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# 腹动脉球囊置入联合宫颈提拉缝合治疗凶险性前置胎盘产后大出血临床效果\*

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**摘要 目的:**探讨腹动脉球囊置入联合宫颈提拉缝合治疗凶险性前置胎盘产后大出血的临床效果。**方法:**选取我院 2019 年 1 月到 2021 年 12 月收治的 178 例凶险性前置胎盘患者作为研究对象,所有患者均采用剖宫产手术,且术后出现产后大出血现象,将所有患者依照术中胎盘位置及植入情况治疗方式分为观察组(n=73)与对照组(n=105)。其中对照组产妇采取腹动脉球囊置入联合宫腔纱条填塞术,观察组采取腹动脉球囊置入联合宫颈提拉缝合治疗,对比两组产妇的剖宫产时间、术后 24 h 失血量、术中失血量以及总手术时间,相关临床指标,产后泌乳时间和产后 1 d、2 d 的泌乳量评分以及住院时间,并发症发生情况。**结果:**两组产妇剖宫产时间、球囊预置术时间对比无明显差异( $P>0.05$ ),观察组产妇术后 24 h 失血量、术中失血量、总手术时间明显低于对照组( $P<0.05$ )。手术前两组产妇凝血酶原时间(PT)、凝血活酶时间(APTT)、血小板(PLT)、纤维蛋白原(FIB)、一氧化氮(NO)、一氧化氮合酶(NOS)、D-二聚体(D-Dimer)无明显差异( $P>0.05$ ),治疗后两组产妇 PT 均升高,观察组高于对照组,PLT、NO、NOS 均降低,观察组低于对照组;对照组 APTT、FIB 无明显变化,但观察组 APTT 高于对照组,FIB 低于对照组;观察组 D-Dimer 无明显变化,但对照组升高( $P<0.05$ )。观察组产妇的产后 1、2 d 泌乳量评分明显高于对照组,泌乳时间、术后住院时间明显低于对照组( $P<0.05$ )。观察组产妇术后并发症发生率明显低于对照组( $P<0.05$ )。**结论:**对凶险性前置胎盘产后大出血患者采取腹动脉球囊置入联合宫颈提拉缝合治疗能够进一步减轻患者术后出血量,且改善患者凝血因子、一氧化氮、一氧化氮合酶、纤维蛋白原、D-二聚体水平,提升泌乳量,减少术后并发症发生率,值得临床应用推广。

**关键词:**腹动脉球囊置入;宫颈提拉缝合;凶险性前置胎盘;产后大出血

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## Clinical Effect of Abdominal Artery Balloon Implantation Combined with Cervical Pull Suture in the Treatment of Dangerous Postpartum Hemorrhage of Placenta Previa\*

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**ABSTRACT Objective:** To investigate the clinical effect of abdominal artery balloon implantation combined with cervical pull suture in the treatment of dangerous postpartum hemorrhage of placenta previa. **Methods:** 178 patients with dangerous placenta previa treated in our hospital from January 2019 to December 2021 were selected as the research object. All patients underwent cesarean section and had postpartum hemorrhage. All patients were divided into observation group (n=73) and control group (n=105) according to the placenta position and implantation conditions during operation. Among them, the control group was treated with abdominal artery balloon implantation combined with Intrauterine gauze packing, and the observation group was treated with abdominal artery balloon implantation combined with cervical lifting suture. The cesarean section time, 24-hour blood loss, intraoperative blood loss and total operation time, relevant clinical indexes, postpartum lactation time, lactation score of 1 and 2 days postpartum, hospital stay and complications were compared between the two groups. **Results:** There was no significant difference in cesarean section time and total operation time between the two groups ( $P>0.05$ ). The blood loss 24 hours after operation and intraoperative blood loss in the observation group were significantly lower than those in the control group ( $P<0.05$ ); There was no significant difference in prothrombin time (PT), thromboplastin time (APTT), platelet (PLT), fibrinogen (FIB), nitric oxide (no), nitric oxide synthase (NOS) and D-Dimer (D-dimer) between the two groups before operation ( $P>0.05$ ). After treatment, PT in the two groups were increased, PLT, NO, NOS in the observation group were lower than that in the control group. APTT and FIB in the control group did not change significantly, but APTT in the observation group was higher than that in the control group, while FIB was lower than that in the control group. There was no

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significant change in D-Dimer in the observation group, but it increased in the control group ( $P<0.05$ ); The scores of lactation volume at 1 and 2 days after delivery in the observation group were significantly higher than those in the control group, and the lactation time and postoperative hospital stay in the observation group were significantly lower than those in the control group ( $P<0.05$ ); The incidence of postoperative complications in the observation group was significantly lower than that in the control group ( $P<0.05$ ). **Conclusion:** abdominal artery balloon implantation combined with cervical pull suture can further reduce the amount of postoperative bleeding, improve the levels of coagulation factor, nitric oxide, nitric oxide synthase, fibrinogen and D-dimer, increase lactation and reduce the incidence of postoperative complications in patients with dangerous postpartum hemorrhage of placenta previa. It is worthy of clinical application and promotion.

**Key words:** Abdominal aortic balloon occlusion; Cervical hanging maneuver; Dangerous placenta previa; Postpartum hemorrhage

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## 前言

凶险性前置胎盘多发生于经产妇中,学术界对于其形成机制尚无明确定论,多数学者认为与多次刮宫、流产等因素相关,同时也是导致不良分娩结局的重要原因<sup>[1]</sup>。产后出血是产妇产后出现的一种严重并发症类型,多数发生在产后 2h 内,能够在短时间内导致弥漫性血管内凝血、失血性休克与产后贫血,是产妇死亡的主要原因<sup>[2]</sup>。研究发现<sup>[3]</sup>,凶险性前置胎盘产妇产剖宫产术中由于子宫下段肌肉收缩力较差,肌肉组织薄弱,导致胎盘玻璃棉血窦无法完全的收缩关闭,或者因胎盘无法完全剥离导致的宫颈顽固性大出,且出血一般较为凶猛,增加了产妇产褥感染等后遗症。腹动脉球囊置入、子宫动脉栓塞术是当前临床上产后大出血常用的治疗方式,但此种方式操作时间较长,术后并发症较多,在临床使用过程中多有限制<sup>[4]</sup>。随着临床医学发展,国外学者通过对肿瘤盆底手术经验借鉴,发现宫颈提拉缝合治疗,在前置胎盘剖宫产术后出血的止血效果较好,且方法简单易行<sup>[5,6]</sup>。另有研究发现<sup>[7]</sup>,对前置胎盘剖宫产术宫颈管顽固性出血患者采取宫颈提拉式缝合术能够提升患者产后出血的治疗效果。然而,当前临床上针对凶险性前置胎盘产后大出血采取腹动脉球囊置入联合宫颈提拉缝合治疗的效果尚

无明确定论。因此,为了提升凶险性前置胎盘产后大出血的治疗效果,本研究探讨了腹动脉球囊置入联合宫颈提拉缝合治疗凶险性前置胎盘产后大出血的临床效果,具体报道如下。

## 1 资料与方法

### 1.1 一般资料

选取我院 2019 年 1 月到 2021 年 12 月收治的 178 例凶险性前置胎盘患者作为研究对象,所有患者均采用剖宫产手术,且术后出现产后大出血现象,将所有患者依照术中胎盘位置及植入情况治疗方式分为观察组( $n=73$ )与对照组( $n=105$ )。

纳入标准:符合凶险性前置胎盘诊断标准<sup>[8]</sup>;均采用剖宫产手术终止妊娠,且术后一次性出血量 $>500\text{ml}$ <sup>[9]</sup>;单胎妊娠;对本研究知情并签署同意书。

排除标准:合并自身免疫性疾病者;合并神经系统疾病或认知功能障碍者;合并凝血功能障碍者;合并剖宫产禁忌者;合并血液系统疾病者;合并妊娠期高血压者;不配合研究或中途退出者。

本研究经我院伦理委员会批准。两组产妇一般资料对比无明显差异( $P>0.05$ ),如表 1 所示。

表 1 一般资料

Table 1 General Information

Groups	n	Average age (year)	Pregnancy week (week)	BIM( $\text{kg}/\text{m}^2$ )	Parity (n)	
					Primiparity	Multiparity
Observation group	73	32.25±2.54	34.42±1.54	26.23±1.55	32	41
Matched group	105	32.53±2.65	34.11±1.44	26.81±1.62	45	60

### 1.2 方法

对照组:采取腹动脉球囊置入联合宫腔纱条填塞术,具体方法为:患者采取平卧位后,在右侧股动脉穿刺将导丝送入动脉,并将 12F 动脉鞘进行放置,随后将球囊导管前端送入到 L3 椎体上段处,注入对比剂,监测双侧肾动脉开口位置、球囊位置、动脉搏动情况以及球囊充盈程度,记录球囊应用的充盈液体。待球囊抽空之后,将动脉鞘用肝素盐水清洗后将动脉鞘固定于大腿内侧。待剖宫产手术新生儿娩出之后,充盈球囊,阻断血液流通,并应用缩宫素辅助治疗。后行宫腔纱条填塞,具体方法:使用卵圆夹钳持已灭菌的纱条一端,经宫颈将其送入阴道

3~4 cm 处,刚换卵圆钳将纱条填塞入宫体,填塞时注意松紧适度。当宫体出血明显时,则应当由宫底呈 "Z" 字形由上至下填塞,注意两侧宫角部位,填塞不留死腔,两手相向用力填实,填至子宫切口部位时,预留一定长度纱条后,剪去多余纱条,将纱条送入阴道内 2~4 cm,然后继续填塞子宫下段至宫颈处,观察是否有活动性出血,若无,则缝合子宫切口。

观察组:采取腹动脉球囊置入联合宫颈提拉缝合治疗,具体方法为:对患者采取腹动脉球囊置入治疗,具体方法与对照组相同。并在术中给予患者宫颈提拉式缝合,消毒并擦洗宫颈管后评估患者宫颈管长度,并应用向上力钳夹来提拉患者宫颈

内口下方的宫颈组织,约 4 cm,并随时观察患者的出血创面和出血状态,若组织下方依然有出血情况则需继续提拉,继而清除宫颈管组织部位附着的胎盘,并将其提落到宫颈内口处。引用连续折叠的方法穿透子宫肌层缝合,密切关注患者出血情况,待无出血之后依次缝合子宫切口、关闭腹腔。术后对两组患者均采取积极的抗感染治疗,预防产后并发症。若两组患者术后出血程度较为严重,则需要对患者实施子宫切除术,术后观察 2 小时,若无出血将球囊和动脉鞘取出,进行加压包扎。

### 1.3 观察指标

(1) 观察并记录两组产妇的剖宫产时间、术后 24 h 失血量、术中失血量以及总手术时间;

(2) 所有产妇在手术前与手术 3 d 之后在空腹状态下抽取静脉血 5 mL,检测所有产妇凝血酶原时间(Prothrombin time, PT)、凝血活酶时间(Thrombin time, APTT)、血小板(Platelets, PLT)、纤维蛋白原(Fibrinogen, FIB)、一氧化氮(Nitric oxide, NO)、一氧化氮合酶(Nitric oxide synthase, NOS)、D-二聚体(D-Dimer)表达水平;

(3) 观察并记录两组产妇产后泌乳时间和产后 1 d、2 d 的泌乳量评分以及住院时间。泌乳量评分,依照挤奶乳汁表现,吸吮后乳房排空状态,手法挤奶乳汁溢处情况和哺乳时间进行评价,分数越高代表泌乳情况越好<sup>[10]</sup>;

(4) 观察并记录两组产妇术后产褥感染、子宫切除、晚期产后出血以及腹腔感染等并发症发生情况。

### 1.4 统计学方法

采取 SPSS 23.0 进行分析,计数资料以(n/%)表示,进行  $\chi^2$  检验;计量资料用( $\bar{x} \pm s$ )表示,采用 t 检验;以  $P < 0.05$  为差异有统计学意义。

## 2 结果

### 2.1 手术相关指标对比

两组产妇剖宫产时间、球囊预置术时间对比无明显差异( $P > 0.05$ ),观察组产妇术后 24 h 失血量、术中失血量、总手术时间明显低于对照组( $P < 0.05$ ),如表 2 所示。

表 2 手术相关指标对比( $\bar{x} \pm s$ )

Table 2 Comparison of surgery-related indicators( $\bar{x} \pm s$ )

Groups	n	Table 2 Comparison of surgery-related indicators( $\bar{x} \pm s$ )				
		Time of cesarean section (min)	Blood loss at 24h after surgery (mL)	Intraoperative blood loss (mL)	Time of balloon preset (min)	Total operative time (min)
Observation group	73	73.47±12.11	205.14±35.29*	1136.74±184.15*	32.53±9.83	86.22±17.84*
Matched group	105	75.58±11.16	270.22±38.11	1521.68±213.07	33.94±11.31	111.37±21.56

Note: Compared with the control group, \* $P < 0.05$ , the same below.

### 2.2 相关临床指标对比

手术前两组产妇 PT、APTT、PLT、FIB、NO、NOS、D-Dimer 无明显差异( $P > 0.05$ );治疗后两组产妇 PT 均升高,观察组高于对照组;PLT、NO、NOS 均降低,观察组低于对照组;对照组

APTT、FIB 无明显变化,但观察组 APTT 高于对照组,FIB 低于对照组;观察组 D-Dimer 无明显变化,但对照组升高( $P < 0.05$ ),如表 3 所示。

表 3 相关临床指标对比( $\bar{x} \pm s$ )

Table 3 Comparison of relevant clinical indicators( $\bar{x} \pm s$ )

Items	Before the operation		Postop	
	Observation group	Matched group	Observation group	Matched group
PT(s)	9.54±3.31	9.21±3.46	11.46±1.21**	10.87±1.53 <sup>#</sup>
APTT(s)	25.46±3.41	25.59±3.56	29.46±2.65**	25.46±2.46
PLT( $\times 10^9/L$ )	271.46±39.42	271.36±40.41	224.36±35.03**	243.47±32.75**
FIB(g/L)	4.63±0.36	4.56±0.56	3.34±0.37**	4.46±0.46
NO( $\mu\text{mmol/L}$ )	103.45±12.45	103.15±11.12	75.37±12.42**	81.27±11.41 <sup>#</sup>
NOS(U/mL)	38.46±9.56	38.33±10.45	24.46±5.46**	32.46±4.75 <sup>#</sup>
D-Dimer(mg/L)	3.36±0.41	3.35±0.83	3.37±0.36*	3.76±0.45 <sup>#</sup>

Note: Compared with before the operation, \*\* $P < 0.05$ , the same below.

### 2.3 术后住院时间与泌乳水平对比

观察组产妇的产后 1、2 d 泌乳量评分明显高于对照组,泌乳时间、术后住院时间明显低于对照组( $P < 0.05$ ),如表 4 所示。

### 2.4 术后并发症对比

观察组产妇术后并发症发生率明显低于对照组( $P <$

0.05),如表 5 所示。

## 3 讨论

产后出血主要指的是产妇在分娩之后 24 h 内出血量 > 500 毫升,是分娩期常见的严重并发症,也是临床上孕产妇死亡的一项主要原因<sup>[11,12]</sup>。凶险性前置胎盘是导致产妇剖宫产后

表 4 术后住院时间与泌乳水平对比( $\bar{x}\pm s$ )  
Table 4 Compar of postoperative hospital stay and lactation level( $\bar{x}\pm s$ )

Groups	n	Postpartum 1d lactation score (score)	Postpartum 2d lactation score (score)	Lactation time (h)	Postoperative length of hospital stay (d)
Observation group	73	1.47±0.11*	1.94±0.29*	22.74±4.15*	7.62±1.46*
Matched group	105	1.28±0.16	1.62±0.11	25.68±3.07	11.57±2.52

表 5 术后并发症对比(n,%)  
Table 5 Comparison of postoperative complications (n,%)

Groups	n	Puerperal infection	Hysterectomy	Late puerperal hemorrhage	Abdominal infection	Grand total
Observation group	73	1	2	1	1	5(6.85%)*
Matched group	105	7	4	6	4	21(20.00%)

出血的一项重要因素,其原因为:前置胎盘会抵达或覆盖宫颈口位置,从而发生附着位置的异常现象,随着产妇孕周增加,对子宫下段的肌层产生拉伸,导致胎盘供血障碍<sup>[3]</sup>。而腹中胎儿为了获得充足的血样供应,会逐渐增加胎盘面积,若此时发生内膜损伤或病变,将会导致胎盘粘连,甚至置入子宫下段和宫颈管,进而完全覆盖宫颈口。该位置平滑肌较少,处于平衡排列状态,收缩力较低,胎盘在该位置处剥离较为困难,待剥离后胎盘的附着面极易出现大出血现象。以往临床上针对凶险性前置胎盘产后大出血患者多采取子宫动脉栓塞术进行治疗,通过压迫方式刺激宫体感受器,并经过大脑皮质收缩宫缩减少出血<sup>[14,15]</sup>。我院对于凶险性前置胎盘患者多采取腹动脉球囊置入联合子宫动脉栓塞术进行治疗,并通过凶险性前置胎盘产妇在手术前进行球囊置入,从而对血管采取预防性措施,有效预防了产后出血情况,减慢出血速度。随着临床医学发展,宫颈提拉式缝合术逐渐被广泛应用于临床,其具有并发症发生率低、操作简单等优点,是当前前置胎盘剖宫产术宫颈管出血的一线治疗方案<sup>[6]</sup>。因此,本研究针对我院凶险性前置胎盘产后大出血患者采取腹动脉球囊置入联合宫颈提拉缝合治疗,旨在为临床产后出血的治疗提供参考意见。

本研究结果表明,两组产妇剖宫产时间、球囊预置术时间对比无明显差异( $P>0.05$ ),观察组产妇术后 24 h 失血量、术中失血量、总手术时间明显低于对照组( $P<0.05$ )。由此证明,对凶险性前置胎盘产后大出血患者采取腹动脉球囊置入联合宫颈提拉缝合治疗能够减少患者术中出血量,而且手术时间较短。孙静等研究发现<sup>[17]</sup>,对凶险性前置胎盘患者采取宫颈提拉式缝合手术治疗效果明显高于单纯子宫动脉栓塞术,且能够减少患者出血量,与本研究结果相符。分析可知:通过宫颈提拉式缝合可在不影响宫颈解剖结构情况下进行操作,通过对颈管黏膜的提拉,可在直视下有效缝合,不仅手术时间较短,且可止血。前置胎盘附着于宫颈内口和子宫下段,会导致宫颈口松弛,也为子宫提拉缝合治疗提供更多操作空间,进而在剥离胎盘面后,向上牵拉正常宫颈管组织,进而产生止血效果<sup>[18,19]</sup>。此外,在采取宫颈提拉缝合治疗前,采用腹动脉球囊置入,可通过暂时性阻断供血动脉,减少术中出血量及患者手术创伤,进一步降低患者术中失血量<sup>[20]</sup>。

手术前两组产妇 PT、APTT、PLT、FIB、NO、NOS、D-Dimer

无明显差异( $P>0.05$ );治疗后两组产妇 PT 均升高,观察组高于对照组;PLT、NO、NOS 均降低,观察组低于对照组;对照组 APTT、FIB 无明显变化,但观察组 APTT 高于对照组,FIB 低于对照组;观察组 D-Dimer 无明显变化,但对照组升高 ( $P<0.05$ )。分析可知:凝血因子是人体血液凝固过程之中的不同蛋白组成<sup>[21]</sup>。其中 APTT、PT、FIB 和 PLT 是临床上常见的凝血因子<sup>[22]</sup>。其中 APTT 可观察血浆凝固所用时间,PT 时间延长则代表了可能存在抗凝物质或凝血因子活性降低,FIB 属于由肝脏合成的凝血功能蛋白质,可促进血小板聚集,内皮细胞与平滑肌收缩、增殖和生长,其水平升高后可能会引发内皮细胞损伤<sup>[23]</sup>。PLT 则可以家属凝血和促进止血,能够保护毛细血管完整性<sup>[24,25]</sup>。另外,有研究发现<sup>[26]</sup>,D-Dimer 属于交联纤维蛋白降解产妇,反应纤维蛋白的溶解功能,若机体血管内活化血栓形成,D-Dimer 水平会升高。NO 属于细胞毒性小氧气,也是生物体之中的重要信号分子。且该因子可抑制宫缩,与子宫平滑肌活动具有密切关系<sup>[27]</sup>。NOS 属于一氧化氮合成限速酶,其表达水平和活性与 NO 具有明显相关性。本研究通过对上述指标的观察发现,观察组患者采取腹动脉球囊置入联合宫颈提拉缝合治疗改善了患者凝血因子、一氧化氮、一氧化氮合酶、纤维蛋白原、D-二聚体水平,进而产生了更好的止血效果。这可能是由于,宫颈提拉缝合牵拉宫颈管部位正常组织后,更容易发现出血的创面,并将正常组织覆盖在创面下面缝合,提升治疗效果的同时,改善患者凝血因子、一氧化氮、一氧化氮合酶、纤维蛋白原、D-二聚体水平<sup>[28]</sup>。

观察组产妇的产后 1、2 d 泌乳量评分明显高于对照组,泌乳时间、术后住院时间明显低于对照组( $P<0.05$ )。由此证明,对凶险性前置胎盘产后大出血患者采取腹动脉球囊置入联合宫颈提拉缝合治疗能够缩短产妇住院时间,提升产妇产后泌乳水平。周仲元等研究发现<sup>[29]</sup>,针对凶险性前置胎盘伴胎盘植入产妇采取腹动脉球囊阻断术联合子宫重塑术治疗能够在提升止血效果的同时,提升产妇泌乳水平,与本研究结果相符。这可能是由于,本研究采用有效的止血方案,减少了产妇创伤及出血量,进一步提升产妇机体机能,从而更有利于术后恢复;观察组产妇术后并发症发生率明显低于对照组( $P<0.05$ )。由此证明,对凶险性前置胎盘产后大出血患者采取腹动脉球囊置入联合宫颈提拉缝合治疗能够降低患者术后并发症发生率。但

采取宫颈提拉缝合治疗需要注意的是,宫颈后方是直肠,前方是膀胱,在进行提拉缝合的过程中深度不能超过患者子宫浆膜层,避免对其邻近脏器造成损伤,增加并发症发生率<sup>[9]</sup>。

综上所述,对凶险性前置胎盘产后大出血患者采取腹动脉球囊置入联合宫颈提拉缝合治疗能够进一步减轻患者术后出血量,且改善患者凝血因子、一氧化氮、一氧化氮合酶、纤维蛋白原、D-二聚体水平,提升泌乳量,减少术后并发症发生率,值得临床应用推广。

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