

# Evaluation during early puerperium of the low transverse incision after cesarean section through vaginal ultrasonography

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## Summary

**Objective:** This study was designed in order to determine the criteria of the natural healing of the low transverse cesarean incision through vaginal ultrasonography.

**Methods:** The uterine wound was examined with a vaginal scanner (5.5-7 MHz) in 75 asymptomatic patients with a normal postoperative course three days after the cesarean section. We compared our findings with those obtained in 21 patients with a complicated post-cesarean course.

**Results:** The uterine incision was identified as an oval, centrally located region between the bladder and the uterus. In 18 of the 75 cases, a hypoechoic area with indistinct limits, almost rounded and with a diameter of smaller than 1.5 cm in all cases was determined in the incision site. Possibly all these cases represented small hematomas or serous collections, with no clinical importance. Four of the 21 symptomatic patients had bladder flap or uterine incision hematomas. These were large (> 2 cm in all cases) hypoechoic areas inside or around the transverse incision site.

**Conclusion:** The low transverse cesarean incision in the uterus can be visualized sonographically with a vaginal scanner and normal postoperative changes can be recognized.

**Key words:** Cesarean section; Vaginal ultrasonography; Puerperium.

## Introduction

The study was designed in order to determine the criteria for the natural healing of low transverse cesarean incisions through vaginal ultrasonography.

## Materials and Methods

During a period of six years, we examined the uterine incision site with sonography in 75 patients. The criteria for entrance into the study were three days postprimary cesarean section, low transverse uterine incision, asymptomatic postoperative course and approval of the patient and attending physician. The indications regarding the cesarean section in these women were the following:

fetal hypoxia (18), failure to progress (21), cephalopelvic disproportion (13), premature labor (7), breech presentation (6), placental abruption (3) and twins (7).

Each patient had an almost empty urinary bladder when examined. Equipment used was GE LOGIQ 400 CL and Kretz 320 Combison with vaginal scanner at 5.5-7 MHz. After determining the incision site, we measured it in both longitudinal and transverse planes of the uterus. Broad ligament areas were also examined.

In order to describe the normal healing of the uterine incision, we compared our findings with those obtained in patients with a complicated post-cesarean course. During the study, we examined sonographically 21 symptomatic patients. These patients were scanned two to five days after their low transverse cesarean sections and most of them had more than one sign or symptom suggesting infection or hematoma formation (fever,

dropping hematocrit, white count). The cesarean section was performed for many reasons: fetal hypoxia (9), failure to progress (7), cephalopelvic disproportion (4), preclampsia (3), chorioamnionitis (3), and premature rupture of membranes (2).

In symptomatic patients the cutaneous and subfascial incision site were examined with abdominal sonography and the lower uterine transverse incision site and broad ligaments with vaginal scanner. Abnormalities in both regions were measured.

## Results

In the asymptomatic patients, the incision site was identified as an oval region centrally located between the bladder and the uterus (Figures 1 & 2). The echogenicity was almost the same or slightly lower than that of the myometrium.

The mean length of this area was 3.5 cm (range 2.0-5.5 cm), the mean width 2.8 cm (range 0.8-4.6 cm), and the mean antero-posterior (AP) dimension was 1.7 cm (range 0.5-3.2 cm).

Within the incision site, small punctate high amplitude echoes were identified. When scanned in parallel to the incision direction, these echoes were thought to correspond clearly to sections of the continuous sutures of the myometrium, because the uterine incision was closed with a continuous technique.

Eighteen of the 75 patients showed evidence of an indistinct hypoechoic region within the incision, almost cyclical, with a diameter in all cases smaller than 1.5 cm (Figure 3). These probably corresponded to a small

Fig. 1

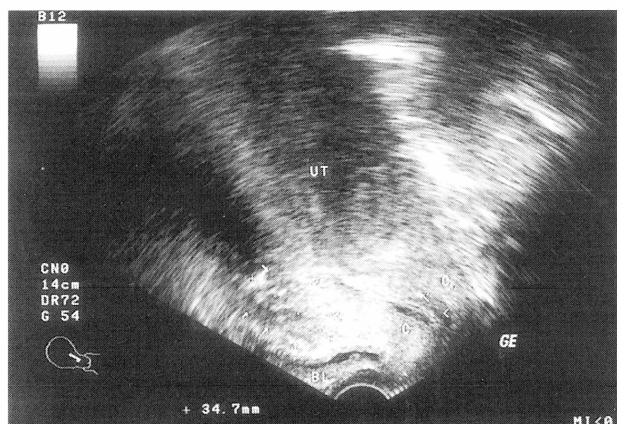


Fig. 2

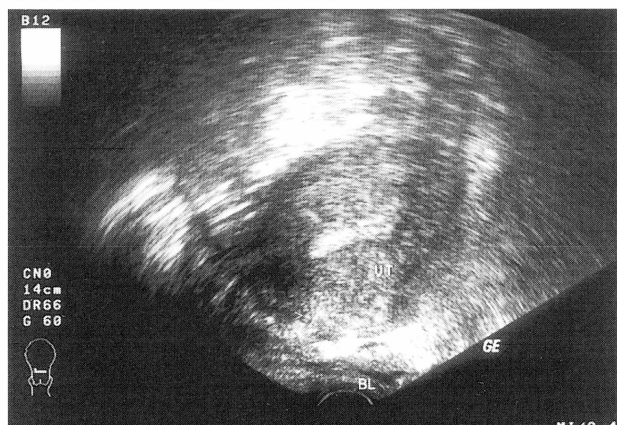


Figure 1. — Normal lower uterine transverse incision. Longitudinal pelvic vaginal sonogram shows incision site (small arrows) as an oval area interposed between the urinary bladder (BL) and the lower uterine segment, uterus (UT), cervix (C), cervical canal (<).

Figure 2. — Transverse pelvic vaginal sonogram of normal lower uterine transverse incision, urinary bladder (BL), uterus (UT), incision site (<).

Figure 3. — Insignificant hematoma or serous collection within incision site. Vaginal sonogram shows a 10-mm round hypoechoic area (<) within incision site (crosses).

Figure 4. — Large hematoma (H), 4.6 x 3.0 cm, inside the incision site. Longitudinal pelvic vaginal sonogram; endometrium (E).

Figure 5. — Longitudinal pelvic vaginal sonogram. Hematoma (H); endometrium (E).

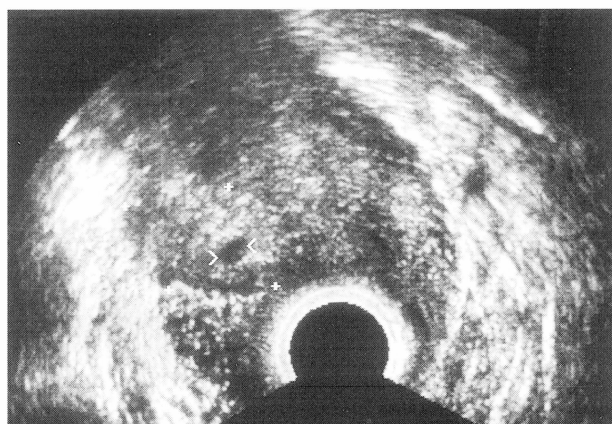


Fig.

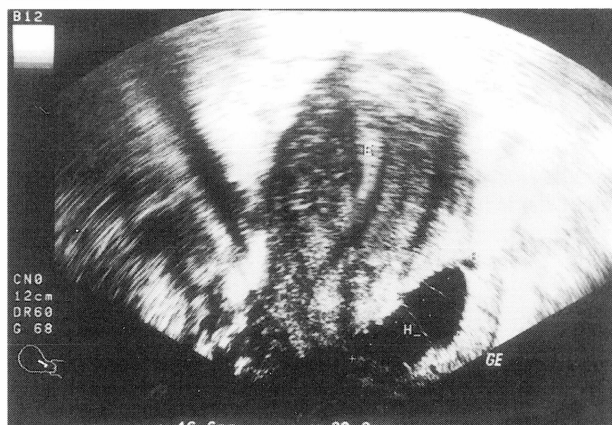


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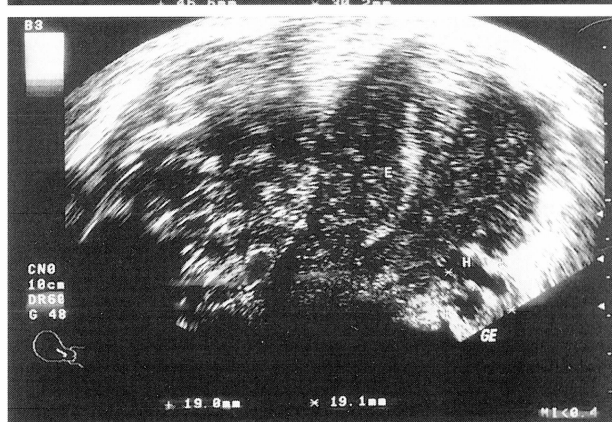


Fig.

hematoma or exudate of the region, considering that the patients were not febrile and the normal clinical course continued until they were discharged from the hospital.

In the symptomatic group, the following postoperative complications were encountered:

- Endometritis (4)
- Urinary infection (5)
- Cutaneous or subfascial hematoma (6)
- Bladder flap or uterine incision hematoma (4)
- Retained products of conception (2)

The bladder flap or uterine incision hematomas were large, hypoechoic areas inside or around the transverse incision site (Figures 4, 5). They were measured from 2 to 5 cm and the three of them were aspirated.

## Discussion

Cesarean section is currently a common mode of delivery, ranging from 15-25% in high-risk centers, while in our clinic it is approximately 21% [3].

Infection and hemorrhage due to uterine atony and inadequate hemostasis at the incision are frequent complications. Hematomas can form in the anterior abdominal wall and around the lower uterine segment, frequently between the uterus and bladder.

In the related literature, we found that it contains mainly descriptions of the sonographic findings of various hematomas of the incision site [1, 2, 4]. Baker *et al.* described the sonographic findings of the low trans-

verse incision cesarean section through abdominal sonography in both asymptomatic and symptomatic patients [5]. Considering that postoperative abdominal sonography is more difficult technically, because of bandaging or the need to use sterile material between the skin and the sonar scanner, but more so because of a more effective distinguishing ability of the scanner 5, 5-7 MHz, we tried to determine the criteria of a normal healing of the uterine wound through vaginal sonography. As can be seen from the results of our study, the findings, which are not pathological and correspond to the normal healing of the low transverse cesarean incision, are the following:

- Oval centrally located region between the bladder and the uterus of echogenicity similar to or slightly more hypoechoic from that of the myometrium (corresponds to the uterine wound).

- Small punctate areas of high amplitude echoes within the incision (correspond to continuous sutures of the myometrium).

- Indistinct low amplitude region, almost cyclical with a diameter smaller than 1.5 cm (corresponds to a small collection of exudation or blood with no clinical importance).

Symptomatic patients with fever and dropping hematocrit are often difficult to evaluate clinically. In these patients, the differential diagnosis includes endometritis, retained products of conception, urinary and respiratory infection, pelvic thrombophlebitis and incisional hematoma. The contribution of sonography to the differential diagnosis of these complications is extremely important. Significant bladder flap hematomas are characteristically greater than 2 cm in diameter and asymmetrically placed in or around the scar. Identification of

normal healing of the low transverse cesarean incision and distinction of serous collections or hematomas in it through vaginal sonography aids treatment in postpartum patients.

## Conclusion

Low transverse cesarean incisions can easily be identified through vaginal sonography and normal postoperative changes can be diagnosed. These, in summary, are a distinct oval region, with echogenicity almost the same as that of the myometrium, between the bladder and uterus, in which echoic masses or small round hypoechoic regions, smaller than 1.5 cm, can be found.

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