbed and in the control group, respectively.

Mean III trimester **LUS thickness** was **2.5 ± 1.1 mm** in the **barbed group** and **2.1 ± 1.0 mm** in the **control group** (p = 0.030).

The proportion of patients with a **LUS thickness > 2.0 mm** was **greater** in the **barbed group** (61.8% vs 39.0%, p = 0.034).

After **correction** for **confounding factors** (placental

position, presence of polyhydramnios, week of pregnancy, maternal age > 35 years, BMI > 30 kg / m²), **previous closure of hysterotomy by barbed suture remained associated with a longer III trimester LUS** (+ 0.49 mm; 95% CI, 0.28 to 0.96 mm; p = 0.038).

A similar number of women from each group underwent elective cesarean section (p = 0.551); **no diagnosis of uterus rupture or placenta accreta spectrum occurred**.

CONCLUSIONS

A **higher III trimester LUS thickness** in the pregnancy **following a caesarean section** performed **with barbed suture** can be considered a **surrogate marker for a better healing of anterior uterine wall**. However, **future comparative studies with larger samples are needed** to estimate the risk of spontaneous uterine rupture during the following pregnancy or in case of labor trial.