·临床研究·

SuperPATH入路半髋关节置换术治疗老年股骨颈骨折临床短期疗效

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【摘 要】 **目的** 探讨SuperPATH入路髋关节置换术在老年股骨颈骨折患者中的应用及疗效。**方法** 入选2015年9月至2017年3月期间爱得堡医院骨科收治的老年单侧股骨颈骨折患者39例,根据手术方法分为2组:SuperPATH入路组($n=14$)和后外侧入路组($n=25$)。对比2组患者的手术时间、术中出血量、术后引流量、术后24 h内疼痛视觉模拟量表(VAS)评分等围术期参数。随访3个月,对比2组患者的术后独立行走时间、并发症发生情况及Harris髋关节量表(HHS)评分。采用SPSS 17.0软件进行数据处理,依据数据类型,组间比较分别采用t检验或χ^2检验。**结果** 与后外侧入路组患者相比,SuperPATH入路组患者的术中失血量[(101.4±16.7) *vs* (135.3±21.6)ml]和术后引流量[(70.4±10.2) *vs* (85.9±16.4)ml]更少、切口长度更小[(6.8±0.7) *vs* (10.1±0.9)cm]、VAS评分更低[(3.5±1.0) *vs* (6.8±1.7)分],差异均具有统计学意义($P<0.05$)。截止末次随访时,2组患者均无脱位、感染和松动发生。与后外侧入路组患者相比,SuperPATH入路组患者的术后独立行走时间显著缩短[(2.8±1.2) *vs* (9.2±2.2)d,$P<0.05$]。**结论** SuperPATH入路是一种可以达到快速康复目的的髋关节置换的微创入路方式,对老年患者这一特殊人群尤为适合。

【关键词】 老年人;外科手术,微创性;股骨头;SuperPATH入路
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Short-term efficacy of SuperPATH approach for hip arthroplasty in the elderly with femoral neck fracture

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【**Abstract**】 **Objective** To investigate the application and efficacy of SuperPATH approach for hip arthroplasty in the elderly patients with femoral neck fracture. **Methods** A total of 39 elderly patients with unilateral femoral neck fracture admitted to the Orthopedic Department of Aidebao Hospital from September 2015 to March 2017 were enrolled in this study. They were divided into SuperPATH approach group ($n=14$) and posterolateral approach group ($n=25$) according to the approach they received. The operation time, intraoperative bleeding volume, postoperative drainage volume, and visual analogue scale (VAS) score within 24 h after operation were compared between the 2 groups. After 3 months' follow-up, the independent walking time, complications and Harris hip joint score were compared between them. SPSS statistics 17.0 was used to perform the statistical analysis. Student's t test or Chi-square test was employed for intergroup comparison based on different data types. **Results** Compared with the posterolateral approach group, the patients with SuperPATH approach had less amounts of intraoperative blood loss [(101.4±16.7) *vs* (135.3±21.6)ml] and postoperative drainage [(70.4±10.2) *vs* (85.9±16.4)ml], shorter incision length [(6.8±0.7) *vs* (10.1±0.9)cm] and lower VAS score [(3.5±1.0) *vs* (6.8±1.7) scores, $P<0.05$]. At the end of the last follow-up, no dislocation, infection or loosening occurred in both groups. The independent walking time was significantly shorter in the SuperPATH group than in the posterolateral approach group in 3 months after operation [(2.8±1.2) *vs* (9.2±2.2)d, $P<0.05$]. **Conclusion** SuperPATH approach is a minimally invasive approach for hip replacement with the advantage of rapid recovery, especially suitable for the elderly patients.

【**Key words**】 aged; surgical procedures, minimally invasive; femur head; SuperPATH approach

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随着人口的老龄化,老年性疾病的治疗成为了临床医师面临的严峻问题,尤其是在高龄骨质疏松状态下,轻微外伤跌倒就有可能造成股骨颈骨折。目前,人工股骨头置换术是对于老年股骨颈骨折患

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者进行治疗的主流方法[1],传统入路方式为后外侧。然而与低龄患者相比,老年患者常常合并多种慢性疾病,且生理功能减退更为明显,更易伴随长期营养不足,从而导致患者围手术期更容易出现难以纠正的并发症,死亡率相对较高[2]。SuperPATH(supercapsular percutaneously assisted total hip)入路是髋关节置换微创手术技术中的一种,即从臀小肌与梨状肌间隙纵行切开髋关节囊显露髋关节,被称为"不会因手术入路导致脱位"的髋关节置换技术[3]。SuperPATH入路具有创面小、不切断髋关节重要肌肉、保留相对完整的关节囊、关节稳定和康复快速等优点,但将其应用于老年股骨颈骨折患者的相关报道尚缺乏。本研究旨在探讨SuperPATH入路在治疗老年股骨颈骨折患者中的应用效果,为微创髋关节置换的推广提供临床依据。

1 对象与方法

1.1 研究对象

入选2015年9月至2017年3月期间爱德堡医院骨科收治的老年单侧股骨颈骨折患者39例,年龄(64.2±3.5)岁,其中男性15例,女性24例。纳入标准:(1)>60岁;(2)临床资料完整;(3)髋臼无缺损;(4)骨折发生在2周内;(5)无髋关节手术史。排除标准:(1)因各种疾病导致的伤前已无法独立行走;(2)多发部位骨折;(3)术前评估手术风险过大;(4)无康复依从性。根据手术方法分为2组:SuperPATH入路组(n=14)和后外侧入路组(n=25)。

1.2 方法

手术由同一医疗组完成。患者取对侧卧位,上半身固定,保证躯体稳定,保证患肢能够进行适当屈伸、内收、内旋活动,以便评估术中体位要求及考察假体安放是否合适。

1.2.1 SuperPATH入路 切口起自大转子尖上1.0 cm处,沿近端向后延伸6~8 cm切开臀大肌筋膜,拉开臀中肌,从臀小肌、梨状肌间隙显露关节囊,沿股骨颈方向电刀切开关节囊,放置特制拉钩,暴露股骨颈骨折部位,尽量维持复位,以便判断前倾方向;开口铰刀通过梨状窝打开股骨髓腔,髓腔锉由小到大依次扩髓,窄锯片沿髓腔锉斜面切断股骨颈取出股骨头;将试模颈安放在之前准备的股骨髓腔锉,试模股骨头安装至髋臼杯,调整肢体,将试模颈复位至试模头,复位后,各个方向检查假体匹配度、关节运动活动度与肢体长度。

1.2.2 后外侧入路 以大转子为中点作髋后外侧切口,直接切开阔筋膜,向近端延长至臀大肌,劈开阔筋膜张肌纤维,切断外旋肌群,部分保留梨状肌。然后到达后外侧关节囊,切开后脱位关节,按照标准步骤[4]进行截骨,髋臼与股骨磨锉,安装假体。将外旋肌群缝回大转子止点,留置引流管,逐层关闭手术切口。

2组患者术后均给予抗炎、镇痛治疗,引流管留置24~48 h。低分子肝素钙常规抗凝。针对高龄患者的特点辅以有针对性的康复措施,包括术后睡眠管理和营养支持,并且在此基础上尽期活动肢体并提倡坐起。预防谵妄、提高饮食质量、稳定内科慢性疾病,必要时进行高级生命支持。如无特殊情况发生,待引流管拔除后指导患者借助扶助器下地站立行走。出院标准:切口愈合正常、恢复正常进食与排便、内科疾病平稳无加重、下地活动无明显不适。

对比2组患者的手术时间、术中出血量、术后引流量、术后24 h内疼痛视觉模拟量表(visual analogue score,VAS)评分等围术期参数。随访3个月,记录患者的术后独立行走时间、并发症发生情况及Harris髋关节量表(Harris hip score,HHS)评分。

1.3 统计学处理

采用SPSS 17.0软件进行数据处理。计量资料以均数±标准差($\bar{x}\pm s$)表示,组间比较采用t检验。计数资料以例数(百分率)表示,组间比较采用χ^2检验。$P<0.05$为差异具有统计学意义。

2 结 果

2.1 基线资料比较

2组患者基线资料间差异无统计学意义($P>0.05$;表1),具有可比性。

表1 基线资料比较

Table 1 Comparison of baseline data between two groups

Item	SuperPATH approach group (n=14)	Posterolateral approach group (n=25)
Gender(male/female, n)	5/9	10/15
Age(years, $\bar{x}\pm s$)	63.6±3.1	64.4±3.3
BMI(kg/m^2, $\bar{x}\pm s$)	21.5±4.4	22.1±4.2
Cardiocerebrovascular disease[n(%)]	9(64.2)	15(60.0)
Respiratory disease[n(%)]	4(28.6)	6(24.0)
Digestive system disease[n(%)]	6(42.9)	10(40.0)

SuperPATH: supercapsular percutaneously assisted total hip; BMI: body mass index

2.2 2组患者围术期相关参数比较

39例患者均成功完成手术,其中4例由于麻醉苏醒和通气功能不佳,术后直接转入ICU进行高级生命支持,后均于次日返回骨科病房。与后外侧入

路组患者相比，SuperPATH 入路组患者的术中失血量和术后引流量更少、切口长度更小、VAS 评分更低，差异均具有统计学意义（$P<0.05$；表 2）。SuperPATH入路组典型病例术后切口图片如图 1 所示，髋关节 X 线检查如图 2 所示。

表 2 2 组患者围术期相关参数比较

Table 2 Comparison of related perioperative indices between two groups ($\bar{x} \pm s$)

Index	SuperPATH approach group ($n=14$)	Posterolateral approach group ($n=25$)
Operation time (min)	45.4 ± 9.6	43.7 ± 8.4
Intraoperative blood loss (ml)	101.4 ± 16.7*	135.3 ± 21.6
Postoperative drainage volume (ml)	70.4 ± 10.2*	85.9 ± 16.4
Incision length (cm)	6.8 ± 0.7*	10.1 ± 0.9
VAS (scores)	3.5 ± 1.0*	6.8 ± 1.7

SuperPATH: supercapsular percutaneously assisted total hip; VAS: visual analogue score. Compared with posterolateral approach group, *$P<0.05$

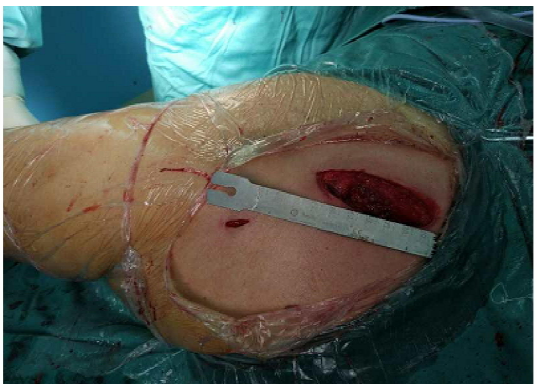


图 1 SuperPATH 入路患者术后切口

Figure 1 Postoperative incision for one patient with SuperPATH approach

SuperPATH: supercapsular percutaneously assisted total hip

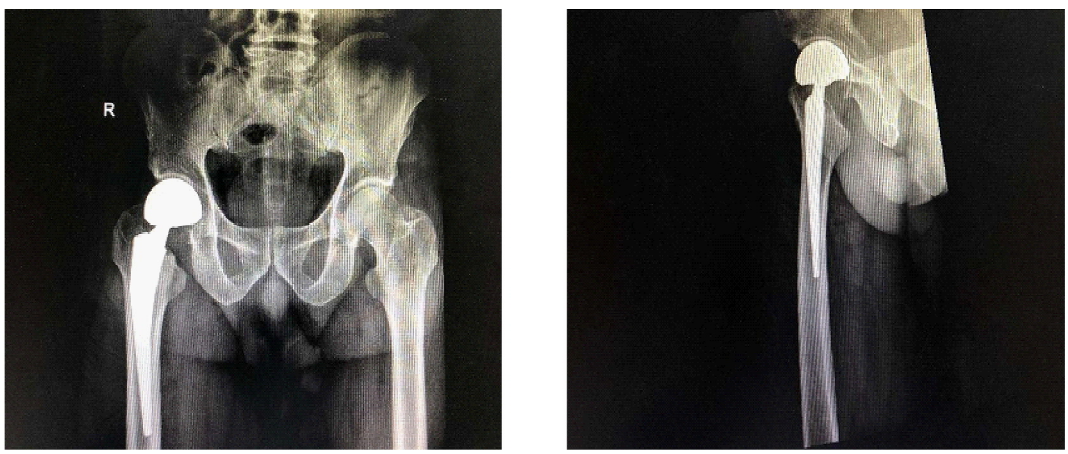
2.3 2 组患者随访情况比较

截止末次随访时，2 组患者均无脱位、感染和松动发生。与后外侧入路组患者相比，SuperPATH 入路组患者的术后独立行走时间显著缩短［(2.8 ± 1.2) *vs* (9.2 ± 2.2) d，$P<0.05$］。术后 3 个月，SuperPATH 入路组患者的 HHS 评分与后外侧入路组［(71.5 ± 3.2) *vs* (70.8 ± 5.2) 分］相比，差异无统计学意义（$P>0.05$）。

3 讨 论

老年股骨颈骨折患者的临床特点在于全身健康情况不佳、常伴有多种合并症，该部位骨折发生后极易出现如褥疮、坠积性肺炎等卧床并发症，严重者可危及生命。人工髋关节置换手术是其目前的主要治疗方法，可有效改善患者的预后[5,6]。传统的髋关节置换手术以后外侧入路应用最为广泛，但该入路方式有损伤坐骨神经的风险，同时切断梨状肌会部分影响患肢的外展力量，对早期的功能康复不利[7]，尤其对肌肉力量与身体协调功能不佳的老年人来讲更加危险[8]。2009 年，美国亚利桑那州圣路加医学中心设计了 SuperPATH 入路[3,6,7]，一定程度上弥补了上述入路的缺点。该入路方式在臀中肌、臀小肌和梨状肌的间隙进行操作，经关节囊上方进入髋关节，并借鉴了 PATH 入路的通道技术来处理髋臼，髋关节无需脱位，手术过程中下肢扭曲牵拉等手法操作较传统后外侧入路轻柔，从而减轻了软组织损伤及对下肢血管牵拉挤压的刺激，是微创人工股骨头置换的革命性技术[9]。

本研究结果表明，与后外侧入路组患者相比，SuperPATH 入路组患者的术中失血量和术后引流量



Normotopia　　Lateral

图 2 SuperPATH 入路患者术后 X 线检查

Figure 2 Postoperative X-ray examination for one patient with SuperPATH approach

SuperPATH: supercapsular percutaneously assisted total hip

更少、切口长度更小、VAS评分更低($P<0.05$),充分体现了微创入路的优势。SuperPATH入路不仅切口小、创伤少,且不切断任何肌肉和肌腱,保留了前后关节囊的完整性,最大程度上减少了髋周软组织的损伤,从而减少了术后疼痛[10]。此外,该入路方式最大程度保护了髋关节周围"软组织封套"的完整性[11,12],从而保证了即刻关节稳定性和本体感觉,为术后快速康复提供了良好的组织基础。因术中未损伤外展及外旋肌群,所以术后无需穿防旋鞋及侧卧夹枕[13]。使用SuperPATH入路能够有效减少术中失血量和术后引流量。

截止末次随访时,2组患者均无脱位、感染和松动发生,这说明SuperPATH入路并没有增加医源性并发症的发生。本研究结果表明,与后外侧入路组患者相比,SuperPATH入路组患者的术后独立行走时间显著缩短[(2.8±1.2) *vs* (9.2±2.2)d,$P<0.05$],这说明SuperPATH入路技术能够帮助患者快速恢复下肢肌力,便于早期开展功能练习,这将大大鼓舞患者的康复信心。

综上所述,SuperPATH入路是一种可以达到快速康复目的的髋关节置换的微创入路方式,对老年患者这一特殊人群尤为适合,这种相对微创的手术方式能够降低老年患者原有内科基础疾病因手术打击而加重的风险,同时可减少患者术后的不适感,提高患者满意度。本研究缺陷在于纳入病例数较少、随访时间较短,尚需多中心大规模的临床实践对SuperPATH入路的效果进行进一步评估。

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