

• 临床研究 •

43 例子宫破裂的临床分析

林萍萍, 樊佳宁, 陆倩倩, 芮 璨, 栾 婷, 王新艳*

南京医科大学附属妇产医院(南京市妇幼保健院)产科, 江苏 南京 210004

[摘要] 目的: 探讨子宫破裂产妇的临床特点和妊娠结局。方法: 回顾性分析2016年12月—2022年12月在南京医科大学附属妇产医院分娩的43例子宫破裂产妇的临床资料, 按照是否有子宫手术史, 分为瘢痕子宫组和非瘢痕子宫组, 比较其临床特点和妊娠结局, 并对20例经阴道试产发生子宫破裂产妇的产时情况进行分析。结果: 43例子宫破裂产妇中瘢痕子宫33例, 非瘢痕子宫10例; 与瘢痕子宫组相比, 非瘢痕子宫组术中出血量 $\geq 1\ 000$ mL的比例($P < 0.001$)、累积出血量 $\geq 1\ 000$ mL的比例($P=0.003$)更高, 输血率更高($P=0.012$)。43例子宫破裂中预期剖宫产23例, 余20例阴道试产者中产后发现子宫破裂组(13例)与产时发现子宫破裂组(7例)相比, 产后发现子宫破裂组中完全性子宫破裂占比明显增加($P=0.044$), 输血率显著增加($P < 0.001$), 两组相比差异有统计学意义。此外, 与产后发现子宫破裂组相比, 产时发现子宫破裂组中羊水异常比例和胎心改变比例增高, 虽差异无统计学意义($P > 0.05$), 但仍需引起临床高度重视。结论: 非瘢痕子宫发生子宫破裂时出血量更多, 阴道试产者于产后发现子宫破裂的并发症更严重, 分娩前后应密切注意羊水、胎心、生命体征等情况, 及时发现子宫破裂, 降低母儿不良妊娠结局的发生率。

[关键词] 子宫破裂; 瘢痕子宫; 非瘢痕子宫; 阴道试产; 剖宫产**[中图分类号]** R714.4**[文献标志码]** A**[文章编号]** 1007-4368(2024)06-788-09**doi:** 10.7655/NYDXBNSN240182

Clinical analysis of 43 cases of maternal uterine rupture

LIN Pingping, FAN Jianing, LU Qianqian, RUI Can, LUAN Ting, WANG Xinyan*

Department of Obstetrics, the Affiliated Obstetrics and Gynaecology Hospital of Nanjing Medical University (Nanjing Women and Children's Healthcare Hospital), Nanjing 210004, China

[Abstract] **Objective:** To investigate the clinical characteristics and pregnancy outcomes of women with uterine rupture. **Methods:** This retrospective study analyzed clinical data from 43 women who experienced uterine rupture during delivery at the Affiliated Obstetrics and Gynaecology Hospital of Nanjing Medical University from December 2016 to December 2022. The participants were divided into scarred and non-scarred uterus groups based on their histories of uterine surgery. Additionally, the delivery outcomes of 20 women who underwent vaginal trial of labor was analyzed. **Results:** Of the 43 cases, 33 women involved a scarred uterus group, and 10 women involved a non-scarred uterus group. The non-scarred uterus group exhibited significantly higher intraoperative blood loss $\geq 1\ 000$ mL ($P < 0.001$) and cumulative blood loss $\geq 1\ 000$ mL ($P=0.003$) compared to the scarred uterus group, along with a higher rate of blood transfusion ($P=0.012$). Among those 43 cases, 23 women underwent expected cesarean sections, while 20 opted for vaginal trial delivery. In the vaginal trial delivery patients, there was a notable increase in complete uterine ruptures ($P=0.044$) and rate of blood transfusion ($P < 0.001$) in the group with uterine rupture detected during delivery (7 cases), compared with the group with uterine rupture detected after delivery (13 cases). Furthermore, the group with uterine rupture detected during delivery showed a higher incidence of abnormal amniotic fluid and fetal heart rate changes. Although these differences did not reach statistical significance ($P > 0.05$), they still warrant significant clinical attention. **Conclusion:** Non-scarred uterus exhibit more bleeding when rupture occurs. Patients undergoing vaginal trial delivery who experience postpartum uterine rupture face more severe complications. It is essential to closely monitor amniotic fluid, fetal heart rate, and vital signs before and after delivery to promptly detect uterine rupture and reduce adverse pregnancy outcomes.

[基金项目] 国家自然科学基金(82204469)

*通信作者(Corresponding author), E-mail: wxynjfybjy@163.com

[Key words] uterine rupture; scarred uterus; non-scarred uterus; vaginal trial of labor; cesarean section

[J Nanjing Med Univ, 2024, 44(06): 788-796]

子宫破裂指在妊娠或分娩期间子宫体部或子宫下段发生破裂^[1],虽然罕见,但因其可能导致紧急子宫切除或严重的母婴并发症,属于临床危急重症,一直被临床工作者高度警惕和重视^[2-4]。随着国内三孩政策的实施,有剖宫产史的女性再次妊娠数量增加,子宫破裂数量也在增加,进一步导致了该严重并发症的发生^[5-6]。有研究表明,产妇的年龄增长^[7]及产次增加、瘢痕子宫、瘢痕子宫阴道试产^[8-10]、头盆不称的过度试产、缩宫素引产^[11-12]、子宫发育异常及多次宫腔操作史^[13]等可能是子宫破裂的影响因素。而子宫破裂的及时诊断和处理对孕妇和新生儿的结局至关重要。本研究对43例子宫破裂产妇的临床症状、分娩方式、影像学检查和孕妇新生儿结局进行回顾性分析,以期临床工作中子宫破裂产妇的及时诊断和治疗提供参考,从而有利于生育力的保护。

1 对象和方法

1.1 对象

2016年12月—2022年12月南京医科大学附属妇产医院分娩发生子宫破裂的产妇一共有43例。按照既往是否有子宫手术史分为:瘢痕子宫组33例,非瘢痕子宫组10例。瘢痕子宫组中20例预期剖宫产,13例经阴道试产。非瘢痕子宫组中3例预期剖宫产,7例经阴道试产。本研究已通过南京医科大学附属妇产医院伦理委员会审批(伦理批号:2022 KY-057),所有患者知情同意。

1.2 方法

回顾性分析43例产妇的临床信息,一般情况包括:年龄、体重指数、孕次、产次、孕周、流产次数,妊娠合并症(糖尿病、高血压、甲状腺疾病),瘢痕子宫的原因、此次妊娠距前次子宫手术的时间、剖宫产的次数,分娩方式(阴道分娩、预期剖宫产、中转剖宫产),新生儿体重,新生儿出生后1 min Apgar评分,新生儿出生后5 min Apgar评分,子宫破裂类型,术中及累积出血量,是否输血和采取措施等。随后又对20例经阴道试产的产妇的产时经过进行分析,按照子宫破裂发现时间分为产时发现子宫破裂组和产后发现子宫破裂组,对两组的瘢痕子宫数、羊

水情况、胎心变化、子宫破裂类型、术中出血量、累积出血量、输血情况和治疗措施等进行统计分析。

1.3 统计学方法

采用SPSS 25.0统计软件进行数据分析,呈正态分布的计量资料以均数±标准差($\bar{x} \pm s$)表示,采取独立样本 t 检验进行分析;非正态分布的计量资料以中位数(四分位数)[$M(P_{25}, P_{75})$]表示,采取曼-惠特尼 U 检验进行分析;对计数资料采取卡方检验或Fisher确切概率法进行分析。 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 产妇一般情况分析

43例产妇的中位分娩年龄33岁(范围21~41岁),中位体重指数 25.98 kg/m^2 (范围 $20.45 \sim 37.24 \text{ kg/m}^2$),中位孕周 38^{+6} 周(范围31~41周),中位孕次3次(范围1~8次),中位产次1次(范围0~2次),25.58%(11/43)流产 ≥ 3 次,41.86%(18/43)有妊娠合并症。瘢痕子宫组33例,21.21%(7/33)流产 ≥ 3 次,42.42%(14/33)有妊娠合并症;3.03%(1/33)是多发性子宫肌瘤行腹腔镜下子宫肌瘤剔除术后,余96.97%(32/33)均为剖宫产术后,其中有2次剖宫产史的4例;此次妊娠距前次子宫手术的中位时间4年(范围2~13年)。非瘢痕子宫组10例,40%(4/10)流产 ≥ 3 次,40%(4/10)有妊娠合并症。与非瘢痕子宫组相比,瘢痕子宫组产妇产次更多,差异有统计学意义($P < 0.001$);在年龄、体重指数、孕周、孕次、流产次数、是否有妊娠合并症方面与非瘢痕子宫组相比,差异无统计学意义(表1)。

2.2 瘢痕子宫和非瘢痕子宫分娩和临床特点

33例瘢痕子宫孕妇中因瘢痕子宫预期剖宫产20例,阴道试产中因胎儿窘迫和羊水异常转剖宫产6例,阴道分娩7例(其中产钳助娩2例);10例非瘢痕子宫孕妇中3例预期剖宫产(2例因“腹腔镜下宫颈环扎术后”和1例因“双胎妊娠”),1例因“胎儿窘迫”中转剖宫产,6例阴道分娩(其中产钳助娩3例),两组分娩方式差异无统计学意义($P=0.081$)。阴道试产中是否使用催产素比较,非瘢痕子宫孕妇中大多使用催产素引产(6/7),瘢痕子宫孕妇使用(4/13)较少,两组相比差异无统计学意义($P=0.057$)。由于

表1 43例子宫破裂的一般情况

Table 1 General characteristics of 43 cases of uterine rupture

Characteristic	Total(n=43)	Scarred uterus group(n=33)	Non-scarred uterus(n=10)	P
Age[n(%)]				0.719
<35 years	28(65.12)	22(66.67)	6(60.00)	
≥35 years	15(34.88)	11(33.33)	4(40.00)	
Body mass index[kg/m ² , M(P ₂₅ , P ₇₅)]	25.98(23.15, 28.32)	25.78(22.83, 28.42)	26.07(23.57, 28.26)	0.772
Gestational age[weeks, M(P ₂₅ , P ₇₅)]	38.60(37.60, 40.20)	38.60(37.55, 40.05)	39.75(37.53, 40.53)	0.390
Number of pregnancies[M(P ₂₅ , P ₇₅)]	3(2, 5)	3(2, 5)	2(1, 5)	0.254
Number of deliveries[M(P ₂₅ , P ₇₅)]	1(1, 1)	1(1, 1)	0(0, 1)	<0.001
Number of miscarriages[n(%)]				0.248
<3	32(74.42)	26(78.79)	6(60.00)	
≥3	11(25.58)	7(21.21)	4(40.00)	
Presence of pregnancy complications[n(%)]				0.892
Yes	18(41.86)	14(42.42)	4(40.00)	
No	25(58.14)	19(57.58)	6(60.00)	
Causes of scarring[n(%)]				-
Cesarean section	32(74.42)	32(96.97)	0(0)	
Myomectomy	1(2.33)	1(3.03)	0(0)	
Number of cesarean sections[n(%)]				-
1	28(65.12)	28(87.50)	0(0)	
2	4(9.30)	4(12.50)	0(0)	
Time since last surgery[n(%)]				-
2- $<$ 3 years	10(23.26)	10(30.30)	0(0)	
3- $<$ 6 years	9(20.93)	9(27.27)	0(0)	
≥6 years	14(32.56)	14(42.42)	0(0)	

非瘢痕子宫组中有1例为双胎妊娠,共有44例新生儿,对分娩孕周及新生儿体重进行分析,两组分娩孕周大多为37~40⁺6周(24/33 vs. 7/11),新生儿体重大多为2 500~ $<$ 3 500 g(22/33 vs. 7/11),两组差异无统计学意义($P > 0.05$,表2)。

2.3 瘢痕子宫和非瘢痕子宫的孕妇及新生儿结局分析

非瘢痕子宫组发生子宫破裂后术中出血量 \geq 1 000 mL的比例和累积出血量 \geq 1 000 mL的比例均较瘢痕子宫组更高($P < 0.05$);非瘢痕子宫组输血率较瘢痕子宫组更高($P=0.012$)。两组之间子宫破裂类型、新生儿Apgar评分比较,差异均无统计学意义。此外,仅有的2例子宫切除产妇均来自非瘢痕子宫组(表3)。

2.4 20例阴道试产后子宫破裂产妇的临床资料

43例子宫破裂产妇中共有20例经阴道试产,有60%(12/20)出现胎心改变、60%(12/20)发生羊水性状变化、40%(8/20)同时存在胎心和羊水性状的变化。而产后发现子宫破裂组(13例)与产时发现子宫破裂组(7例)相比,产后发现子宫破裂组中完全

性子宫破裂比例明显增加($P=0.044$),输血率明显增加($P < 0.001$),血红蛋白进行性下降比例明显增加($P=0.005$),两组相比差异均有统计学意义。此外,产时发现子宫破裂组中,85.71%(6/7)产时发生羊水异常、71.43%(5/7)胎心改变,均高于产后发现子宫破裂组;产后发现子宫破裂组中,15.38%(2/13)行子宫切除手术,剖腹探查术中平均出血量、产后累积出血量均高于产时发生子宫破裂组,虽然可能由于病例数量有限,上述数据差异无统计学意义,但仍需引起临床工作者的重视(表4)。

2.5 10例非瘢痕子宫破裂产妇的临床资料

10例非瘢痕子宫产妇中(表5),1例因双胎妊娠、腹痛、腹腔积血、B超胎儿脐血流S/D比值高行剖宫产,2例因“宫颈环扎”预期剖宫产,1例因阴道试产胎儿窘迫转剖宫产,上述均在术中发现子宫破裂;3例因孕妇产时胎心减速、羊水异常行产钳助娩,产后阴道出血、B超提示子宫异常、腹腔积血;2例产后出血、失血性休克、B超及CT均提示子宫异常、盆腹腔积血;1例产时出现胎心减速、羊水异常,产后阴道流血多、B超提示子宫异常,上述均在分娩

表2 瘢痕子宫与非瘢痕子宫的分娩和临床特点分析

Table 2 Comparative analysis of delivery and clinical characteristics between scarred uterus and non-scarred uterus groups [n/N(%)]

Clinical characteristic	Scarred uterus group	Non-scarred uterus group	P
Mode of delivery			0.081
Expected cesarean section	20/33(60.61)	3/10(30.00)	
Cesarean section following failure in trial labor	6/33(18.18)	1/10(10.00)	
Vaginal delivery	7/33(21.21)	6/10(60.00)	
Labor induction during vaginal trial of labor			0.057
Yes	4/13(30.77)	6/7(85.71)	
No	9/13(69.23)	1/7(14.29)	
Gestational age at delivery ^a			0.861
<37 weeks	7/33(21.21)	3/11(27.27)	
37-40 ⁶ weeks	24/33(72.73)	7/11(63.64)	
≥41 weeks	2/33(6.06)	1/11(9.09)	
Neonatal weight ^a			0.257
<2 500 g	3/33(9.09)	3/11(27.27)	
2 500-<3 500 g	22/33(66.67)	7/11(63.64)	
3 500-<4 000 g	8/33(24.24)	1/11(9.09)	
≥4 000 g	0/33(0)	0/11(0)	

a: There is one case of twin pregnancy in non-scarred uterus group.

表3 瘢痕子宫与非瘢痕子宫的孕妇和新生儿结局分析

Table 3 Outcome analysis for pregnant women and newborns between scarred uterus and non-scarred uterus groups [n/N(%)]

Outcome	Scarred uterus group	Non-scarred uterus group	P
Type of uterine rupture			0.568
Complete uterine rupture	8/33(24.24)	4/10(40.00)	
Incomplete uterine rupture	25/33(75.76)	6/10(60.00)	
Surgical methods			0.050
Uterine repair	33/33(100.00)	8/10(80.00)	
Hysterectomy	0/33(0)	2/10(20.00)	
Intraoperative blood loss			<0.001
<500 mL	17/33(51.52)	0/10(0)	
500-<1 000 mL	13/33(39.39)	3/10(30.00)	
≥1 000 mL	3/33(9.09)	7/10(70.00)	
Cumulative blood loss			0.003
<500 mL	4/33(12.12)	0/10(0)	
500-<1 000 mL	21/33(63.64)	2/10(20.00)	
≥1 000 mL	8/33(24.24)	8/10(80.00)	
Blood transfusion	7/33(21.21)	7/10(70.00)	0.012
1-minute Apgar score ^a			0.154
0-3	2/33(6.06)	1/11(9.09)	
4-7	1/33(3.03)	2/11(18.18)	
8-10	30/33(90.91)	8/11(72.73)	
5-minute Apgar score ^a			1.000
0-3	0/33(0)	0/11(0)	
4-7	2/33(6.06)	1/11(9.09)	
8-10	31/33(93.94)	10/11(90.91)	

a: There is one case of twin pregnancy in non-scarred uterus group.

表4 20例阴道试产子宫破裂产时发现组和产后发现组比较

Table 4 Comparison of 20 cases of vaginal trial delivery with uterine rupture detected during delivery and after delivery groups

Clinical characteristic	Uterine rupture detected during delivery (n=7)	Uterine rupture detected after delivery (n=13)	P
Presence of uterine scarring[n(%)]			0.329
Yes	6(85.71)	7(53.85)	
No	1(14.29)	6(46.15)	
Abnormal amniotic fluid[n(%)]	6(85.71)	6(46.15)	0.158
Fetal heart rate changes[n(%)]	5(71.43)	7(53.85)	0.642
Progressive decrease in hemoglobin[n(%)]	0(0)	9(69.23)	0.005
Type of uterine rupture[n(%)]			0.044
Complete uterine rupture	0(0)	7(53.85)	
Incomplete uterine rupture	7(100.00)	6(46.15)	
Intraoperative blood loss[mL, M(P ₂₅ , P ₇₅)]	500(400, 800)	1 000(525, 1 750)	0.321
Cumulative blood loss[mL, M(P ₂₅ , P ₇₅)]	650(445, 1 010)	1 600(850, 3 580)	0.117
Blood transfusion[n(%)]			<0.001
Yes	0(0)	12(92.31)	
No	7(100.00)	1(7.69)	
Surgical method[n(%)]			0.521
Uterine repair	7(100.00)	11(84.62)	
Hysterectomy	0(0)	2(15.38)	

后行剖腹探查发现子宫破裂。对非瘢痕子宫破裂产妇的临床资料总结发现大多数产妇产时有胎心减速、羊水异常,产后有阴道流血多,B超或CT提示异常影像学表现。在临床工作中,瘢痕子宫孕妇阴道试产过程应严密监测,预防子宫破裂的发生;而对于非瘢痕子宫产妇在阴道试产的产时、产后异常情况以及影像学表现,也应提高警惕,争取及时发现并治疗子宫破裂。

3 讨论

受经济情况、医疗水平以及文化程度等因素影响,子宫破裂在不同国家或者同一国家不同地区的发生率参差不齐^[5]。2005年WHO发表的一篇系统分析报道子宫破裂全球中位发生率是0.8/万~5.3/万^[10]。2019年,一项由9个国家参与的欧洲国际产科调查系统网络研究发现子宫破裂总体发生率为3.3/万(95% CI: 3.1/万~3.5/万)^[14];同年我国一篇多中心研究报道,我国子宫破裂的总体发生率为2.96/万^[15]。近年来国内各地区报道的子宫破裂发生率为1.2/万~5.21/万^[5,16-17]。子宫破裂虽然罕见,但因其可能导致紧急子宫切除或严重的母儿并发症,属于临床危急重症,需引起高度警惕和重视。

瘢痕子宫是公认的导致子宫破裂的重要影响

因素^[6,10],本研究中,瘢痕子宫占有所有子宫破裂产妇的76.74%。数据显示,全球范围内妊娠期子宫破裂发生率为0.016%~0.300%,由于剖宫产手术或其他子宫手术造成的子宫瘢痕会使子宫破裂的发生率增加为0.2%~1.8%^[18-19],如果产程中使用了缩宫素或前列腺素制剂干预,子宫破裂发生率甚至可以为2.4%~4.7%^[11,20-21]。考虑到全球剖宫产率上升的趋势,国家“三孩”生育政策的推行,以及为了减少剖宫产相关并发症而实施剖宫产后阴道试产(trial of labor after cesarean, TOLAC)率的增加,子宫破裂的发生率也可能会逐渐增加^[22-24]。这给临床工作者带来了新的挑战,提前预防、尽早识别、及时救治子宫破裂则显得尤为关键。

值得注意的是,在本研究中,非瘢痕子宫组的术中出血量较瘢痕子宫组更多、输血率更高。分析可能的原因:瘢痕子宫组60.61%(20/33)预期剖宫产,18.18%(6/33)阴道试产时在临产后中转剖宫产,上述均在术中发现子宫破裂,大多位于原切口部位,术中出血可控,并未对妊娠结局造成过多的影响。这也提醒把握高危因素孕妇手术时机的重要性,根据孕妇临床情况适时终止妊娠,以避免自发性子宫破裂。目前已有多篇文献报道剖宫产后阴道分娩(vaginal birth after caesarean section, VBAC)是瘢痕

表5 10例非瘢痕子宫破裂产妇的临床资料分析
Table 5 Clinical data analysis of 10 cases of non-scarred uterine rupture

No.	Mode of delivery	Time of rupture detection	Clinical presentation	Imaging finding	Intraoperative finding	Blood transfusion
1	Expected caesarean section (twins)	During surgery	Abdominal pain, fetal heart rate deceleration	Hemoperitoneum, high umbilical cord blood flow S/D ratio indicated by B-ultrasonography	Subserous of right uterine horn with a 3 cm×6 cm hematoma	Yes
2	Expected caesarean section	During surgery	None	-	Incomplete rupture of lower uterine segment	No
3	Expected caesarean section	During surgery	None	-	Incomplete rupture of lower uterine segment with a 5 cm×5 cm laceration	No
4	Cesarean section following failure in trial labor	During surgery	Fetal heart rate deceleration	-	3 cm×2 cm laceration at the right side of uterus	No
5	Vaginal delivery (forceps)	After delivery	Fetal heart rate deceleration, grade III amniotic fluid, postpartum hemorrhage	Hemoperitoneum, laceration of right side of uterus indicated by B-ultrasonography	Incomplete rupture of lower uterine segment with a 6 cm laceration	Yes
6	Vaginal delivery (forceps)	After delivery	Postpartum hemorrhage	Laceration of left side of uterus, hemoperitoneum indicated by B-ultrasonography and CT	5 cm rupture laceration at the left side of uterus	Yes
7	Vaginal delivery (forceps)	After delivery	Abdominal pain, grade II amniotic fluid, fetal heart rate deceleration, postpartum hemorrhage	Hemoperitoneum and abnormal echo at the lower anterior wall of the uterus indicated by B-ultrasonography	5 cm laceration at the lower part of the uterus	Yes
8	Vaginal delivery	After delivery	Postpartum hemorrhage, hemorrhagic shock	Hemoperitoneum, abnormal echo in lower uterine segment indicated by B-ultrasonography	1 cm tear at the lower part of the uterus with active bleeding	Yes
9	Vaginal delivery	After delivery	Fetal heart rate deceleration, abdominal pain, postpartum hemorrhage, hemorrhagic shock	Hemoperitoneum indicated by B-ultrasonography and CT	8 cm laceration at the lower segment uterus	Yes
10	Vaginal delivery	After delivery	Fetal heart rate deceleration, grade III amniotic fluid, postpartum hemorrhage	Abnormal echo in lower uterine and paracentral segments indicated by B-ultrasonography	6 cm laceration at the right side of uterus	Yes

子宫发生破裂的最常见原因^[5,9,25],在临床上,应尤为重视VBAC的产妇。本研究中,瘢痕子宫组7例(21.21%)剖宫产所致瘢痕子宫经阴道分娩的产妇,考虑到其为子宫破裂的高危人群,产后均进行了宫腔探查,并积极完善B超等辅助检查,及时发现子宫破裂可能并立即处理。文献提示瘢痕子宫的破裂处多是前次切口处,子宫破裂口相对规整、加之瘢痕处出血量往往不多,常不累及其表面覆盖的内脏腹膜^[6]。因此,瘢痕子宫组产妇总体上出血不多、输血率低,结局良好。而非瘢痕子宫组,70%(7/10)阴道试产的产妇中,除1例因胎心改变中转剖宫产术中发生子宫破裂外,余6例均阴道分娩,产后出现了不同程度的血红蛋白下降、失血性休克等症状。B超、CT等辅助检查结果提示“腹腔积血、异常回声”,高度怀疑“子宫破裂”后行剖腹探查,术中所见大多为子宫表面不同部位、不规整且较大的子宫破裂口,出血多。此外,产后做出剖腹探查决定需非常慎重,特别是对于非瘢痕子宫的产妇而言,因此在疑似“子宫破裂”的诊疗过程中可能会耗费更多的时间,完善一系列检查,并试图通过各种保守方法救治的同时动态观察病情进展等,这也可能是非瘢痕子宫组出血量更多、输血率高的原因之一。故产后对于非瘢痕子宫者阴道分娩后发生血红蛋白和血压下降与阴道出血量不符时,也需警惕子宫破裂的可能,以免贻误病情。

非瘢痕子宫破裂的后果可能会比瘢痕子宫破裂更严重,产程中应该如何去发现和预警呢?很多文献提示子宫破裂的临床表现有腹痛、阴道流血、血尿、失血性休克、血性羊水、胎心改变、宫缩消失等^[2,15,26]。2019年周玮等^[27]指出硬膜外麻醉能够显著提高TOLAC的成功率,增加产妇选择试产的意愿和信心,但往往在一定程度上会掩盖腹痛等症状,此类产妇往往以胎心改变为首要表现。但是也有文献报道硬膜外镇痛只能阻断子宫收缩引起的疼痛,不能阻断胎盘早剥或者子宫破裂引起的病理性疼痛^[28]。本研究中,13例经阴道分娩且发生子宫破裂的产妇都给予了硬膜外分娩镇痛,腹痛等症状均不强烈,这提示临床实践中,由于分娩镇痛的实施,突发的或剧烈难耐的或持续性的腹痛在子宫破裂患者中往往并不典型,不一定是子宫破裂的首发症状或特征表现,因此一线医务人员不能仅关注患者腹痛这一主诉而忽略胎心改变等其他临床表现。多篇文献均认为TOLAC过程中,持续的胎心监护可以作为早期子宫破裂诊断的参考指标^[5,22,29]。缪嘉燕等^[30]

研究发现,羊水血性或者污染提示可能存在胎儿宫内窘迫,可增加阴道分娩后母婴不良结局的风险。研究表明,诊断产时子宫破裂主要根据产时临床表现,胎心监护异常是子宫破裂最常见的征象,可见于55%~87%的产妇,表现为胎儿心率减慢、晚期减速、宫缩消失,其他症状包括腹痛、阴道流血、肌张力增高、血尿^[31-32]。本研究的10例非瘢痕子宫破裂产妇中,除3例预期剖宫产外,71.43%(5/7)有胎心减速、42.86%(3/7)有羊水异常、85.71%(6/7)有阴道流血症状;经阴道试产的产妇中60.00%(12/20)出现胎心改变、60.00%(12/20)发生羊水性状变化、40.00%(8/20)同时存在胎心和羊水性状的改变;并且分组分析发现,产时发现子宫破裂的产妇出现胎心改变、羊水改变的发生率更高,虽由于临床案例有限,结果差异无统计学意义,但仍警醒临床工作者,在产程处理中,如遇到不能解释的胎心改变或者羊水性状改变,应综合分析,仔细查体,认真鉴别是否有子宫破裂可能,适时放宽剖宫产手术指征,有可能更早发现子宫破裂,从而改善母婴结局。

总之,在阴道试产过程中,腹痛等主观症状可能会被分娩镇痛掩盖,但是产程中羊水情况和胎心改变等客观表现,可被及时发现并处理,从而有效避免不良结局的发生。另外,经阴道分娩后,也不能放松警惕,本研究中100%(7/7)瘢痕子宫阴道分娩和33.33%(2/6)非瘢痕子宫阴道分娩的产妇均于产后行宫腔探查发现宫腔连续性异常;除1例未行B超检查外,余均立即行B超检查发现“盆腔积血”、“异常回声”等。在产后怀疑子宫破裂的患者中,影像学检查如B超、CT、MRI等起着重要作用^[33]。B超是首选的检查方法,它成本低,易于获得且便携,可以在各种环境下进行,如产房或急症患者床边。不仅可以检测子宫破裂的位置,还可以用于判断腹腔积血的多少,但是对于腹腔游离气体的监测不灵敏^[34-35]。CT比B超视野更开阔,可进一步帮助显示破裂的位置和范围,CT血管造影术及尿路造影术还可以用于识别破裂的血管以及检测输尿管和膀胱的损伤^[33,36]。当超声和CT不能确定子宫损伤时,MRI因其较高的软组织分辨率,可进一步运用于子宫破裂的诊断,但通常只适用于临床体征稳定的患者^[37-38]。目前临床上对于是否常规行产后宫腔探查尚有争议^[39],但笔者课题组认为,产后宫腔探查和超声检查是及时发现产后子宫破裂的重要手段;尤其对瘢痕子宫产妇,建议经验丰富的医师常规行产后宫腔探查,有助于及早发现子宫破裂。当宫腔探查和B超检查不确定时,

如患者生命体征稳定,可行急诊盆腔CT或MRI检查。

本研究也存在一些局限性:由于是回顾性研究,样本的采集来自既往病例,如文化程度、收入情况、职业、瘢痕厚度等临床资料不够齐全;由于子宫破裂发生率不高,近6年样本量小,导致某些结果如非瘢痕子宫组与瘢痕子宫组的阴道分娩率差异没有统计学意义;后续行多中心研究可能获得更准确的临床指导建议。

综上所述,本研究对43例子宫破裂的产妇进行了回顾性分析,结果提示瘢痕子宫产妇的子宫破裂发生率更高,但非瘢痕子宫产妇术中出血量更多、输血率更高,这提示在临床工作中,非瘢痕子宫的破裂可能会有更严重的妊娠结局,应该引起重视。另外,阴道试产时,应在整个产程中密切注意羊水和胎心情况,当出现羊水异常或者胎心改变时,就要警惕子宫破裂的发生;对于阴道分娩后怀疑子宫破裂的产妇,产后应密切注意生命体征变化及血红蛋白指标等实验室检查,产后宫腔探查和床边B超是诊断子宫破裂的重要手段,能够使诊断子宫破裂的时机提前,有助于保障母儿安全。

[参考文献]

- [1] MUTISO S K, OINDI F M, MUNDIA D M. Uterine rupture in the first trimester: a case report and review of the literature[J]. *J Med Case Rep*, 2024, 18(1):5
- [2] AL-ZIRQI I, VANGEN S. Prelabour uterine rupture: characteristics and outcomes [J]. *BJOG*, 2020, 127 (13) : 1637-1644
- [3] CHANG Y H. Uterine rupture over 11 years: a retrospective descriptive study [J]. *Aust N Z J Obstet Gynaecol*, 2020, 60(5): 709-713
- [4] FINNSDOTTIR S K, MAGHSOUDLOU P, PEPIN K, et al. Uterine rupture and factors associated with adverse outcomes [J]. *Arch Gynecol Obstet*, 2023, 308 (4) : 1271-1278
- [5] 崔红梅,关崇丽,吕玲,等. 妊娠期完全性子宫破裂临床分析[J]. *中国计划生育学杂志*, 2021, 29(3):620-625
- [6] TANOS V, TONEY Z A. Uterine scar rupture - prediction, prevention, diagnosis, and management [J]. *Best Pract Res Clin Obstet Gynaecol*, 2019, 59: 115-131
- [7] HAMILTON E L, MCLAUGHLIN K, MOLLART L. Factors that influence women's decision on the mode of birth after a previous caesarean section: a meta-ethnography[J]. *Int J Community Based Nurs Midwifery*, 2023, 11 (3) : 152-168
- [8] ATIA O, ROTEM R, REICHMAN O, et al. Number of prior vaginal deliveries and trial of labor after cesarean success [J]. *Eur J Obstet Gynecol Reprod Biol*, 2021, 256: 189-193
- [9] DIMITROVA D, KÄSTNER A L, KÄSTNER A N, et al. Risk factors and outcomes associated with type of uterine rupture [J]. *Arch Gynecol Obstet*, 2022, 306(6) : 1967-1977
- [10] YOU S H, CHANG Y L, YEN C F. Rupture of the scarred and unscarred gravid uterus: outcomes and risk factors analysis [J]. *Taiwan J Obstet Gynecol*, 2018, 57(2) : 248-254
- [11] ZHANG H, LIU H, LUO S, et al. Oxytocin use in trial of labor after cesarean and its relationship with risk of uterine rupture in women with one previous cesarean section: a meta-analysis of observational studies [J]. *BMC Pregnancy Childbirth*, 2021, 21(1): 11
- [12] ZHAO P, ZHAO Y, HE J, et al. Subsequent placenta accreta after previous mifepristone-induced abortion: a case report [J]. *World J Clin Cases*, 2021, 9 (33) : 10244-10248
- [13] 林春容,刘广钰,曹甜甜,等. 完全性子宫破裂危险因素的Meta分析[J]. *中国循证医学杂志*, 2020, 20(10) : 1187-1192
- [14] WU C, MCGEE T. Ten years of uterine rupture in an Australian tertiary hospital [J]. *Aust N Z J Obstet Gynaecol*, 2021, 61(6) : 862-869
- [15] 刘喆,杨慧霞,辛虹,等. 全国多中心子宫破裂现状调查及结局分析[J]. *中华妇产科杂志*, 2019, 54(6) : 363-368
- [16] 赵玲,芮璨,樊佳宁,等. 瘢痕子宫行乳酸依沙吡啶引产致子宫破裂病例报告及文献复习[J]. *南京医科大学学报(自然科学版)*, 2023, 43(3) : 432-437
- [17] 陈月芬. 妊娠中晚期子宫破裂162例临床分析[D]. 济南: 山东大学, 2023
- [18] STEER P J. Improving our understanding of uterine activity during labour [J]. *BJOG*, 2022, 129(6): 985
- [19] VANDENBERGHE G, BLOEMENKAMP K, BERLAGE S, et al. The International Network of Obstetric Survey Systems study of uterine rupture: a descriptive multi-country population-based study [J]. *BJOG*, 2019, 126 (3) : 370-381
- [20] HAUTAKANGAS T M, UOTILA J T, HUHTALA H, et al. How does uterine contractile activity affect the success of trial of labour after caesarean section, and the risk of uterine rupture? An exploratory, blinded analysis of a cohort from a randomised controlled trial [J]. *BJOG*, 2022, 129 (6) : 976-984
- [21] RYBERG J, CARLSSON Y, SVENSSON M, et al. Risk of uterine rupture in multiparous women after induction of

- labor with prostaglandin: a national population-based cohort study[J]. *Int J Gynaecol Obstet*, 2024, 165(1): 328-334
- [22] 王雅楠, 李奎. 剖宫产术后阴道试产时完全性子宫破裂临床特征分析[J]. *北京医学*, 2021, 43(4): 312-316
- [23] 杨磊, 张云, 李亚. 剖宫产术后阴道分娩的产程观察及影响妊娠结局的相关因素分析[J]. *川北医学院学报*, 2023, 38(6): 814-817
- [24] ZHAN W, ZHU J, HUA X, et al. Epidemiology of uterine rupture among pregnant women in China and development of a risk prediction model: analysis of data from a multicentre, cross-sectional study[J]. *BMJ Open*, 2021, 11(11): e054540
- [25] TAN L K, BEH S T. Uterine rupture in Singapore: trends and lessons learnt[J]. *Ann Acad Med Singapore*, 2021, 50(1): 1-2
- [26] ZHAO P, SU C, WANG C, et al. Clinical characteristics of uterine rupture without previous Cesarean section: a 25-year retrospective study [J]. *J Obstet Gynaecol Res*, 2021, 47(6): 2093-2098
- [27] 周玮, 漆洪波. 2019年ACOG剖宫产后阴道分娩指南解读[J]. *中国实用妇科与产科杂志*, 2019, 35(12): 1340-1344
- [28] ROTTENSTREICH M, ROTEM R, HIRSCH A, et al. Delayed diagnosis of intrapartum uterine rupture - maternal and neonatal consequences [J]. *J Matern Fetal Neonatal Med*, 2021, 34(5): 708-713
- [29] 罗丽萍, 郭玲, 欧阳安. 胎心监护在TOLAC过程中早期诊断子宫破裂的应用价值探讨[J]. *当代医学*, 2019, 25(25): 139-140
- [30] 缪嘉燕, 李婵娟, 吴莉莉, 等. 瘢痕子宫再次妊娠阴道试产的影响因素及结局分析[J]. *安徽医药*, 2021, 25(11): 2182-2186
- [31] GUISE J M, MCDONAGH M S, OSTERWEIL P, et al. Systematic review of the incidence and consequences of uterine rupture in women with previous caesarean section[J]. *BMJ*, 2004, 329(7456): 19-25
- [32] 温晶娜, 刘小华. 多次子宫手术史妊娠期子宫破裂的早期发现和处置[J]. *中国实用妇科与产科杂志*, 2023, 39(6): 601-605
- [33] ABOUGHALIA H, BASAVALINGU D, REVZIN M V, et al. Imaging evaluation of uterine perforation and rupture[J]. *Abdom Radiol*, 2021, 46(10): 4946-4966
- [34] CUI X, WU S. Ultrasonic assessment has high sensitivity for pregnant women with previous cesarean section occurring uterine dehiscence and rupture: a STARD-compliant article[J]. *BMC Med*, 2020, 99(31): e21448
- [35] KAWAKAMI K, YOSHIKATO T, KUROKAWA Y, et al. New ultrasonographic risk assessment of uterine scar dehiscence in pregnancy after cesarean section [J]. *J Med Ultrason*, 2023, 50(1): 89-96
- [36] CHUNG S, ALSHOWAIKH K, YACOEL T, et al. Precipitous delivery complicated by uterine artery laceration and uterine rupture in an unscarred uterus: a case report [J]. *Case Rep Womens Health*, 2022, 36: e00433
- [37] SHARMA P G, RAJDERKAR D A. Confirmation of posterior uterine rupture in the second trimester by magnetic resonance imaging [J]. *J Neonatal Perinatal Med*, 2017, 10(2): 199-202
- [38] 徐飞, 孙瑜, 张艳榕, 等. 70例子宫破裂的母儿结局和临床特点分析[J]. *南京医科大学学报(自然科学版)*, 2022, 42(8): 1147-1154
- [39] 和作珍, 亓晶. 产后即时徒手宫腔探查减少产后出血[J]. *中国生育健康杂志*, 2003, 14(6): 344-346

[收稿日期] 2024-02-24

(本文编辑: 陈汐敏)