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股骨近端防旋髓内钉与人工股骨头置换术治疗 老年不稳定股骨转子间骨折的比较研究*

陈刚 刘玺[△] 马建武 许喆 李志 周孝辉

(青海省人民医院骨科 青海 西宁 810000)

摘要 目的:比较股骨近端防旋髓内钉(PFNA)与人工股骨头置换术(FHR)治疗老年不稳定股骨转子间骨折(UFIF)的疗效。**方法:**选择2015年9月到2017年6月期间在我院接受手术治疗的老年UFIF患者156例进行研究。根据手术方案的不同将患者分成观察组(n=78)及对照组(n=78),其中观察组给予FHR术式治疗,对照组给予PFNA术式治疗,随访6个月,比较两组患者的疗效、并发症以及手术时间、切口长度、术中出血量、下床时间等手术指标,并比较两组患者术前、术后1个月、术后3个月、术后6个月的视觉模拟量表(VAS)评分。**结果:**观察组的优良率为92.31%,与对照组的88.46%相比,差异无统计学意义($P>0.05$)。观察组的下床时间明显少于对照组,但手术时间、切口长度以及术中出血量明显大于对照组($P<0.05$)。观察组术后输血的发生率明显高于对照组($P<0.05$),而两组患者的内植物松动、骨折不愈合以及下肢深静脉血栓的发生率比较差异无统计学意义($P>0.05$)。两组患者术后1个月、术后3个月、术后6个月的VAS评分均低于术前,且随着时间的推移,VAS评分呈逐渐降低的趋势,差异有统计学意义($P<0.05$)。**结论:**对于老年UFIF患者而言,PFNA术式及FHR术式的治疗效果及安全性均较好,临床上可根据患者的实际骨折程度选择合适的术式。

关键词:股骨近端防旋髓内钉;人工股骨头置换术;老年;不稳定股骨转子间骨折;疗效

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Comparative Study on Proximal Femoral Nail Antirotation and Artificial Femoral Head Replacement in Treatment of Unstable Femoral Intertrochanteric Fractures in the Elderly*

CHEN Gang, LIU Xi[△], MA Jian-wu, XU Zhe, LI Zhi, ZHOU Xiao-hui

(Department of Orthopedics, Qinghai Provincial People's Hospital, Xining, Qinghai, 810000, China)

ABSTRACT Objective: To compare the therapeutic effect of proximal femoral nail antirotation (PFNA) and artificial femoral head replacement (FHR) in the treatment of unstable femoral intertrochanteric fractures (UFIF) in the elderly. **Methods:** 156 elderly patients with UFIF who were underwent surgical treatment in our hospital from September 2015 to June 2017 were selected to carry out research. The patients were divided into the observation group (n=78) and the control group (n=78) according to the different surgical procedures. The observation group was treated with FHR, and the control group was treated with PFNA. The patients were followed up for 6 months, the effects, complications, the operative time, incision length, intraoperative bleeding volume and out of bed time were observed in the two groups, the visual analogue scale (VAS) scores of two groups before operation, 1 months after operation, 3 months after operation and 6 months after operation were evaluated. **Results:** The excellent and good rate of the observation group was 92.31%, compared with 88.46% of the control group, the difference was not statistically significant ($P>0.05$). The out of bed time in the observation group was significantly less than the control group, however, the operative time, incision length and intraoperative bleeding volume were significantly higher than the control group ($P<0.05$). The incidence of postoperative blood transfusion in the observation group was significantly higher than that of the control group ($P<0.05$), there was no significant difference in the incidence of internal plant loosening, nonunion of fracture and deep vein thrombosis of lower extremities in the two groups ($P>0.05$). The VAS scores of patients in two groups at 1 months, 3 months and 6 months after operation were all lower than those before operation, and the VAS score was gradually decreased with time going on, the difference was statistically significant ($P<0.05$). **Conclusion:** The effect and safety of PFNA and FHR were better for the elderly UFIF patients. The appropriate surgical procedure can be selected according to the actual degree of fracture of the patient.

Key words: Proximal femoral nail antirotation; Artificial femoral head replacement; Elderly; Unstable femoral intertrochanteric fractures; Comparison

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作者简介:陈刚(1978-),男,硕士,住院医师,从事骨科下肢创伤方面的研究,E-mail: asbwpi@163.com

△ 通讯作者:刘玺(1990-),男,硕士,住院医师,从事骨科上肢创伤方面的研究,E-mail: jsdgzn@163.com

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前言

老年不稳定股骨转子间骨折 (unstable femoral intertrochanteric fractures, UFIF) 在临床上比较常见, 此病发病率较高, 且复位固定较为困难, 对患者的预后生存质量具有一定的影响^[1,2]。当前手术疗法是老年 UFIF 治疗的主要方式, 其中股骨近端防旋髓内钉 (proximal femoral nail antirotation, PFNA) 术式是治疗 UFIF 的常用方案, 其具有手术切口小、失血量少、患者恢复较快等优点, 但其也存在易松动和退钉等情况, 这使得人工股骨头置换 (femoral head replacement, FHR) 逐渐在临床得到了一定范围的应用^[3-5]。FHR 是近年来发展起来的一类可替换 UFIF 患者股骨头的手术治疗方案, 此种手术创伤相对较大, 但术后无退钉等风险, 疗效较好^[6,7]。为更好地选择最佳术式治疗老年 UFIF 患者, 本文通过比较 PFNA 与 FHR 对于老年 UFIF 的疗效, 旨在为临床治疗提供相应的数据支持, 现报道如下。

1 资料和方法

1.1 临床资料

选择 2015 年 9 月到 2017 年 6 月期间在我院接受手术治疗的老年 UFIF 患者 156 例进行研究。纳入标准: (1) 患者均由髋关节的正、侧位 X 线片确诊为 UFIF; (2) 年龄 ≥ 60 岁; (3) 均为单侧骨折者; (4) 有手术指征者; (5) 患者或其家属已签署知情同意书。排除标准: (1) 其他类型的骨折者; (2) 存在心、肝、肾等重要脏器的功能障碍者; (3) 恶性肿瘤者; (4) 病历资料缺失者。根据手术方案的不同将患者分成观察组 ($n=78$) 及对照组 ($n=78$), 其中观察组男 32 例, 女 46 例, 年龄 62-76 岁, 平均 (68.94 ± 2.13) 岁; 致伤原因: 摔跌伤 51 例, 交通事故伤 27 例; 骨折位置: 左侧 38 例, 右侧 40 例; 受伤到手术时间 3-13d, 平均 (7.21 ± 1.32) d。对照组男 34 例, 女 44 例, 年龄 61-74 岁, 平均 (67.88 ± 2.29) 岁; 致伤原因: 摔跌伤 49 例, 交通事故伤 29 例; 骨折位置: 左侧 36 例, 右侧 42 例; 受伤到手术时间 4-15d, 平均 (6.57 ± 1.28) d。两组基线资料比较, 差异无统计学意义 ($P > 0.05$), 具有可比性。关于此次研究, 我院的伦理委员会已经进行了审核及批准。

1.2 方法

两组患者在术前均给予常规 X 线及 CT 等影像学检查, 掌握骨折的移位情况, 判断出骨折分型, 评估患者的实际病情, 择

期实施手术。对照组给予 PFNA 术式治疗, 麻醉后将患肢放置在骨科牵引床实施闭合复位, 经 C 臂 X 线机透视复位满意后, 确保患肢保持 $10^\circ - 15^\circ$ 的内收位。然后在其大转子的顶部作一个长度 4 cm 纵向切口, 并逐层分离, 于顶部内侧将导针闭合钻入, 采用开口器进行开口, 视情况进行扩髓。插进合适主钉, 复位满意后, 借助近端瞄准器将导针插进, 确认骨折位。挑选合适的螺旋刀片并打进股骨髓, 实施加压锁定。借助远端瞄准器, 固定好远端锁钉, 最后冲洗并缝合切口。观察组给予 FHR 术式治疗, 麻醉后取患者髋关节的前外侧 S-P 型切口入路, 在其大转子处从上方朝下作出 5-8 cm 长度弧形切口。再将臀大肌实施钝性分离, 对阔筋膜张肌进行游离后暴露出大转子骨折的区域, 将股骨头颈部和局部粗隆部成功取出之后留下外旋肌处骨块, 视情况给予螺钉亦或是钢丝行原位固定。再将关节囊切开, 在患者小粗隆约 1.5 cm 位置实施股骨颈截骨, 将股骨头取出后实施髓腔扩髓, 挑选合适的股骨头假体为患者进行股骨头置换。两组术后均给予负压引流 1-2d, 在术前 0.5h 和术后给予抗生素和抗凝药物避免感染和下肢静脉血栓的产生。两组患者术后第 2d 均可在床上活动, 并进行股四头肌的锻炼。

1.3 观察指标

通过门诊复查的方式对所有患者进行随访 6 个月, 比较两组患者的疗效和并发症发生情况, 根据 Harris 髋关节功能评分表评价疗效^[8], 满分 100 分, 分值 ≥ 90 分记为优, 80-89 分记为良, 70-79 分记为可, <70 分记为差。优良率 = (优 + 良) / 总例数 $\times 100\%$ 。评价两组患者术前、术后 1 个月、术后 3 个月、术后 6 个月的视觉模拟量表 (visual analogue scale, VAS) 评分, VAS 评分分值为 0-10 分, 分值越高, 表示患者的疼痛症状越明显。统计两组患者手术时间、切口长度、术中出血量、下床时间等手术指标以及术后输血的发生率。

1.4 统计学方法

采用 SPSS21.0 进行统计分析, 计数资料用率表示, 其数据比较采用 χ^2 检验, 计量资料用 $(\bar{x} \pm s)$ 表示, 其数据比较采用 t 检验, 检验标准设置为 $\alpha=0.05$ 。

2 结果

2.1 两组疗效的对比

观察组的优良率为 92.31%, 与对照组的 88.46% 相比, 差异无统计学意义 ($P > 0.05$), 见表 1。

表 1 两组疗效的对比[n(%)]
Table 1 Comparison of effect of two groups[n(%)]

Groups	n	Excellent	Good	Tolerableness	Bad	Excellent and good rate
Observation group	78	34(43.59)	38(48.72)	5(6.41)	1(1.28)	72(92.31)
Control group	78	28(35.90)	41(52.56)	6(7.69)	3(3.85)	69(88.46)
χ^2				0.664		
P				0.415		

2.2 两组手术指标的对比

观察组的下床时间明显少于对照组,但手术时间、切口长

度以及术中出血量明显大于对照组,差异均有统计学意义($P < 0.05$),见表 2。

表 2 两组手术指标的对比($\bar{x} \pm s$)Table 2 Comparison of operation indexes of two groups($\bar{x} \pm s$)

Groups	n	Operative time(min)	Incision length(cm)	Intraoperative bleeding volume(mL)	Out of bed time(d)
Observation group	78	64.87± 5.39	9.68± 1.24	389.57± 53.61	9.18± 1.33
Control group	78	50.17± 4.88	5.82± 0.66	183.69± 21.37	19.19± 2.04
t	-	17.856	24.269	31.506	36.302
P	-	0.000	0.000	0.000	0.000

2.3 两组输血情况和并发症的对比

观察组术后输血的发生率明显高于对照组,差异有统计学意义($P < 0.05$),而两组患者的内植物松动、骨折不愈合以及

下肢深静脉血栓的发生率比较差异无统计学意义($P > 0.05$),见表 3。

表 3 两组输血率和并发症的对比[n(%)]

Table 3 Comparison of blood transfusion rate and complications of two groups[n(%)]

Groups	n	Internal plant loosening	Nonunion of fracture	Deep vein thrombosis of lower extremities	Postoperative blood transfusion
Observation group	78	0(0.00)	0(0.00)	3(3.85)	45(57.69)
Control group	78	1(1.28)	2(2.56)	1(1.28)	14(17.95)
χ^2	-	1.006	2.026	1.026	26.195
P	-	0.316	0.155	0.311	0.000

2.4 两组 VAS 评分的对比

术前、术后 1 个月、术后 3 个月、术后 6 个月两组患者的 VAS 评分比较差异无统计学意义($P > 0.05$),术后 1 个月、术后

3 个月、术后 6 个月的 VAS 评分均低于术前,且术后 3 个月、术后 6 个月低于术后 1 个月,术后 6 个月低于术后 3 个月,差异均有统计学意义($P < 0.05$),见表 4。

表 4 两组 VAS 评分的对比($\bar{x} \pm s$, 分)Table 4 Comparison of VAS score of two groups($\bar{x} \pm s$, scores)

Groups	n	Before operation	1 month after operation	3 months after operation	6 months after operation
Observation group	78	6.34± 1.21	3.02± 1.01*	2.68± 0.72*#	1.21± 0.37*#△
Control group	78	6.28± 1.03	3.04± 1.04*	2.70± 0.69*#	1.23± 0.35*#△
t	-	0.333	0.122	0.177	0.347
P	-	0.739	0.903	0.860	0.729

Note: compared with before operation, * $P < 0.05$; compared with 1 months after operation, # $P < 0.05$; compared with 3 months after operation, △ $P < 0.05$.

3 讨论

目前,我国老年人普遍存在一定程度的骨质疏松症状。有报道指出,老年人由于受到骨质疏松的影响,即使是轻微的外伤亦可能导致严重的骨折,而这些骨折类型当中,以不稳定型骨折最为多见,部分患者甚至还可伴随大、小粗隆等区域的严重性粉碎^[9-11]。关于老年 UFIF 的治疗,以 PFNA 为主的髓内固定术式已经较为广泛地应用于临床治疗,此种微创术式具有较好的骨骼固定生物力学特性,也获得了广大患者的认可^[12,13]。FHR 术式是一种针对患者股骨头进行置换的手术方案,其主要应用于股骨头或股骨颈粉碎性骨折的治疗过程中,近年来,国

外有报道指出^[14,15],FHR 术式对于 UFIF 患者具有较好的固定效果,但国内临床尚未进行大范围的推广,通过比较并分析 PFNA 及 FHR 术式治疗老年 UFIF 患者的疗效有助于临床诊治过程的进行。

本研究结果发现,两组患者优良率比较差异无统计学意义($P > 0.05$),这提示了 PFNA 术式与 FHR 术式的疗效基本相当。分析原因,可能是因为这两种术式均对患者骨折后的骨骼固定性生物力学情况进行了有效的改善,并最终达到了相同的手术目的,因此手术初期的效果也基本一致^[16,17]。同时,本研究发现,观察组的下床时间明显少于对照组,但手术时间、切口长度以及术中出血量明显大于对照组($P < 0.05$),这提示了 PFNA 术式

的手术时间和术中出血量均较少,且切口长度也较短,而接受FHR术式患者的早期下床时间更短。分析原因,主要可能是因为PFNA术式属于微创术式,对患者造成的手术损伤相对更加轻微,也更利于术后的早期恢复^[18-20]。虽然有报道称应用这两种术式的患者在术后3个月均能下地活动^[21,22],但本研究观察组应用的FHR术式可使患者在手术之后的短期内即能下地负重及行走,并可开展髋关节有关功能的锻炼。而对照组患者则需在术后保持长期卧床,此时全方位功能的锻炼仍未全部完成,因此下床时间明显更晚。此外,本研究还发现,观察组术后输血的发生率明显高于对照组($P<0.05$),两组患者的内植物松动、骨折不愈合以及下肢深静脉血栓的发生率比较差异无统计学意义($P>0.05$)。这提示了观察组应用的FHR术式在术后产生的并发症中,除需输血治疗的发生率较高外,其余并发症与应用PFNA术式的对照组无明显差异。可能是因为FHR是对患者的股骨头进行替换,在一定程度上增加了患者的手术创伤,失血量也相对较大^[23,24]。事实上,有报道称PFNA术式因其自身具有的微创特性可使治疗UFIF的并发症相对更少^[25,26]。本研究结论与其并不完全一致,今后可考虑增大样本量进行更具广泛性和代表性的研究。最后,本研究结果显示,两组患者术后1个月、术后3个月、术后6个月的VAS评分均低于术前,且随着时间的推移,VAS评分呈逐渐降低的趋势,差异有统计学意义($P<0.05$),这表明两组所用术式均可改善老年UFIF患者的疼痛感。究其原因,可能是因为两组患者手术过程中均应用了镇痛药物,并且观察组的手术操作精细以及给予患者术后多模式的有效镇痛,能使患者早期下地活动,缩短了卧床时间,恢复相对较快,疼痛情况也得到了相应的缓解。对照组则属于微创术式,虽恢复时间缓慢,但未增加患者明显疼痛感,Ma JX等人也有类似的报道结果^[27,28]。需要指出的是,针对老年UFIF患者的治疗,根据PFNA和FHR术式的自身特性可制定两组术式的适应症。FHR术式比较适合骨质疏松程度较重的老年患者,特别是转子间粉碎性骨折的患者,而PFNA术式则更倾向于骨折区骨骼质量相对更好的患者,亦或是股骨大粗隆比较完整及有轻度移位者^[29,30]。

综上所述,应用PFNA术式及FHR术式均可较好地治疗老年UFIF患者,疗效和安全性基本相当,但PFNA术式较适合骨折程度较轻微者,而FHR术式则更适合骨折程度严重或粉碎性骨折者,临床上应根据患者的实际病情进行手术方案的选择。

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(上接第 489 页)

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