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瘢痕子宫再次妊娠孕妇阴道试产结局与子宫前壁下段肌层厚度的关系

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[摘　要]　**目的：**探讨瘢痕子宫再次妊娠孕妇阴道试产结局和子宫前壁下段肌层厚度的关系。**方法：**选取2019年2月至2021年3月海口市妇幼保健院收治的120例具备阴道试产指征的瘢痕子宫再次妊娠孕妇，均同意阴道试产和接受子宫前壁下段肌层厚度超声测量。依据阴道试产结局分为成功组和失败组，比较两组孕妇子宫前壁下段肌层厚度和围产期相关指标。比较不同超声分级子宫前壁下段肌层厚度孕妇的阴道试产结局。绘制受试者工作特征(receiver operating characteristic，ROC)曲线分析子宫前壁下段肌层厚度对阴道试产结局的预测价值。**结果：**阴道试产成功率为62.50%(75/120)。超声测量显示：子宫前壁下段肌层厚度I级(>3 mm)79例，II级(2~3 mm)41例。成功组子宫前壁下段肌层厚度高于失败组(P<0.01)。I级孕妇的阴道试产成功率高于II级，先兆子宫破裂发生率低于II级，差异均有统计学意义(均P<0.05)。ROC曲线分析显示：子宫前壁下段肌层厚度预测阴道试产成功的曲线下面积(area under the curve，AUC)为0.703，最佳截断值为3.87 mm，敏感度为63.86%，特异度为78.38%。**结论：**瘢痕子宫再次妊娠孕妇的子宫前壁下段肌层厚度的超声测量值与阴道试产成功率、先兆子宫破裂发生风险紧密相关，对临床预测阴道试产结局有一定参考价值。

[关键词]　瘢痕子宫；妊娠；阴道试产；子宫前壁下段肌层厚度；预测

Relationship between vaginal trial delivery outcome and myometrial thickness of lower anterior wall of uterus in pregnant women with second pregnancy of scarred uterus

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Abstract　**Objective:** To investigate the relationship between the outcome of vaginal trial delivery and the thickness of the lower segment of the anterior wall of the uterus in pregnant women. **Methods:** A total of 120 pregnant women with scarred uterus with indications of vaginal trial delivery treated in Haikou Maternal and Child Health Hospital from February 2019 to March 2021 were selected for this study. They agreed to have vaginal trial delivery

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and undergo ultrasonic measurement of the thickness of the lower segment of the anterior wall of the uterus. According to the outcome of vaginal trial delivery, the pregnant women were divided into a successful group and a failure group. The thickness of myometrium in the lower part of anterior wall of uterus and perinatal related indexes was compared between the 2 groups. We compared the results of vaginal trial delivery of pregnant women with different ultrasonic grades of the thickness of the lower segment of the anterior wall of the uterus. The receiver operating characteristic (ROC) curve was drawn to analyze the predictive value of the thickness of the lower segment of the anterior wall of the uterus on the outcome of vaginal trial delivery. **Results:** The success rate of vaginal trial delivery was 62.50% (75/120). Ultrasound measurement showed that the thickness of myometrium in the lower segment of anterior wall of uterus was grade I (>3 mm) in 79 cases and grade II (2–3 mm) in 41 cases. The thickness of the lower segment of the anterior wall of the uterus in the successful group was significantly higher than that in the failed group (P<0.01). The successful rate of vaginal trial delivery in grade I was higher than that in grade II, and the incidence of threatened uterine rupture was lower than that in grade II, with significant difference (all P<0.05). ROC curve analysis showed that the area under the curve (AUC) for predicting the success of vaginal trial delivery was 0.703, the best cut-off value was 3.87 mm, the sensitivity was 63.86%, and the specificity was 78.38%. **Conclusion:** The ultrasonic measurement for the thickness of the lower segment of the anterior wall of the uterus is closely related to the successful rate of vaginal trial delivery and the risk of threatened uterine rupture, which has a reference value for clinical prediction of the outcome of vaginal trial delivery.

Keywords scar uterus; pregnancy; vaginal trial; thickness of myometrium in the lower segment of anterior wall of uterus; prediction

瘢痕子宫再次妊娠的围产处理是妇产医学工作的重点，随着围产医学的不断进步，“一次剖宫产，终身剖宫产”的传统错误观念逐渐被摒弃。目前临床普遍认为，对瘢痕子宫再次妊娠孕妇应重视孕期或产前咨询指导，积极评估是否具备阴道试产指征并提供分娩建议，提高阴道分娩率，尽量减少不必要的剖宫产，以降低母婴结局并发症发生风险，节约医疗费用[1-2]。子宫前壁下段肌层厚度是反映子宫瘢痕愈合情况的重要指标，瘢痕子宫再次妊娠孕妇均需接受超声测量检查，明确瘢痕愈合情况对临床评估阴道试产风险有益[3]，但子宫前壁下段肌层厚度与阴道试产结局是否存在紧密关联，尚需大量高证据等级的报道论证。本研究对120例瘢痕子宫再次妊娠孕妇进行前瞻性分析研究，探讨子宫前壁下段肌层厚度与阴道试产结局的关系。

1 对象与方法

1.1 对象

选取2019年2月至2021年3月海口市妇幼保健院收治的120例瘢痕子宫再次妊娠孕妇。入组标准：1)既往子宫下段横切口剖宫产史1次，且与本次妊娠间隔时间≥2年；2)本次妊娠为单胎头位，孕晚期检查胎儿正常；3)结合既往剖宫产史相关情况和本次妊娠孕期超声检查，明确具备阴道试产指征[4]，瘢痕愈合质量I~II级，且经过对孕妇及家属提供产前咨询沟通后，同意接受阴道试产。排除标准：1)具备明确剖宫产指征[5]；2)经产前咨询沟通后仍选择剖宫产；3)拟在外院分娩。本研究经海口市妇幼保健院医学伦理委员会审批通过。

1.2 方法

1.2.1 阴道试产和分组

由具有丰富经验的妇产科医师进行阴道试产指征评估。阴道试产在产科医师和助产士陪护下进行。若试产过程中出现孕妇无法忍受宫缩痛而放弃试产；临产后12 h内胎儿仍未分娩、胎儿窘迫或先兆子宫破裂等异常情况，均表示阴道试产失败。试产失败者即刻中转剖宫产手术分娩。海口市妇幼保健院具备急诊中转剖宫产等医疗条件，有效确保阴道失败孕妇应急处理的安全性。统计本研究120例入组孕妇的阴道试产结局，依据试产结局分为成功组和失败组。

1.2.2 子宫前壁下段肌层厚度超声测量

孕妇在孕晚期接受产科医师制订的超声检

查计划。由同组经验丰富的妇产超声医师完成操作，仪器采用GE Voluson S10超声诊断仪，经腹部探头频率2~9 MHz，经阴道探头频率为5~9 MHz，观察子宫前壁下段肌层形态和连续性，无宫缩状态下于肌层最薄处测量其纵切厚度值，连续测量3次，取平均值记录。临床上依据子宫前壁下段肌层厚度超声测量值，分为I级(>3 mm)、II级(2~3 mm)和III级(<2 mm)，其中II~III级(<3 mm)表示瘢痕愈合缺陷[6]。本研究统计两组分娩前1周的子宫前壁下段肌层厚度超声测量值。

1.3 统计学处理

采用SPSS 21.0统计软件分析数据。计数资料以例(%)表示，采用χ^2检验或Fisher确切概率法；正态分布的计量资料以均数±标准差($\bar{x}\pm s$)表示，采用t检验。绘制受试者工作特征(receiver operating characteristic，ROC)曲线分析子宫前壁下段肌层厚度测量值对阴道试产结局的预测价值。P<0.05为差异有统计学意义。

2 结果

2.1 阴道试产结局

本组120例瘢痕子宫再次妊娠孕妇均积极配合相关检查和完成妊娠随访，阴道试产成功75例，占比62.50%。阴道试产失败45例，占比37.50%。

2.2 成功组和失败组相关指标比较

两组孕妇年龄、分娩孕周、距上次剖宫产分娩时间、新生儿出生体重比较，差异均无统计学意义(均P>0.05)，成功组新生儿5 min Apgar评分和子宫前壁下段肌层厚度均高于失败组(均P<0.05，表1)。

2.3 不同子宫前壁下段肌层厚度孕妇阴道试产结局比较

依据超声测量结果，120例孕妇子宫前壁下段肌层厚度可分为I级(n=79)和II级(n=41)(图1，2)。I级孕妇阴道试产成功率高于II级(P<0.001)，先兆子宫破裂发生率低于II级组(P=0.048，表2)。

表1 阴道试产成功组与失败组相关指标比较

Table 1 Comparison of relevant indexes between successful vaginal trial delivery group and failed vaginal trial delivery group

指标	成功组(n=75)	失败组(n=45)	t	P
年龄/岁	30.82 ± 3.27	31.17 ± 3.40	0.559	0.577
分娩孕周	39.20 ± 1.76	39.48 ± 1.80	0.837	0.405
子宫前壁下段肌层厚度/mm	4.53 ± 1.02	3.18 ± 0.64	7.979	<0.001
距上次剖宫产分娩时间/年	3.87 ± 1.02	4.02 ± 1.23	0.721	0.472
新生儿出生体重/kg	3.20 ± 0.34	3.32 ± 0.38	1.343	0.182
新生儿5 min Apgar评分	9.36 ± 0.40	9.12 ± 0.52	2.838	0.005

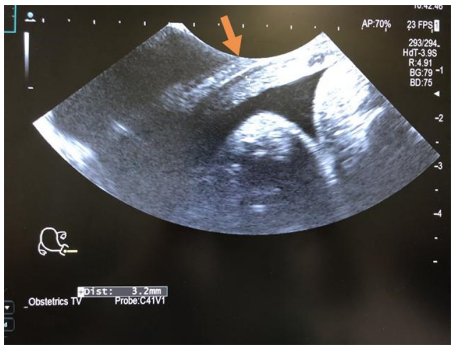

图1 I级超声图像，孕39周阴道分娩。箭头处测得子宫前壁下段肌层最薄处厚度约为3.07 mm

Figure 1 Level I ultrasonic image, during vaginal delivery at 39 weeks of pregnancy. The thickness of the thinnest myometrium of the lower segment of the anterior wall of the uterus measured at the arrow is about 3.07 mm

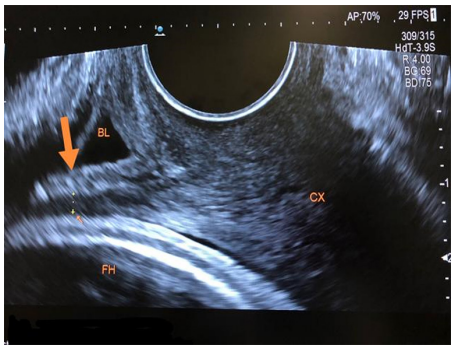

图2 II级超声图像，38$^+$周阴道试产失败，转剖宫产成功分娩。箭头处可见子宫前壁下段肌层偏薄，最薄处厚约2.51 mm

Figure 2 Level II ultrasound image, failure of vaginal trial delivery and successful delivery of cesarean section at 38$^+$ weeks of pregnancy. Thin myometrium of the lower segment of the anterior wall of the uterus can be seen at the arrow, and the thickness of the thinnest part is about 2.51 mm

表2 不同子宫前壁下段肌层厚度孕妇阴道试产结局比较

Table 2 Comparison of vaginal trial delivery outcomes of pregnant women with different thickness of myometrium in the lower segment of anterior wall of uterus

超声结果分级	*n*	子宫前壁下段肌层厚度/mm	阴道试产成功率/%	先兆子宫破裂发生率/%
I级	83	4.61 ± 0.72	74.70	2.41
II级	37	2.71 ± 0.26	35.14	13.51
χ^2/t		15.575	26.730	3.901
P		<0.001	<0.001	0.048

2.4 子宫前壁下段肌层厚度对阴道试产结局的预测价值

将阴道试产结局作为状态变量(试产成功=1，试产失败=0)，将子宫前壁下段肌层厚度超声测量值作为检验变量绘制ROC曲线，结果显示：子宫前壁下段肌层厚度预测阴道试产结局的AUC为0.703(95%CI：0.570~0.836)，最佳截断值为3.87 mm，敏感度为63.86%，特异度为78.38%，约登指数为0.422(图3)。

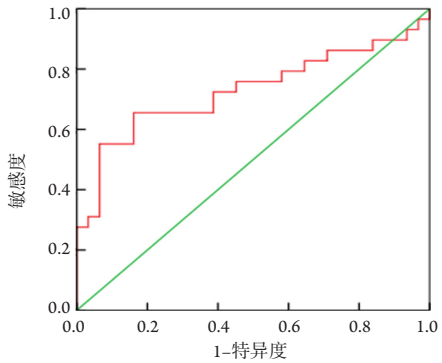

图3 子宫前壁下段肌层厚度预测阴道试产结局的ROC曲线

Figure 3 ROC curve for predicting the outcome of vaginal trial delivery by the thickness of myometrium in the lower segment of anterior wall of uterus

3 讨论

我国生育政策的转变，如放开二胎、鼓励三胎的政策出台，为渴望二孩三孩的家庭提供了机遇。由于我国既往剖宫产率较高，长期位居世界前列水平，导致瘢痕子宫再次妊娠比较多见，此类孕妇的分娩方式抉择及围产处理需引起重视[7-8]。在临床实践中，医师和瘢痕子宫再次妊娠孕妇对分娩方式选择均有一定倾向性，尽管阴道分娩存在诸多优点，但许多医师出于安全性考虑，或孕妇出于对阴道分娩的恐惧、担心，仍多选择剖宫产术分娩。产科处理水平提高和超声技术的应用，为具备阴道试产指征者选择阴道试产提供了有利条件。

子宫前壁下段肌层厚度与瘢痕子宫再次妊娠孕妇的妊娠结局之间的关系是妇产医学研究的热点。在经验上[9-10]，子宫前壁下段肌层厚度>3 mm表示正常，且在无其他剖宫产指征情况下建议阴道试产，对产后恢复和新生儿有益；<3 mm表示偏薄，阴道试产宫缩的并发症风险增加，需谨慎考虑评估；<2 mm子宫破裂风险较大，不考虑阴道试产，综合评估后宜提前剖宫产术终止妊娠。目前子宫前壁下段肌层厚度与阴道试产结局并未建立明确的因果关系，子宫前壁下段肌层厚度的超声测量值也并不能作为阴道试产或试产成功的金标准。子宫前壁下段肌层厚度与阴道试产结局的关系仍值得探究。

本研究纳入120例具备阴道试产指征且瘢痕愈合质量为I~II级的孕妇，在产前完善相关检查和做好应急手术准备条件下，阴道试产成功率为62.50%(75/120)，与陈淑华等[11]报道的68.33%接近。阴道试产结局的影响因素复杂，比如分娩间隔时间、孕妇年龄和胎儿体重等，本研究中两组分娩间隔时间、孕妇年龄和新生儿体重比较并无明显差异，可能与本研究样本量偏少和孕妇个体差异有关。依据超声测量分级，发现I级孕妇阴道试产成功率(74.70%)明显高于II级(35.14%)，而先兆子宫破裂发生率(2.41%)显著低于II级(13.51%)，与沈红梅等[12]和Anitha等[13]的报道相符，提示随子宫前壁下段肌层厚度增加，对阴道试产越有利；反之，子宫前壁下段肌层厚度偏薄，所能承受的张力较小，分娩时子宫在机械性牵拉作用下瘢痕处子宫破裂的风险增加。但王林林等[14]指出：子宫前壁下段肌层厚度与瘢痕子宫再次妊娠孕妇的子宫破裂风险的相关性可能并不大，在满足>2.0 mm或2.5 mm的阴

性评估值条件下，二者对子宫破裂的阳性预测值仅为15%和13%。笔者也认为，瘢痕子宫再次妊娠孕妇子宫破裂的影响因素复杂，除外子宫前壁下段肌层厚度外，胎儿体重、孕周、阴道分娩史和前次剖宫产术缝合方式等亦有可能产生影响。

本研究发现：子宫前壁下段肌层厚度对阴道试产结局的AUC为0.703，预测阴道试产成功的敏感度为63.86%，特异度为78.38%。表明子宫前壁下段肌层厚度对阴道试产结局仍产生明显影响，与≥3.87 mm者相比，<3.87 mm者可能面临更高的试产失败风险，但单纯依靠子宫前壁下段肌层厚度预测阴道试产结局也存在敏感度偏低的缺陷，在临床实际中，子宫前壁下段肌层厚度<3.87 mm且阴道试产成功者并不少见，需辨证看待子宫前壁下段肌层厚度的临床价值。因此，笔者认为，运用超声技术测量子宫前壁下段肌层厚度对临床评估阴道试产风险和预测阴道试产结局有一定参考价值，但不能作为临床分娩决策和预测试产结局的金标准指标，需客观辨证看待[15-16]；阴道试产能否成功仍取决于母婴综合条件和产科医疗水平。本研究存在样本量偏少、子宫前壁下段肌层厚度超声测量值易受操作者主观因素影响等不足，后续需进一步完善。

参考文献

1. Deng K, Liu W, Chen Y, et al. Obstetric and gynecologic outcomes after the transvaginal repair of cesarean scar defect in a series of 183 women[J]. J Minim Invasive Gynecol, 2021, 28(5): 1051-1059.
2. 顾向应, 张艺珊. 加强瘢痕子宫再次妊娠的全程管理是降低孕产妇风险的当务之急[J]. 中国计划生育和妇产科, 2019, 11(5): 5-6.
   GU Xiangying, ZHANG Yishan. Strengthening the whole process management of scar uterus re pregnancy is an urgent task to reduce the risk of pregnant women[J]. Chinese Journal of Family Planning & Gynecotokology, 2019, 11(5): 5-6.
3. Asgari Z, Salehi F, Hoseini R, et al. Ultrasonographic features of uterine scar after laparoscopic and laparoscopy-assisted minilaparotomy myomectomy: a comparative study[J]. J Minim Invasive Gynecol, 2020, 27(1): 148-154.
4. 洪凡, 龚景进, 黄楚君, 等. 瘢痕子宫妊娠早产经阴道分娩的可行性与安全性[J]. 实用妇产科杂志, 2020, 36(1): 72-74.
   HONG Fan, GONG Jingjin, HUANG Chujun, et al. The feasibility and safety of preterm delivery through vagina with scar uterus[J]. Journal of Practical Obstetrics and Gynecology, 2020, 36(1): 72-74.
5. Lu YM, Guo YR, Zhou MY, et al. Indwelling intrauterine foley balloon catheter for intraoperative and postoperative bleeding in cesarean scar pregnancy[J]. J Minim Invasive Gynecol, 2020, 27(1): 94-99.
6. Kamel R, Eissa T, Sharaf M, et al. Position and integrity of uterine scar are determined by degree of cervical dilatation at time of Cesarean section[J]. Ultrasound Obstet Gynecol, 2021, 57(3): 466-470.
7. 栗娜, 刘彩霞. 瘢痕子宫妊娠的孕期保健与分娩期处理[J]. 中国实用妇科与产科杂志, 2020, 36(2): 13-16.
   LI Na, LIU Caixia. Prenatal care and management during delivery of re-pregnancy with scarred uterus[J]. Chinese Journal of Practical Gynecology and Obstetrics, 2020, 36(2): 13-16.
8. 王春雨, 韩冰, 赵亚丹, 等. 瘢痕子宫再次妊娠不同分娩方式近远期并发症比较[J]. 实用妇产科杂志, 2020, 36(1): 53-57.
   WANG Chunyu, HAN Bing, ZHAO Yadan, et al. Comparison of short-term and long-term complications of different delivery modes after prior cesarean section[J]. Journal of Practical Obstetrics and Gynecology, 2020, 36(1): 53-57.
9. Ganapathi T, Chaudhari HK. Ultrasonographic measurement of uterine lower segment scar thickness in cases of previous one caesarean section and obstetric outcome[J]. Int J Reprod Contracept Obstet Gynecol, 2018, 7(11): 4454-4460.
10. Seliger G, Muendane A, Chaoui K, et al. Does ultrasound-guided intervention during repeat cesarean sections improve uterine scar architecture and reduce the number of scars? A prospective controlled clinical intervention trial[J]. J Perinat Med, 2018, 46(8): 857-866.
11. 陈淑华, 钟诚. 瘢痕子宫下段肌层厚度与阴道试产失败的关系[J]. 中国性科学, 2020, 29(10): 108-111.
    CHEN Shuhua, ZHONG Cheng. Relationship between thickness of the lower uterine muscle layer and the failure of vaginal delivery[J]. Chinese Journal of sexual Sciences, 2020, 29(10): 108-111.
12. 沈红梅, 李璐. 经腹联合经阴道超声检测瘢痕子宫下段肌层厚度对分娩方式选择的指导价值[J]. 中国超声医学杂志, 2019, 35(4): 358-361.
    SHEN Hongmei, LI Lu. Value of transabdominal combined with transvaginal ultrasonography in the selection of delivery method for the detection of scar subuterine muscle layer thickness[J]. Chinese Journal of Ultrasound in Medicine, 2019, 35(4): 358-361.
13. Anitha N, Deepika K, Prathibha SD. Retrospective study of incidence and risk factors of uterine scar dehiscence identified at repeat caesarean section[J]. J Evid-Based Integr, 2020, 7(36): 1976-1979.
14. 王林林, 陈俊雅, 杨慧霞, 等. 妊娠期子宫瘢痕情况与剖宫产术后再次妊娠孕妇发生子宫破裂的相关性[J]. 中华妇产科杂志, 2019, 54(6): 375-380.
    WANG Linlin, CHEN Junya, YANG Huixia, et al. Correlation between uterine scar condition and uterine rupture for pregnancy women after previous cesarean section[J]. Chinese Journal of Obstetrics and Gynecology, 2019, 54(6): 375-380.

15. 张婷, 姬宏宇, 王莉, 等. 瘢痕子宫再次妊娠距上次剖宫产间隔时间与凶险性前置胎盘的关系[J]. 实用妇产科杂志, 2020, 36(4): 276-279.
ZHANG Ting, JI Hongyu, WANG Li, et al. The relationship between the interval time of pregnancy and last cesarean section and the incidence of pernicious placenta previa[J]. Journal of Practical Obstetrics and Gynecology, 2020, 36(4): 276-279.
16. Dhama V, Gupta S, Chaudhary R, et al. A sonographic assessment of previous caesarean section scar: is a reliable safeguard for trial of labour?[J]. Int J Reprod Contracept Obstet Gynecol, 2020, 9(4): 1520-1527.

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