

doi: 10.13241/j.cnki.pmb.2018.13.032

股骨近端防旋髓内钉与联合加压交锁髓内钉治疗老年股骨转子间骨折的疗效比较研究

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摘要 目的: 研究对比股骨近端防旋髓内钉(PENA-II)与联合加压交锁髓内钉(InterTan)治疗老年股骨转子间骨折的疗效。**方法:** 选择2014年6月至2016年6月我院收治的老年股骨转子间骨折患者92例,按照随机数字表法分为PENA-II组与InterTan组,每组各46例。两组患者分别接受PENA-II治疗和InterTan治疗,术后进行为期12个月的随访。比较两组临床疗效、手术相关指标(手术时间、术中出血量、骨折愈合时间)、手术前后骨密度水平变化情况以及并发症发生情况。**结果:** PENA-II组优良率为89.13%,略高于InterTan组的86.96%,但两组比较差异无统计学意义($P>0.05$)。PENA-II组患者手术时间、术中出血量分别为(65.2 ± 15.3)min、(57.2 ± 29.3)mL,明显低于InterTan组患者的(84.3 ± 13.8)min、(104.7 ± 36.5)mL($P<0.05$),两组患者骨折愈合时间比较差异无统计学意义($P>0.05$)。术前、术后12周以及术后24周PENA-II组患者的腰椎骨密度水平与InterTan组比较差异无统计学意义($P>0.05$)。两组切口感染、肺部感染、下肢深静脉血栓、近端股骨外侧皮质劈裂以及髓内翻发生率对比差异无统计学意义($P>0.05$)。**结论:** PENA-II与InterTan治疗老年股骨转子间骨折的临床疗效相当,且两种手术方法对骨密度水平的影响及术后并发症发生率相似。但PENA-II治疗具有手术时间短以及术中出血量少等优势,值得临床推广应用。

关键词: 股骨转子间骨折;老年;股骨近端防旋髓内钉;联合加压交锁髓内钉;临床疗效

中图分类号:R683 文献标识码:A 文章编号:1673-6273(2018)13-2554-04

Comparative Study of Curative Effect on Proximal Femoral Anti Rotation Nail and Combine Compression Interlocking Intramedullary Nail in the Treatment of Intertrochanteric Fracture in the Elderly

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ABSTRACT Objective: To compare and analyze the efficacy of proximal femoral anti rotation nail (PENA- II) and combine compression interlocking intramedullary nail (InterTan) in the treatment of intertrochanteric fracture in the elderly. **Methods:** 92 cases of elderly patients with intertrochanteric fracture who were treated in our hospital from June 2014 to June 2016 were selected, the patients were divided into PENA- II group and InterTan group according to the random number table method, 46 cases in each group. Two groups were received PENA- II treatment and InterTan treatment respectively, the patients were followed up for 12 months after the operation. The clinical efficacy, operative index (operation time, blood loss, fracture healing time), bone mineral density changes and complications were compared between the two groups. **Results:** The excellent and good rate of PENA- II group was 89.13%, slightly higher than 86.96% of InterTan group, but the difference between the two groups was not statistically significant ($P>0.05$). The operation time and intraoperative blood loss in PENA- II group were (65.2 ± 15.3)min, (57.2 ± 29.3)mL, significantly lower than (84.3 ± 13.8)min, (104.7 ± 36.5)mL in InterTan group ($P<0.05$), there was no significant difference in fracture healing time between the two groups ($P>0.05$). The level of lumbar bone density in PENA- II group before operation, 12 weeks after operation, and 24 weeks after operation were not significantly different from those in InterTan group ($P>0.05$). There was no significant difference between the two groups in incision infection, pulmonary infection, deep vein thrombosis, split of the lateral femoral cortex, and the incidence of coxa varus between the two groups ($P>0.05$). **Conclusion:** The clinical efficacy of PENA- II and InterTan in elderly patients with intertrochanteric fractures is equivalent, the effect of the two surgical methods on bone mineral density and the incidence of postoperative complications are similar. But PENA- II has the advantages of shorter operation time and less bleeding during operation, so it is worthy of clinical application.

Key words: Intertrochanteric fracture; Elderly; Proximal femoral anti rotation nail; Combined compression intramedullary nail; Clinical efficacy

Chinese Library Classification(CLC): R683 Document code: A

Article ID: 1673-6273(2018)13-2554-04

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(收稿日期:2017-09-18 接受日期:2017-10-12)

前言

股骨转子间骨折是指发生在髓关节囊线外至小转子下方区域的一系列骨折,发病率在全身骨折中占比约为3%~4%^[1-3]。该病多发于老年人群,且大部分骨折均呈粉碎性,加之老年人群大多合并骨质疏松以及高血压、糖尿病等基础疾病,从而在一定程度上增加了治疗难度,患者预后较差^[4-6]。临床上治疗股骨转子间骨折主要采用保守治疗以及手术治疗,但保守治疗由于卧床时间过长,易增加深静脉血栓以及褥疮等并发症的风险^[7-9]。髓内固定是目前国内外公认的治疗股骨转子间骨折的有效方式,其主要包括股骨近端防旋髓内钉(PENA-II)与联合加压交锁髓内钉(InterTan),但学界对于PENA-II与InterTan治疗老年股骨转子间骨折效果尚且存在一定的争议^[10-12]。鉴于此,本研究通过对比PENA-II与InterTan治疗老年股骨转子间骨折的疗效,并对其进行分析,旨在为临床治疗老年股骨转子间骨折提供参考。现报道如下。

1 资料与方法

1.1 一般资料

选取2014年6月至2016年6月间于我院接受治疗的老年股骨转子间骨折患者92例。纳入标准:(1)所有患者均经临床检查、影像学检查确诊为新鲜股骨转子间骨折;(2)美国麻醉医师协会(ASA)分级为Ⅱ级~Ⅲ级;(3)均选择髓内固定手术治疗;(4)年龄≥60岁;(5)两组患者均签署了知情同意书。排除标准:(1)合并心、肝、肾等脏器功能严重障碍者;(2)伴有严重心血管、呼吸系统以及代谢性疾病者;(3)存在精神系统疾病或交流障碍者;(4)因其它原因无法接受手术治疗或无法接受随访者。按照随机数字表法将患者随机分为PENA-II组与InterTan组,每组各46例。其中PENA-II组男27例,女19例,年龄60~87岁,平均年龄(71.34±6.57)岁;致伤原因:摔伤21例,高空坠落伤14例,车祸伤7例,其他4例;ASAⅡ级20例,Ⅲ级26例;合并基础疾病:高血压7例,糖尿病8例。InterTan组男25例,女21例,年龄60~89岁,平均年龄(73.62±6.63)岁;致伤原因:摔伤20例,高空坠落伤14例,车祸伤8例,其他4例;ASAⅡ级19例,Ⅲ级27例;合并基础疾病:高血压9例,糖尿病8例。两组性别、年龄、致伤原因、ASA分级以及合并基础疾病比较均无统计学差异($P>0.05$),证明组间存在可比性。我院伦理委员会已批准本次研究。

1.2 研究方法

所有患者入院后均行血常规、尿常规、心电图等常规检查,同时予以持续性皮或骨牵引。两组患者均选择伤后2~10d行

手术治疗,术前均予以抗生素治疗。综合患者具体情况选择全麻或腰硬联合麻醉,均取仰卧位,于牵引床上牵引复位,在X线机的透视下明确骨折复位情况。

1.2.1 PENA-II 手术方法 患者予以PENA-II治疗,具体方式如下:从大转子顶点上方3cm沿近端延伸4cm作切口,在透视条件下明确导针位于髓腔内以及插入深度,随后行开口扩髓处理,采用合适的PENA-II主钉插入股骨近端髓腔中,同时在大腿上段外侧做一切口,置入螺旋刀片,然后安装远端锁定螺钉,拧紧尾帽。

1.2.2 InterTan 手术方法 患者予以InterTan治疗,具体方式如下:选择大转子顶点上方3cm开始朝着近端延伸4cm作切口,在透视条件下置入导针,并与近端扩髓,沿着导针置入合适的InterTan主钉,同时在大腿上段外侧做一切口,通过侧方组件打入拉力主钉导针,透视条件下明确导针处于股骨颈中央,且深度为股骨头软骨下方5~10mm后插入方旋刀片,置入合适长度的拉力主钉,取出防旋刀片后置入加压螺钉,组合件导向下拧入远端锁钉。

1.3 观察指标

比较两组患者的手术时间、术中出血量、骨折愈合时间。在术后12周评定疗效,临床疗效主要是根据Harris髋关节功能评分进行判定:Harris评分≥90分记为优,Harris评分在80~89分之间记为良,Harris评分在70~79分之间记为一般,Harris评分<70分记为差。优良率=(优例数+良例数)/总例数×100%。在术前、术后12周、术后24周采用双能X线骨密度仪检测患者骨密度水平。对两组患者以复查和电话的方式进行为期12个月的随访,对比术后并发症发生情况,主要包括切口感染、肺部感染、下肢深静脉血栓、近端股骨外侧皮质劈裂以及髓内翻等。

1.4 统计学方法

所有数据应用SPSS25.0软件进行统计学分析,计数资料以(%)表示,采用 χ^2 检验。计量资料以($\bar{x} \pm s$)表示,采用t检验,将 $P<0.05$ 记作差异有统计学意义。

2 结果

2.1 两组临床疗效对比

PENA-II组优良率为89.13%,略高于InterTan组的86.96%,但两组对比差异无统计学意义($P>0.05$),见表1。

2.2 两组患者手术时间、术中出血量以及骨折愈合时间对比

PENA-II组患者手术时间明显短于InterTan组,术中出血量明显少于InterTan组(均 $P<0.05$),但两组患者骨折愈合时间比较差异无统计学意义($P>0.05$)。见表2。

表1 两组临床疗效对比[n(%)]

Table 1 Comparison of clinical efficacy between the two groups[n(%)]

Groups	n	Excellent	Good	Common	Bad	Excellent and good rate
PENA-II group	46	26(56.52)	15(32.61)	4(8.70)	1(2.17)	41(89.13)
InterTan group	46	24(52.17)	16(34.78)	3(6.52)	3(6.52)	40(86.96)
χ^2	-					0.103
P	-					0.748

表 2 两组患者手术时间、术中出血量以及骨折愈合时间对比($\bar{x} \pm s$)

Table 2 Comparison of operative time, intraoperative blood loss and fracture healing time between the two groups ($\bar{x} \pm s$)

Groups	n	Operative time(min)	Intraoperative bleeding volume(mL)	Healing time(weeks)
PENA- II group	46	65.25± 15.34	57.22± 29.35	14.23± 2.30
InterTan group	46	84.33± 13.86	104.71± 36.58	14.34± 2.21
t	-	6.287	12.883	0.426
P	-	0.000	0.000	0.671

表 3 手术前后两组患者腰椎骨密度水平对比($\bar{x} \pm s$, SD)

Table 3 Comparison of bone mineral density of lumbar spine in two groups before and after operation($\bar{x} \pm s$, SD)

Groups	n	Before operation	12 weeks after operation	24 weeks after operation
PENA- II group	46	-3.2± 1.0	-3.4± 1.0	-3.6± 1.0
InterTan group	46	-3.2± 1.1	-3.5± 0.9	-3.5± 1.1
t	-	0.000	0.504	0.456
P	-	1.000	0.615	0.649

表 4 两组患者术后并发症发生情况对比[n(%)]

Table 4 Comparison of postoperative complications between the two groups [n(%)]

Groups	n	Incision infection	Pulmonary infection	Deep vein thrombosis	Split of the lateral femoral cortex	Coxa varus
PENA- II group	46	3(6.52)	4(8.70)	2(4.35)	1(2.17)	3(6.52)
InterTan group	46	4(8.70)	5(10.87)	4(8.70)	2(4.35)	5(10.87)
χ^2	-	0.155	0.123	0.713	0.345	0.548
P	-	0.694	0.726	0.398	0.557	0.459

2.3 手术前后两组患者腰椎骨密度水平对比

术前、术后 12 周以及术后 24 周 PENA- II 组患者的腰椎骨密度水平与 InterTan 组比较无统计学差异($P>0.05$),见表 3。

2.4 两组患者术后并发症发生情况对比

PENA- II 组患者切口感染、肺部感染、下肢深静脉血栓、近端股骨外侧皮质劈裂以及髓内翻发生率与 InterTan 组相比差异无统计学意义(均 $P>0.05$),见表 4。

3 讨论

近年来随着我国人口老龄化问题的日益加重,股骨转子间骨折的发病率呈逐年上升趋势。老年股骨转子间骨折患者由于身体机能降低,且大多合并骨质疏松以及其他内科基础疾病,临床治疗较为困难^[13-15]。以往临床上主要是采用牵引保守治疗该类患者,但难以保证骨折获得良好的复位,并且易引发股骨颈短缩以及髓内翻等并发症^[16,17]。同时牵引保守治疗要求患者长期卧床静养,增加了院内感染、压疮、深静脉血栓以及心脑血管意外等并发症的发病风险,对患者的生命健康安全造成了极大的威胁^[18]。近年来,随着微创技术的发展和手术材料的进步,使得老年股骨转子间骨折的手术治疗成为可能。通过手术可以实现骨折断端的良好复位和牢固固定,患者早期可以下床活动,使术后并发症的发生率降低。目前治疗老年股骨转子间骨折的两种常用髓内固定方式为 PENA- II 与 InterTan,但对两种治疗方法效果的定论尚且存在一定的争议。

本研究通过对比显示,PENA- II 组优良率为 89.13%,略高

于 InterTan 组的 86.96%,但两组对比差异无统计学意义($P>0.05$)。表明了 PENA- II 与 InterTan 治疗老年股骨转子间骨折的临床疗效相当。其中 PENA- II 采用远端锁定孔可选择静态或动态锁定,尤其适用于低位转子间骨折、转子下骨折合并股骨干骨折以及部分病理性骨折^[19,20]。而 InterTan 采用双钉系统具有更强的抗股骨头旋转作用,且在联合拉力螺钉组合后有效为术中提供即时旋转稳定性,同时具有线性加压作用,从而有效降低了应力集中,进一步避免了远端周围骨折的发生^[21,22]。但本研究中两组疗效相当,这可能是由于 PENA- II 远端锁定孔可选择静态或动态锁定已经可以实现牢固固定,故疗效与 InterTan 差距不大。此外,PENA- II 组患者手术时间、术中出血量均明显低于 InterTan 组($P<0.05$),这符合 Kim JW 等人的研究报道^[23],说明了 PENA- II 相比 InterTan 治疗老年股骨转子间骨折,具有手术时间短、术中出血量少等优势。究其原因,作者认为 PENA- II 在实际操作过程中,其螺旋刀片只需直接砸入即可,相比 InterTan 明显减少了手术操作,同时能有效避免对患者造成不必要的损伤,因此有利于减少手术时间以及术中出血量^[24,25]。另外,术前、术后 12 周以及术后 24 周 PENA- II 组患者的腰椎骨密度水平与 InterTan 组比较差异无统计学意义($P>0.05$)。这表明了 PENA- II 与 InterTan 治疗老年股骨转子间骨折在改善患者腰椎骨密度水平方面效果相当。本研究结果还显示了 PENA- II 组患者切口感染、肺部感染、下肢深静脉血栓、近端股骨外侧皮质劈裂以及髓内翻发生率与 InterTan 组相比,差异无统计学意义($P>0.05$)。这表明了 PENA- II 与 InterTan 引发的并发症发

生情况一致,均有较好的安全性。其中 PENA-II 的螺旋刀片主要是十字设计,在刀片打入时有利于将患者的松质骨嵌压至刀片周围,从而促使其可在最大限度上与骨组织达到嵌压,同时可获得较好的锚合力,具有较好的成角稳定性,进一步有效避免骨折再移位以及髓内翻等情况发生^[26,27]。而 InterTan 主钉远端采用了发卡式的分叉开槽时机,从而在一定程度上降低了应力集中的风险,进一步达到分散远端周围骨质应力的作用,从而防止了远端周围骨折的发生,进而减少了术后大腿疼痛等不良情况的发生^[28-30]。

综上所述,PENA-II 与 InterTan 均能较好的治疗老年股骨转子间骨折,但 PENA-II 手术时间短、术中出血量少,值得临床推广应用。

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前无明显差异。结果说明,肺癌根治术后,患者的生活质量都会有不同程度的降低,术后发生乳糜胸更是显著降低了患者的生活质量,而且恢复速度相比于其他患者也较慢。我们的研究结果与国内外其他相关研究结果具有一致性,说明结果可信度高,具有较高的临床参考意义。

综上所述,本研究表明肺癌术后未合并乳糜胸患者生活质量明显高于合并乳糜胸的患者,并且恢复速度明显优于合并乳糜胸患者。因此,胸外科医生应不断提高手术技巧,改进手术方式,进而降低术后乳糜胸发生率,提高患者远期生活质量。

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