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双腔水囊联合腹主动脉介入阻隔术对比催产素联合常规剖宫产 在晚期妊娠糖尿病引产中的应用分析*

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摘要 目的:探讨双腔水囊联合腹主动脉介入阻隔术对比催产素联合常规剖宫产对于晚期妊娠糖尿病引产的临床疗效。**方法:**收集 2019 年 9 月至 2020 年 4 月在我院待产的 146 例晚期妊娠糖尿病患者,随机分为研究组(73 例)和对照组(73 例)。研究组首先采用双腔水囊置于宫颈引产,对于双腔水囊引产失败的患者则采用腹主动脉介入阻隔术情况下剖宫产;对照组采用单纯静脉滴注小剂量催产素引产,对于催产素引产失败的患者则行常规剖宫产。通过询问病史、体征检查、实验室检查等收集孕妇一般情况、引产前后宫颈 Bishop 评分、各产程情况、不良反应等数据;引产失败的部分患者收集手术时间、输血量、出血量、子宫切除率、新生儿 Apgar 评分。对比分析两组患者促宫颈成熟度、各产程情况、妊娠结局、不良反应等结果。**结果:**研究组孕妇宫颈 Bishop 评分治疗后高于对照组($P<0.05$);研究组与对照组在宫颈 Bishop 评分提高上比较差异有统计学意义($P<0.05$)。研究组引产成功率高于对照组,对照组剖宫产率高于研究组,两组分娩结局比较差异有统计学意义($P<0.05$)。研究组引产开始至临产时间、第一产程、第二产程、总产程时间上短于对照组($P<0.05$)。研究组术中出血量、输血量、子宫切除率及新生儿 Apgar 评分均少于对照组($P<0.05$)。研究组不良反应发生例数低于对照组($P<0.05$)。**结论:**双腔水囊、催产素均可促宫颈成熟,但前者优于后者且可提高引产成功率;腹主动脉介入阻隔术的应用较常规剖宫产优势更为明显,对于晚期妊娠糖尿病孕妇采用双腔水囊联合腹主动脉介入阻隔术引产具有更高安全性,值得临床借鉴。

关键词:晚期妊娠糖尿病;双腔水囊;腹主动脉介入阻隔术;催产素;剖宫产;引产

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Application of Double Cavity Water Capsule Combined with Abdominal Aorta Interventional Occlusion Compared with Oxytocin Combined with Routine Cesarean Section in the Induction of Late Gestational Diabetes Mellitus*

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ABSTRACT Objective: To explore the clinical effect of double cavity water capsule combined with abdominal aorta interventional occlusion compared with oxytocin combined with routine cesarean section in the induction of late gestational diabetes mellitus. **Methods:** From September 2019 to April 2020, 146 patients with late gestational diabetes waiting for labor in our hospital were randomly divided into study group (73 cases) and control group (73 cases). In the study group, the double cavity water capsule was placed in the cervix to induce labor, and in the case of failure of double cavity water capsule to induce labor, the abdominal aorta interventional occlusion was used to block the cesarean section. In the control group, the single intravenous drip of low-dose oxytocin was used to induce labor, and in the case of failure of oxytocin induced labor, the conventional cesarean section was used. The general condition of pregnant women, Bishop score of cervix before and after induction of labor, condition of each stage of labor, adverse reactions and other data were collected by asking medical history, physical examination and laboratory examination. The operation time, blood transfusion amount, bleeding amount, hysterectomy rate and Apgar score of newborn were collected by some patients who failed to induce labor. The results of cervical maturity, labor process, pregnancy outcome and adverse reactions were compared between the two groups. **Results:** The cervical Bishop score of the pregnant women in the study group was higher than that in the control group after treatment($P<0.05$); there was statistically significant difference between the study group and the control group in the cervical Bishop score increased ($P<0.05$). The induced labor success rate in the study group was higher than that in the control group, and the cesarean section rate in the control group was higher than that in the study group ($P<0.05$). The labor induction to labor time, the first stage, the second stage and the total stage of labor in the

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study group were shorter than those in the control group ($P<0.05$). The intraoperative blood loss, blood transfusion volume, hysterectomy rate and Apgar score of newborns in the study group were lower than those in the control group ($P<0.05$). The number of adverse reactions in the study group was lower than that in the control group ($P<0.05$). **Conclusion:** Double cavity water capsule and oxytocin can promote cervical ripening, but the former is better than the latter and can improve the success rate of induced labor; the application of abdominal aorta interventional occlusion is more obvious than that of conventional cesarean section, which has a higher safety for late gestational diabetes mellitus to use double cavity water capsule combined with abdominal aorta interventional occlusion for induction of labor, which is worthy of clinical reference.

Key words: Late gestational diabetes mellitus; Double cavity water capsule; Abdominal aorta interventional occlusion; Oxytocin; Cesarean section; Induced labor

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前言

妊娠期糖尿病目前呈逐年上升趋势,是妊娠期常见合并症之一,其再次怀孕复发率较高,且远期心血管疾病发生率也会随之增加^[1,2]。妊娠期糖尿病在孕晚期会增加妊娠不良结局如新生儿窒息、巨大儿、死胎、早产等危害,孕妇剖宫产率也随之增加,目前二胎政策开放,而初产妇患者剖宫产后可能会导致瘢痕部位妊娠、术中大出血甚至切除子宫等严重不良结局^[3,4]。因此,对于晚期妊娠糖尿病患者提前结束妊娠,以防止或减少孕妇及胎儿的不良结局尤为重要,而引产是终止妊娠的常用手段^[5,6]。引产成功与否关键在于子宫成熟程度,引产方法的选择亦尤为重要,目前促宫颈成熟方法较多,处理不当则对母婴均具有潜在危险。鉴于此,本研究选取我院待产的晚期妊娠糖尿病患者进行研究,探讨双腔水囊联合腹主动脉介入阻隔术对比催产素联合常规剖宫产对于晚期妊娠糖尿病引产的临床疗效,为临床提高晚期妊娠糖尿病引产成功率提供依据。

1 资料与方法

1.1 一般资料

收集 2019 年 9 月至 2020 年 4 月在我院待产的 146 例晚期妊娠糖尿病患者。纳入标准:初产妇、单胎、头位、胎膜完整、孕 37-42 周且符合妊娠期糖尿病诊断患者;无阴道引产禁忌症患者;胎儿中等大小(体重在 2.5 kg-4.0 kg);宫颈 Bishop 评分 ≤ 6 分。排除标准:孕妇伴有其他严重合并症或并发症,如心功能衰竭、严重肝肾疾病、重度子痫等;既往有子宫手术史患者;前置胎盘、明显头盆不对称不能经阴道分娩;生殖道有炎症等疾病患者;双胎或多胎患者。随机分为研究组(73 例)和对照组(73 例)。研究组孕妇年龄 22-37 岁,平均(29.2 \pm 6.5)岁;孕周 37-42 周,平均(39.4 \pm 1.5)周;宫颈 Bishop 评分为(3.5 \pm 0.8)分。对照组孕妇年龄 22-38 岁,平均(28.7 \pm 6.3)岁;孕周 37-42 周,平均(38.7 \pm 1.7)周;宫颈 Bishop 评分为(3.7 \pm 0.7)分。分析研究组和对照组患者一般临床资料情况年龄、孕周、Bishop 评分差异均无统计学意义($P>0.05$)。术前孕妇及家属签署知情同意书,且经本院医学伦理委员会同意批准。

1.2 方法

两组患者均严格按照妊娠晚期促子宫颈成熟与引产指南(2014)^[7]的方法用药,在引产开始前均进行血常规、产科超声、凝血四项、心电图、阴道检查、宫颈 Bishop 评分、骨盆测量、胎

心监护(NST 有反应)及催产素激惹试验(OCT)。研究组患者首先排空膀胱,取截石位,进行阴道常规消毒,用扩阴器显示宫颈。然后将两个球囊置入宫颈管,内侧球囊注入 40 mL 生理盐水并轻拉导管使球囊紧贴宫颈内口,而外球囊位于宫颈外口,再注入 20 mL 生理盐水充盈外球囊,取出内窥镜,再分别适当给予内外球囊生理盐水,最多至 80 mL,确认球囊不会脱落并将外球囊置于一侧大腿内侧。如宫颈 Bishop 评分 ≥ 6 分,提示宫颈成熟,可行人工破膜引产。球囊放置时间不能超过 24 h,一般 12 h,期间若球囊自行脱落,提示宫口开大,产妇进入产程,若未脱落,则行人工破膜。引产 72 h 后仍未进入产程为引产失败,则对患者进行腹主动脉介入阻隔术下剖宫产结束妊娠。腹主动脉介入阻隔术:局部麻醉下经右侧股动脉穿刺,插入 5F 椎动脉导管行腹主动脉下段造影并测量其横径大小,选取相应大小球囊导管植入取代 5F 椎动脉导管,注入造影剂将球囊填充从而阻断腹主动脉下段血流,抽出造影剂进行体外导管固定,然后进行剖宫产手术。对照组采用小剂量催产素,配置方法为 0.9%氯化钠溶液 500 mL 中加入 2.5U 缩宫素,摇匀后静脉滴注,通过观察孕妇宫缩与否、胎心情况决定是否调整滴速,从 8 滴/min 开始,每次增加 4 滴,一般 20 min 调整 1 次,最大不超过 40 滴/min,直至孕妇出现有效宫缩或宫颈 Bishop 评分 ≥ 6 分,则行人工破膜引产。引产 72 h 后仍未进入产程为引产失败,则对患者进行常规剖宫产结束妊娠。

1.3 疗效评价

(1)促宫颈成熟评价:宫颈 Bishop 评分 ≥ 6 分提示宫颈成熟, <6 分提示宫颈不成熟,Bishop 评分与引产成功率成正相关。宫颈 Bishop 评分 ≥ 6 分或提高 ≥ 2 分以上或临产为引产有效。引产开始至 72 h 后未分娩则为无效。(2)分娩情况及随访:记录孕妇分娩结局:引产成功自然分娩和剖宫产。记录孕妇各项分娩情况:引产开始至临产时间、第一产程、第二产程、第三产程、总产程时间等。并对所有孕妇进行随访记录,同时观察记录不良反应情况,包括有无宫缩增强/减弱、新生儿窒息、胎膜早破、羊水污染、宫内感染等。剖宫产孕妇还需记录:新生儿 Apgar 评分、子宫切除率、手术时间、输血量、术中出血量。

1.4 统计学方法

采用 SPSS 25.0 进行数据分析,计量资料以($\bar{x} \pm s$)的形式表示,采用 t 检验分析,计数资料以例数及百分率表示,比较采用卡方检验,以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 研究组与对照组孕妇宫颈成熟效果评分比较 对照组($P<0.05$);研究组与对照组在宫颈 Bishop 评分提高上比
治疗前研究组与对照组宫颈 Bishop 评分比较差异无统计 较差异有统计学意义($P<0.05$),见表 1。
学意义($P>0.05$);研究组孕妇宫颈 Bishop 评分治疗后高于对

表 1 研究组与对照组孕妇宫颈 Bishop 评分比较
Table 1 Comparison of cervical Bishop scores between study group and control group

Groups	n	Cervical Bishop score		Cervical Bishop score increased
		Induced before	Induced after	
Research group	73	3.5± 0.8	7.5± 1.6	4.0± 0.9
Control group	73	3.7± 0.7	6.1± 1.1	2.4± 0.5
t value	-	3.541	9.251	6.812
P value	-	0.203	0.000	0.000

2.2 研究组与对照组孕妇分娩结局 组,两组分娩结局比较差异有统计学意义($P<0.05$),见表 2。
研究组引产成功率高于对照组,对照组剖宫产率高于研究

表 2 研究组与对照组孕妇分娩结局比较[n(%)]
Table 2 Comparison of delivery outcomes between study group and control group [n (%)]

Groups	n	Induced labor success rate	Cesarean section rate
Research group	73	61(83.6)	12(16.4)
Control group	73	48(65.8)	25(34.2)
χ^2 value	-		6.118
P value	-		0.000

2.3 研究组与对照组孕妇各项分娩情况 时间上短于对照组,差异具有统计学意义($P<0.05$),研究组与
研究组引产开始至临产时间、第一产程、第二产程、总产程 对照组第三产程时间差异无统计学意义($P>0.05$),见表 3。

表 3 研究组与对照组孕妇各项分娩情况比较
Table 3 Comparison of delivery between study group and control group

Groups	n	Labor induction to labor time(h)	First stage of labor (h)	Second stage of labor(h)	Third stage of labor (h)	Total stage of labor (h)
Research group	61	11.5± 2.1	7.3± 1.5	1.1± 0.8	0.1± 0.1	7.7± 1.9
Control group	48	15.7± 4.6	10.4± 2.3	1.3± 0.7	0.1± 0.2	10.9± 1.7
t value		8.751	7.243	11.861	2.482	8.516
P value		0.000	0.000	0.000	0.849	0.000

2.4 研究组与对照组孕妇剖宫产手术情况 评分均少于对照组,差异有统计学意义($P<0.05$),研究组与对
研究组术中出血量、输血量、子宫切除率及新生儿 Apgar 照组孕妇手术时间差异无统计学意义($P>0.05$),见表 4。

表 4 研究组与对照组孕妇剖宫产手术情况比较
Table 4 Comparison of cesarean section between study group and control group

Groups	n	Time of operation (h)	Intraoperative blood loss(mL)	Blood transfusion volume(mL)	Hysterectomy rate (%)	Apgar score of newborn(score)
Research group	12	115.4± 15.7	1157.2± 142.8	584.9± 182.1	1(8.3)	7.8± 0.9
Control group	25	92.8± 14.5	2594± 372.5	1472.6± 318.2	5(20.0)	7.0± 0.8
χ^2 /t value		3.547	52.184	43.543	5.814	6.347
P value		0.662	0.000	0.000	0.000	0.000

2.5 不良反应 腔水囊放置后感腹部不适,1 例发生羊水污染,1 例新生儿轻度
两组孕妇均无明显严重不良反应发生。研究组中有 2 例双 窒息。对照组用药后有 5 例孕妇出现宫缩过强,1 例孕妇宫缩

减弱,2例羊水污染,1例急产,2例新生儿轻度窒息,2例宫内感染,1例胎膜早破。研究组不良反应发生例数低于对照组,差异有统计学意义($\chi^2=5.108, P=0.000$)。

3 讨论

妊娠期糖尿病作为引产指征之一,可以减少母婴的潜在危害,减少剖宫产率的发生从而防止术中大出血甚至切除子宫等严重不良结局^[89]。引产成功率与宫颈成熟呈正相关,即宫颈成熟程度越高,引产成功率越高;引产方法较多,主要分为药物和机械性引产两种,引产方法不同所产生的妊娠分娩结局及不良反应亦不相同,因此引产方法的选择对于引产成功率尤为重要^[90]。

双腔水囊作为一种新型引产器械,利用导管内外水囊机械性压力产生温和、稳定、持久的张力刺激宫颈,从而促进内源性激素前列腺素的分泌,促进宫颈成熟软化,提高宫颈 Bishop 评分,增加引产成功率^[11-13]。既往传统临床常用引产方法为静脉滴注小剂量缩宫素,但不同产妇不同使用剂量会导致副作用的产生,最常见是宫缩过频和胎心率异常;且需专人观察并记录宫缩程度、频率、胎心率变化等情况,时间较长,活动受限制导致孕妇不易接受;部分研究显示小剂量静脉滴注缩宫素促宫颈成熟引产效果一般^[14]。双腔水囊无药物副作用反应,无需专人观察记录陪护,使用方法简单、有效。国内外文献研究显示,双腔水囊促宫颈成熟率较高,能够有效提高宫颈 Bishop 评分,增加引产成功率,降低剖宫产的发生率,且认为双腔水囊技术比催产素的应用更加安全、有效,可以降低妊娠分娩不良反应的发生^[15,16]。本研究中,研究组孕妇宫颈 Bishop 评分和 Bishop 评分提高上高于对照组,且研究组不良反应发生例数低于对照组。双腔水囊对孕妇无负担、无精神压力,可随时取出,保证产妇休息,避免催产素长时间诱发宫缩反应给孕妇带来的不适感及精神疲劳,可以减轻孕妇焦虑心理,缩短引产产程时间,对于妊娠期糖尿病高危孕妇而言产程缩短可以更加保障母婴安全,且在增加阴道分娩率的同时并未增加妊娠分娩的不良反应^[17-19]。

引产失败的孕妇则行剖宫产终止妊娠。腹主动脉介入阻隔术主要通过阻断腹主动脉血供,减少手术中的出血量,防止手术中发生大出血,从而减少子宫切除等较严重并发症,保全产妇的生育能力,保证母婴的安全^[20-22]。有研究显示子宫动脉结扎术和髂内动脉栓塞术止血效果不如腹主动脉介入阻隔术^[23,24]。但需防球囊取出困难、动脉破裂等风险,本研究中并未发生此类情况。本研究术中出血量、输血量、子宫切除率均少于对照组,提示与常规剖宫产术相比,腹主动脉介入阻隔术的使用可以有效减少手术出血量和子宫切除的风险。有研究显示,腹主动脉介入阻隔术还能减少新生儿窒息缺氧的发生^[25]。本研究中研究组与对照组均发生新生儿轻度窒息,但无明显差异性,后续还需进一步研究。部分研究认为腹主动脉介入阻隔术具有电离辐射、费用相对较高、对母婴存在潜在危害,但本研究中腹主动脉介入阻隔术孕妇接受透视次数和辐射剂量均较低,远低于国际辐射防护委员会认为可能影响胎儿发育功能的剂量,且对孕妇及婴儿未发现明显不良严重反应^[26,27]。另外,目前关于药物或机械性引产是否会增加孕妇剖宫产率尚有争议。有研究报道引产会增加剖宫产率,也有研究认为引产不会增加剖宫产率甚至可以降低剖宫产率^[28-30]。本研究中研究组引产成功率高于对

照组,剖宫产率低于对照组,因此认为引产可以在一定程度上降低剖宫产率。

综上所述,双腔水囊与催产素均可促宫颈成熟,但双腔水囊成功率更高,引产成功率也较高,且未增加妊娠分娩的不良反应;腹主动脉介入阻隔术可以有效减少手术出血量和子宫切除的风险;对于晚期妊娠糖尿病孕妇采用双腔水囊联合腹主动脉介入阻隔术引产具有更高的安全性,值得临床推广应用。

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