

## 双动全髋关节置换术与人工股骨头置换术治疗高脱位风险老年股骨颈骨折的疗效比较

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**【摘要】** 目的 比较双动全髋关节置换术与人工股骨头置换术治疗高脱位风险老年股骨颈骨折患者的疗效。方法 回顾性分析 2019 年 7 月至 2022 年 7 月黄石市中心医院运动医学科收治的 57 例高脱位风险老年股骨颈骨折患者的临床资料, 根据手术方案不同分为双动全髋关节置换组(研究组) 21 例和人工股骨头置换组(对照组) 36 例, 所有患者均采用后外侧入路。比较两组患者的手术时间、术中出血量、术后引流量; 同时比较两组患者术前、术后 1 个月和术后 1 年随访时的 Harris 髋关节评分、视觉模拟评分(VAS), 并比较术后 1 年随访时的治疗优良率及并发症情况。结果 研究组患者的手术时间、术中出血量、术后引流量分别为(134.43±20.01) min、(378.09±152.89) mL、(218.57±129.74) mL, 明显高于对照组的(100.69±20.83) min、(143.06±71.23) mL、(154.44±62.39) mL, 差异均有统计学意义( $P<0.05$ ); 研究组患者术后 1 个月与术后 1 年随访时的 Harris 评分分别为(73.62±5.78)分、(90.67±3.50)分, 明显高于对照组的(64.78±8.04)分、(84.17±4.62)分, 差异均有统计学意义( $P<0.05$ ); 研究组患者术后 1 个月与术后 1 年随访时 VAS 评分分别为(2.57±1.08)分、(1.10±0.77)分, 明显低于对照组的(3.25±1.16)分、(1.61±0.80)分, 差异均有统计学意义( $P<0.05$ ); 研究组患者的治疗优良率为 95.24%, 明显高于对照组的 72.22%, 差异有统计学意义( $P<0.05$ ); 研究组术后总并发症发生率为 19.05%, 略低于对照组的 22.22%, 但差异无统计学意义( $P>0.05$ )。结论 双动全髋关节置换术治疗老年高脱位风险股骨颈骨折较人工股骨头置换术具有脱位率低、缓解髋关节疼痛明显、术后髋关节功能恢复好的优点。

**【关键词】** 老年; 股骨颈骨折; 双动全髋置换术; 人工股骨头置换术; 脱位

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**Comparison of the efficacy of total hip arthroplasty with dual mobility cup and artificial femoral head arthroplasty in the treatment of elderly femoral neck fractures with high risk of dislocation.** LI Bo<sup>1</sup>, SUN Fa-rui<sup>2</sup>, FENG Shao-sheng<sup>1</sup>, HUANG Chun-yi<sup>1</sup>, YE Heng-yi<sup>1</sup>. 1. Medical College, Wuhan University of Science and Technology, Wuhan 430000, Hubei, CHINA; 2. Department of Sports Medicine, Huangshi Central Hospital, Huangshi 435000, Hubei, CHINA

**【Abstract】 Objective** To compare the efficacy of total hip arthroplasty with dual mobility cup and artificial femoral head arthroplasty in elderly patients with femoral neck fracture at high risk of dislocation. **Methods** The clinical data of 57 elderly patients with femoral neck fracture at high risk of dislocation admitted to the Department of Sports Medicine, Huangshi Central Hospital from July 2019 to July 2022 were retrospectively analyzed. The patients were divided into two groups according to different surgical protocols: 21 cases receiving total hip arthroplasty with dual mobility cup (the study group) and 36 cases receiving artificial femoral head arthroplasty group (the control group). Posterolateral approach was used in all patients. The operative time, intraoperative bleeding, and postoperative drainage were compared between the two groups, as well as the Harris hip scores and Visual Analogue Scale (VAS) scores before and at 1 month, 1 year after operation, and the treatment excellence rates and complications at 1 year after operation. **Results** The operative time, intraoperative bleeding, and postoperative drainage in the study group were (134.43±20.01) min, (378.09±152.89) mL, and (218.57±129.74) mL, which were significantly higher than (100.69±20.83) min, (143.06±71.23) mL, and (154.44±62.39) mL in the control group ( $P<0.05$ ). Harris scores in the study group at 1 month and 1 year after operation were (73.62±5.78) points and (90.67±3.50) points, which were significantly higher than (64.78±8.04) points and (84.17±4.62) points in the control group ( $P<0.05$ ). VAS scores in the study group at 1 month and 1 year after operation were (2.57±1.08) points and (1.10±0.77) points, which were significantly lower than (3.25±1.16) points and (1.61±0.80) points in the control group ( $P<0.05$ ). The treatment excellence rate was 95.24% in the study group, significantly higher than 72.22% in the control group ( $P<0.05$ ). The total postoperative complication rate was 19.05% in the study group, slightly lower than 22.22% in the control group ( $P>0.05$ ). **Conclusion** Compared with artificial femoral head arthroplasty, total hip arthroplasty with dual mobility cup has the advantages of lower dislocation rate, more obvious relief of hip pain, and better recovery of hip function.

**【Key words】** Elderly; Femoral neck fracture; Total hip arthroplasty with dual mobility cup; Artificial femoral head arthroplasty; Dislocation

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股骨颈骨折是老年人群常见骨折之一,在临床中其发生率占所有髋部骨折 50%以上<sup>[1]</sup>。人工髋关节置换术是治疗老年股骨颈骨折患者的有效手术方式,能显著减缓疼痛、改善关节活动度,减少长期卧床后并发症的发生。尽管人工髋关节置换技术已经十分成熟,但脱位仍是人工髋关节置换术后无法避免的并发症之一。研究发现初次髋关节置换术后脱位率为 0.2%~7%<sup>[2]</sup>,脑卒中偏瘫、精神性疾病、颈椎融合术后等患者由于下肢肌力或肌张力的异常,脱位风险显著提高<sup>[3]</sup>。对于高脱位风险股骨颈骨折患者,过去常采用脱位率较低的人工股骨头置换术<sup>[4]</sup>,但由于髋臼未做处理,患者术后仍感髋部疼痛。随着人工髋关节假体的不断更新,越来越多的特殊假体被运用于高脱位风险患者中,诸多研究发现双动全髋关节置换术较普通全髋关节置换术具有脱位率低、长期疗效好的优势<sup>[5-8]</sup>。但关于双动全髋关节置换术与人工股骨头置换术治疗高脱位风险老年股骨颈骨折患者疗效

比较的报道甚少,对于此类患者应选择何种术式及假体仍需探究。为此,本研究比较双动全髋关节置换术与人工股骨头置换术治疗高脱位风险股骨颈骨折的临床疗效,以期临床手术方案提供参考。

## 1 资料与方法

1.1 一般资料 回顾性分析 2019 年 7 月至 2022 年 7 月黄石市中心医院运动医学科收治的 57 例高脱位风险老年股骨颈骨折患者的临床资料。纳入标准:(1) 60 岁以上;(2)患肢肌力 II~IV 级;(3)诊断为股骨颈骨折;(4) CT、X 线显示患侧髋臼发育良好、无骨缺损;(5)患者术前能自由行走或在工具辅助下行走。排除标准:(1)术前患肢肌力正常或小于 II 级;(2)基础疾病较多,无法耐受手术者;(3)拒绝行髋关节置换手术者;(4)失访者。按手术方式不同分为研究组(双动全髋关节置换组) 21 例和对照组(人工股骨头置换组) 36 例。两组患者的一般资料比较差异均无统计学意义( $P > 0.05$ ),具有可比性,见表 1。

表 1 两组患者的一般资料比较( $\bar{x} \pm s$ , 例(%))

Table 1 Comparison of patients' basic conditions between the two groups [ $\bar{x} \pm s$ , n (%)]

组别	例数	性别		年龄(岁)	肌力		
		男性	女性		II 级	III 级	IV 级
研究组	21	9 (42.86)	12 (57.14)	74.86±7.02	4 (19.05)	11 (52.38)	6 (28.57)
对照组	36	15 (41.67)	21 (58.33)	74.72±8.54	6 (16.67)	16 (44.44)	14 (38.89)
统计值			0.008	4.582		0.622	
P 值			0.930	0.951		0.733	

1.2 手术方法 两组患者的手术均由同一高年资关节外科副主任医师主刀完成,术前常规进行评估和基础疾病治疗。

1.2.1 对照组 麻醉完成后将患者体位调整为侧卧位,常规消毒铺巾,采用后外侧入路,暴露髋关节囊后截骨,取出股骨头,股骨侧常规开髓、扩髓,选择合适型号股骨假体,关节复位后测试髋关节活动度,冲洗切口,彻底止血,置引流管一根另开口,依次关闭切口,术毕。

1.2.2 研究组 麻醉、术前准备与对照组相同,取出股骨头后切除关节盂缘,清除圆韧带,用髋臼挫挫除软骨至软骨下骨质均匀点状渗血,试模测试后安放髋臼假体使前倾角和外展角均位于安全区内<sup>[9]</sup>,测试稳定后放入内衬。股骨侧常规开髓、扩髓,冲洗股骨髓腔后置入合适型号股骨头假体并安装双动股骨头假体,关节复位后行髋关节活动度及假体稳定性测试,冲洗切口,彻底止血,置引流管一根另开口,依次关闭切口,术毕。

1.3 围手术期管理 术前 30 min 静脉滴注抗生素及氨甲环酸,缝合切口后向髋关节腔内推注稀释后的氨甲环酸溶液<sup>[10]</sup>,术后常规抗凝、镇痛、抗感染治

疗。麻醉复苏返回病房后立即行踝泵锻炼,术后 24 h 除引流管,术后第 2 天助行器辅助下地行走。

1.4 观察指标 (1)手术情况:比较两组患者的手术时间、术中出血量、术后引流量。(2) Harris 髋关节评分、VAS 评分:比较两组患者术前、术后 1 个月、术后 1 年随访时的 Harris 评分及 VAS 评分。(3)临床疗效:根据术后 1 年 Harris 髋关节评分判定,总分计 100 分。优:分值  $\geq 90$  分,良:分值 80~89 分,可:分值 70~79 分;差:分值  $< 70$  分。优良率=(优例数+良例数)/总例数  $\times 100\%$ 。(4)术后并发症:比较两组患者术后的脱位、髋部疼痛、深静脉血栓、肺炎等并发症发生情况。

1.5 统计学方法 应用 SPSS26.0 软件进行数据分析。计量资料符合正态分布,以均值  $\pm$  标准差( $\bar{x} \pm s$ )表示,组间比较采用独立样本  $t$  检验;计数资料组间比较采用  $\chi^2$  检验。以  $P < 0.05$  为差异具有统计学意义。

## 2 结果

2.1 两组患者的手术情况比较 与对照组比较,研究组患者的手术时间更长,术中出血量及术后引流量更多,差异均具有统计学意义( $P < 0.05$ ),见表 2。

表 2 两组患者的手术情况比较( $\bar{x}\pm s$ )

**Table 2 Comparison of surgical indicators between the two groups ( $\bar{x}\pm s$ )**

组别	例数	手术时间(min)	术中出血量(mL)	术后引流量(mL)
研究组	21	134.43±20.01	378.09±152.89	218.57±129.74
对照组	36	100.69±20.83	143.06±71.23	154.44±62.39
统计值		5.982	7.904	2.519
P 值		0.001	0.001	0.015

表 3 两组患者的 Harris 髋关节评分及 VAS 评分比较( $\bar{x}\pm s$ )

**Table 3 Comparison of Harris hip scores and VAS scores between the two groups ( $\bar{x}\pm s$ )**

组别	例数	Harris 评分( $\bar{x}\pm s$ )			VAS 评分( $\bar{x}\pm s$ )		
		术前	术后 1 月	术后 1 年	术前	术后 1 月	术后 1 年
研究组	21	38.29±4.08	73.62±5.78	90.67±3.50	7.00±1.18	2.57±1.08	1.10±0.77
对照组	36	40.11±5.23	64.78±8.04	84.17±4.62	7.14±0.87	3.25±1.16	1.61±0.80
统计值		1.373	4.412	5.575	0.509	2.192	2.377
P 值		0.175	0.001	0.001	0.613	0.033	0.021

表 4 两组患者的临床疗效比较[例(%)]

**Table 4 Comparison of clinical efficacy between the two groups [n (%)]**

组别	例数	优	良	可	差	优良率(%)
研究组	21	9	11	1	0	95.24
对照组	36	6	20	9	1	72.22

2.4 两组患者并发症比较 研究组患者术后并发症总发生率为 19.05%，略低于对照组的 22.22%，但差异无统计学意义( $\chi^2=0.081, P=0.776>0.05$ )，见表 5。

表 5 两组患者的并发症比较(例)

**Table 5 Comparison of complications between the two groups (n)**

组别	例数	髋部疼痛	髋部疼痛	深静脉血栓	肺炎	总发生率 (%)
研究组	21	1	1	2	1	19.05
对照组	36	5	5	1	0	22.22

2.2 两组患者的髋关节 Harris 评分及 VAS 评分比较 术后随访 1 个月、1 年，研究组患者的术后髋关节 Harris 评分及 VAS 评分均优于对照组，差异均有统计学意义( $P<0.05$ )，见表 3。

2.3 两组患者的临床疗效比较 研究组患者的治疗优良率为 95.24%，明显高于对照组的 72.22%，差异有统计学意义( $\chi^2=5.338, P=0.021<0.05$ )，见表 4。

### 2.5 典型病例

2.5.1 病例一 患者女性，84 岁，因摔伤致左侧股骨颈骨折入院，既往脑梗病史，查体发现左侧不全偏瘫、下肢肌力 IV 级。患者人工股骨头置换术后一个月发生脱位，来院静脉麻醉下行手法复位。术后两个月患者再次因脱位入院，予以手法复位后加以髋关节支具固定，患者住院满一周后出院。术后第 3 个月患者蹲下后即感左髋部疼痛、无法活动，入院行 X 线检查提示左髋关节置换术后脱位。根据病情，术者决定采用双动假体对其行全髋关节置换术，术后随访期间患者未再发生脱位(图 1)。

2.5.2 病例二 患者男性，75 岁，摔伤致左侧股骨颈骨折，既往阿尔兹海默症病史，入院查体提示患侧肌力 III 级，人工股骨头置换术后两周脱位，入院予以手法复位后再未脱位(图 2)。

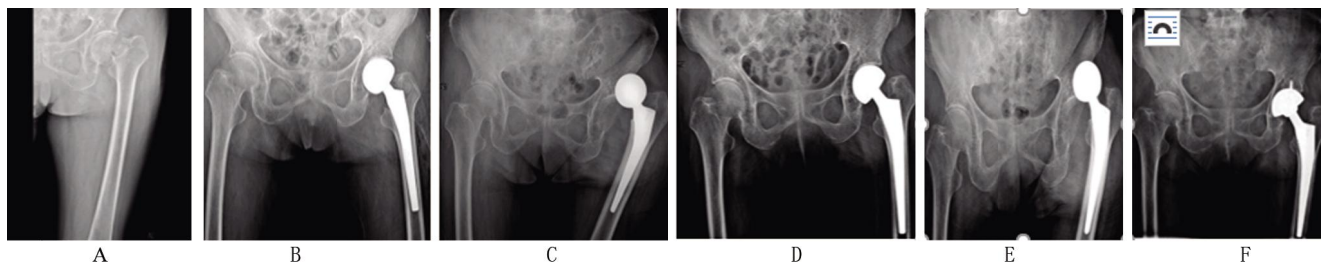


图 1 患者，女，84 岁，左侧股骨颈骨折

**Figure 1 Patient, female, 84 years old, with left femoral neck fracture**

注：A，股骨正位片提示左侧股骨颈骨折，骨折端移位明显；B，人工股骨头置换术后 X 线示假体位置良好；C、D，人工股骨头置换术后 1 个月脱位，静脉麻醉后予以手法复位，复查骨盆正位片提示复位位置良好；E、F，术后第 2 个月再次脱位，行双动全髋关节置换翻修，术后复查 X 线示髋臼及股骨侧假体与骨贴附良好。

Note: A, X-ray suggested a fracture of the left femoral neck with significant displacement; B, After artificial femoral head replacement, X-ray showed that the prosthetic was in good position; C, D, Dislocation occurred one month after surgery, and manual reduction was performed after intravenous anesthesia, with X-ray reexamination indicating that the reduction position was good; E, F, The dislocation occurred again in the second month after surgery, and total hip arthroplasty revision with dual mobility cup was performed, with X-ray reexamination indicating that the acetabular and femoral side prostheses were well attached to bone.

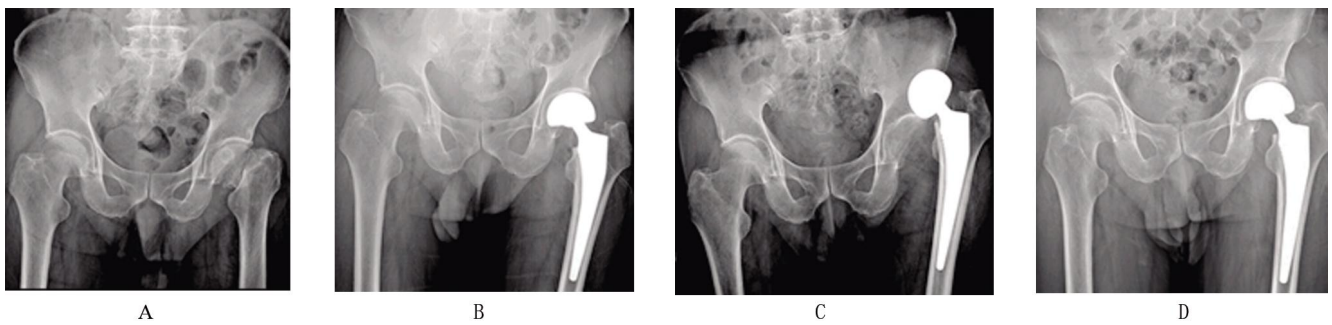


图2 患者,男,75岁,左侧股骨颈骨折

Figure 2 Patient, male, 75 years old, with left femoral neck fracture

注:A,骨盆正位片提示左侧股骨颈骨折;B,人工股骨头置换术后X线示人工假体与骨贴附良好;C、D,人工股骨头置换术后两周脱位,予以手法复位,复查骨盆正位片提示复位位置良好。

Note: A, X-ray suggested a fracture of the left femoral neck; B, X-ray showed good apposition of the prosthesis to the bone after artificial femoral head arthroplasty; C, D, Dislocation occurred two weeks after artificial femoral head arthroplasty, and manual reduction was performed, with X-ray reexamination suggesting good repositioning position.

### 3 讨论

脱位作为髋关节置换术后常见并发症,不仅给患者带来痛苦,也一直困扰众多关节外科医生。Lawrence将髋关节置换术后脱位的原因描述为四类:(1)体位性脱位,假体的位置良好;(2)假体组件错位,即髋臼假体或者股骨假体位置不良引起脱位;(3)髋关节肌肉功能改变引起的软组织失衡;(4)软组织失衡合并假体位置不良<sup>[1]</sup>。髋关节置换术后脱位因素除了与手术技术例如手术入路、假体安放位置等有关,患者相关因素对脱位率也有重要影响。脑卒中、颈腰椎关节融合术、神经肌肉疾病、髋臼发育不良等因素都会增加不稳风险<sup>[5]</sup>,患有神经系统疾病的患者全髋置换术后不稳风险明显增加,前3个月内脱位风险更是高达13%<sup>[12-13]</sup>。由于此类患者活动范围不大、患者家属预期值不高,手术主要目的为恢复部分活动能力、缓解疼痛,过去常采用人工股骨头置换术。相较于全髋关节置换术,人工股骨头置换术操作简单、手术创伤小、术中耗时短、术后恢复快,适合活动范围小、运动要求不高的老年患者。但由于没有匹配的髋臼侧假体,患者活动时股骨头假体与髋臼不断磨损,容易引起疼痛并加速髋臼的磨损,严重则需再次手术行全髋关节翻修<sup>[14]</sup>。随着植入物的不断更新,采用特殊髋臼假体的全髋关节置换术越来越多被运用于高脱位风险患者中,其中限制性衬垫及双动髋关节假体运用最为广泛<sup>[15]</sup>。有文献指出,在高脱位风险患者中限制性髋臼衬垫能有效防止股骨头假体脱出,具有较强的防脱位机制,减少术后脱位率<sup>[16]</sup>。然而,限制性衬垫使得假体活动范围减小,术后假体无菌性松动、假体组件断裂、衬垫/杯界面分离、聚乙烯高磨损等不良事件发生率显著提高<sup>[15,17]</sup>。Philippot等<sup>[18]</sup>采用双动髋关节假体进行100例初次人工全髋关节置换术后发现对于高脱位风险的髋关节置换病例,双动髋关节假体能够提供更大的活动范围和保持长期高稳定性,长期生存率优于限

制性髋臼内衬。

双动髋关节假体在1976年被Gilles Bousquet等<sup>[19]</sup>提出,它是一种三极髋臼杯,由一个金属髋臼杯与聚乙烯内衬组成的无约束大关节和一个聚乙烯内衬与人工股骨头假体组成的约束小关节组合而成<sup>[20]</sup>。双动髋关节假体通过大直径移动的内衬和大臼杯覆盖范围提供关节内稳定性,髋关节屈曲、外展、内收旋转时假体的活动始于小关节,这种组合使得假体在撞击前获得更大的活动范围,降低脱位风险<sup>[21]</sup>。Comebes等<sup>[22]</sup>报道了在平均七年的随访中,2197例双动假体的全髋置换术中仅22例发生脱位(脱位率为0.88%)。本研究将两组术后脱位情况进行比较发现,研究组无脱位病例,对照组2例脱位病例,与之前的研究结果相符,证明双动髋关节假体能增加髋关节活动范围、降低脱位率。尽管研究组平均手术时间、手术出血量、术后引流量均高于对照组,但术后髋部疼痛的发生率低于对照组。这是因为人工股骨头置换术后髋臼与股骨假体配合度低,且骨性髋臼负重区形成了应力,患者长时间行走或运动会导致髋关节疼痛,严重时发生脱位<sup>[23]</sup>。研究组虽然手术过程复杂、手术耗时多,但其匹配的人工股骨头假体和髋臼假体使得髋臼软骨磨损降低,术后疼痛明显减轻,术后1个月、一年的Harris评分及VAS评分均优于对照组,在缓解髋关节疼痛、恢复髋关节功能的长期疗效上更优。

综上,针对高脱位风险老年股骨颈骨折患者,术者需选择合适的手术方式及合适的髋关节假体。与人工股骨头置换术相比,双动全髋关节置换术治疗高脱位风险老年股骨颈骨折具有脱位率低、缓解髋关节疼痛明显、恢复髋关节功能好的优点。

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