doi:10.11659/jjssx.06E022056

·临床研究·

腹腔镜睾丸下降固定术中关闭内环口的必要性

王婉蓉[1],程时刚[2],郭 辉[1] (1.武汉科技大学医学院,湖北 武汉 430065;2.华中科技大学同济医学院附属湖北妇幼保健院外科,湖北 武汉 430070)

[摘 要] **目的** 探讨腹腔镜睾丸下降固定术中不关闭内环口时腹股沟斜疝发生的可能性。**方法** 回顾性分析行腹腔镜睾丸下降固定术的142例(150侧睾丸,其中双侧8例)隐睾合并同侧内环口开放患儿的临床资料,按照术中是否缝合腹膜关闭内环口将患儿分为开放组(112例,118侧)和对照组(30例,32侧),开放组术中不缝合腹膜关闭内环口,对照组术中缝合腹膜关闭内环口。比较2组患儿的手术时间、睾丸下降情况及并发症发生情况。**结果** 开放组的手术时间为(62.06±7.83)min,对照组的手术时间为(67.31±8.42)min,2组比较差异具有统计学意义($P<0.05$)。所有患儿的睾丸均成功下降固定于阴囊,开放组中有1例患儿术中精索血管出血。术后随访6~18个月,睾丸回缩至阴囊上方9例(2例为双侧回缩),共11侧,占比7.3%,Fowler-Stephens Ⅱ期手术后1例睾丸萎缩。开放组中有1例(0.8%)患儿术后发生腹股沟斜疝,对照组术后未发生腹股沟斜疝,2组比较差异无统计学意义($P>0.05$)。**结论** 尽管存在腹股沟斜疝发生的风险,腹腔镜睾丸下降固定术中常规缝合腹膜关闭内环口可能不是必须的。

[关键词] 腹腔镜;隐睾;内环口;腹腔内睾丸;腹股沟斜疝

[中图分类号] R699 [文献标识码] A [收稿日期] 2022-06-19

Necessity of closing the internal ring in laparoscopic testicular descending fixation

WANG Wan-rong[1],CHENG Shi-gang[2],GUO Hui[1] (1.School of Medicine,Wuhan University of Science and Technology,Wuhan Hubei 430065,China;2.Department of Surgery,Maternal and Child Health Hospital of Hubei Province,Tongji Medical College,Huazhong University of Science and Technology,Wuhan Hubei 430070,China)

Abstract: Objective To investigate the possibility of indirect inguinal hernia without closing the internal ring during laparoscopic testicular descending fixation. **Methods** The clinical data of 142 children (150 testes,8 of which were bilateral) with cryptorchidism combined with ipsilateral open internal ring who underwent laparoscopic testicular descending fixation were retrospectively analyzed. According to whether the internal ring was closed with suturing the peritoneum during the operation,the children were divided into the open group (112 cases,118 testes) and the control group (30 cases,32 testes). The open group did not close the internal ring with suturing the peritoneum during the operation,and the control group closed the internal ring with suturing the peritoneum during the operation. The operative time,profile of testicular descending and incidence of complication were compared between the two groups. **Results** The operative time of the open group was (62.06 ± 7.83) minutes,and that of the control group was (67.31 ± 8.42) minutes,the difference between the two groups was statistically significant ($P<0.05$). The testes of all children were successfully descended and fixed into the scrotum,and 1 child in the open group had intraoperative hemorrhage of spermatic cord blood vessel. After followed up for 6 to 18 months,9 cases (2 cases were bilateral retraction) had testicular retraction above the scrotum,with a total of 11 testicles,accounting for 7.3%;1 case had testicular atrophy after stage Ⅱ operation of Fowler Stephens. 1 case (0.8%) occurred indirect inguinal hernia after the operation in the open group,while no cases of indirect inguinal hernia occurred in the control group,and there was no statistically significant difference between the two groups ($P>0.05$). **Conclusion** Despite the risk of an indirect inguinal hernia,it may not be necessary to close the internal ring with conventional suturing the peritoneum during laparoscopic testicular descending fixation.

Keywords: laparoscope;cryptorchidism;internal ring;intra-abdominal testes;indirect inguinal hernia

隐睾是小儿泌尿外科最常见的先天畸形之一,足月新生儿发病率达3%,早产儿发病率可达21%[1]。腹腔镜睾丸下降固定术对不可触及型隐睾的治疗已得到广泛认可[2]。腹腔镜手术对于腹股沟型隐睾的治疗具有非常明显的优势[3]。腹腔镜下可充分游离精索,使睾丸无张力下降至阴囊,减少了术后睾丸回缩、睾丸萎缩等并发症的发生。目前,对于腹腔镜睾丸下降固定术中是否需缝合腹膜关闭内环口从而避免术后腹股沟斜疝的发生尚存在一些争议。在开放手术中,

[基金项目] 湖北省第二届医学领军人才工程

[通信作者] 程时刚,E-mail:chenggang527@163.com

临床常规将疝囊游离至内环口处并予以高位结扎,既能延长精索长度从而将睾丸无张力下降至阴囊,又能避免术后腹股沟斜疝的发生。也有研究认为腹腔镜睾丸下降固定术中即使不关闭内环口也不会发生腹股沟斜疝。Blackburn 等[4]结合文献报道并对 17 例腹腔镜睾丸下降固定术患儿进行研究后主张无需关闭内环口,但该研究样本量偏小,其结论尚需进一步验证。因此,本研究回顾性分析我院行腹腔镜睾丸下降固定术患儿的临床资料,探讨术中不关闭内环口腹股沟斜疝发生的可能性。

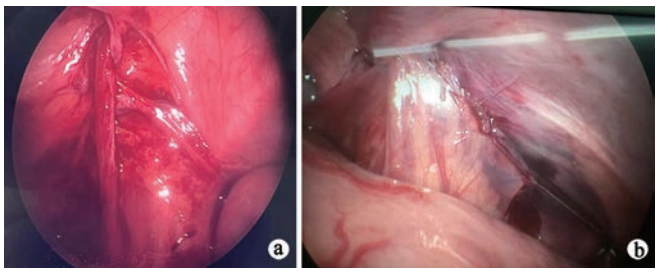
1 资料与方法

1.1 临床资料

回顾性分析 2018 年 6 月至 2020 年 12 月于我院行腹腔镜睾丸下降固定术的 142 例(150 侧睾丸)隐睾合并同侧内环口开放患儿的临床资料,按照术中是否缝合腹膜关闭内环口将患儿分为开放组(112 例,118 侧)和对照组(30 例,32 侧),开放组术中不缝合腹膜关闭内环口,对照组术中缝合腹膜关闭内环口。患儿年龄 9 个月至 10 岁;其中左侧隐睾 56 例,右侧隐睾 78 例,双侧隐睾 8 例;腹股沟管内睾丸 106 例(114 侧),腹腔内低位睾丸(距内环口 <2.0 cm)26 例,腹腔内高位隐睾(距内环口 ≥2.0 cm)10 例。本组病例中不包含内环口闭合、睾丸回缩、睾丸缺如及睾丸发育不良的患儿。本研究经我院医学伦理委员会批准(2022IEC067)。

1.2 手术方法

患儿取头低足高位,采取气管插管全身麻醉,于脐缘作 0.5 cm 小切口,穿刺 Trocar 建立人工气腹,压力维持在 8 ~ 10 mmHg,置入 5 mm 30°镜头。在腹直肌旁分别作 2 个 0.3 cm 切口,建立操作通道。术中见患侧内环口均呈开放状态。首先使用无损伤钳将睾丸引带拖出内环口至腹腔,注意勿钳夹输精管及附睾组织;然后在远离输精管处离断引带后将睾丸拖入腹腔,钝性分离内环口处精索血管及输精管周围的腹膜组织,注意保留精索与输精管交汇处的三角区腹膜组织。充分游离精索血管及输精管,以将睾丸游离到对侧内环口处为宜。在同侧阴囊作一横切口,建立肉膜下囊袋。从同侧 Trocar 插入 3 mm 吸引器杆经内环口自阴囊切口穿出。蚊式钳在吸引器杆的引导下进入腹腔,腹腔镜下抓住睾丸引带端,缓慢地将睾丸拖出阴囊切口外,注意切勿扭转精索血管。如果彻底松解后仍感觉张力偏高,可经 Prentiss 路径将睾丸下拖至患侧阴囊[5]。开放组中 10 例腹腔内高位隐睾(距内环口 ≥2 cm)的患儿行腹腔镜 Fowler-Stephens 分期手术(一期仅结扎精索血管)[6-7]。开放组中的患儿均未缝合腹膜关闭内环口(图 1a),对照组患儿均缝合腹膜关闭内环口(图 1b)。检查腹腔内无出血后退镜,缝合脐部伤口。



a:术中未缝合腹膜关闭内环口;b:术中缝合腹膜关闭内环口

图 1 腹腔镜睾丸下降固定术中内环口

1.3 观察指标

比较 2 组患儿的手术时间、睾丸下降情况及并发症发生情况。

1.4 统计学方法

采用 SPSS 20.0 软件对数据进行处理,计量资料用均数 ± 标准差($\bar{x} \pm s$)表示,计数资料采用 χ^2 检验,$P < 0.05$ 为差异具有统计学意义。

2 结果

开放组的手术时间为(62.06 ± 7.83)min,对照组的手术时间为(67.31 ± 8.42)min,2 组比较差异具有统计学意义($P < 0.05$)。所有患儿的睾丸均成功下降固定于阴囊。开放组中有 1 例患儿术中精索血管出血,经压迫止血后出血控制,术后随访未发现睾丸萎缩、回缩等并发症。术后随访 6 ~ 18 个月,睾丸回缩至阴囊上方 9 例(2 例为双侧回缩),共 11 侧,占比 7.3%;Fowler-Stephens Ⅱ 期手术后 1 例(10.0%)睾丸萎缩。开放组中有 1 例(0.8%)患儿术后发生腹股沟斜疝,对照组术后未发生腹股沟斜疝,2 组比较差异无统计学意义($P > 0.05$)。所有患儿术后随访期内均未发生鞘膜积液。

3 讨论

对于不可触及型隐睾患儿,目前可用的影像学检查有彩超、磁共振成像、睾丸造影、静脉造影等,但均不能完全准确地判断睾丸实际位置或缺失情况[8]。腹腔镜探查因其具有微创和放大效应的优点,有利于明确患儿睾丸的有无及位置,具有诊断和治疗的双重作用。腹腔镜在不可触及型隐睾的诊断及治疗中的主导地位已为临床所接受。随着腹腔镜技术的发展,对于

腹股沟型隐睾,腹腔镜下手术相对于开放手术同样具有明显的优势[9],具体表现在:可充分游离精索血管及输精管,睾丸能真正无张力下降至阴囊底部,手术后睾丸回缩率低[10];无需破坏腹股沟管;双侧隐睾可同时进行手术。Samadi 等[11]对 173 例患儿(203 侧)睾丸进行腹腔镜睾丸固定术,手术成功率为 95%。Lintula等[12]对 16 例患儿(19 侧)睾丸行腹腔镜睾丸固定术的成功率达82%。本研究中142 例患儿(150 侧)隐睾通过腹腔镜睾丸下降固定术均成功固定于阴囊,随访中有11 侧(7.3%)睾丸回缩,手术成功率为92.0%(138/150),与上述文献报道的手术成功率相近。

本研究中腹股沟管内睾丸 106 例(114 侧)患儿通过腹腔镜手术睾丸均成功下降固定于阴囊,手术成功率高,并发症少。通常来说,腹腔内睾丸位置距离内环口 <2 cm 为腹腔内低位隐睾,≥2 cm 为腹腔内高位隐睾。对于腹腔内高位隐睾患者,目前大部分专家都主张行 Fowler-Stephens 分期手术,分期手术能降低睾丸萎缩的风险[13-14],手术成功率为 67% ~98%[15]。本研究中 10 例腹腔内高位隐睾患儿行腹腔镜 Fowler-Stephens 分期手术,睾丸均成功下降并固定于阴囊,术后随访过程中,1 例患儿发生睾丸萎缩,发生率为10.0%,略高于国外文献报道的8%左右的萎缩率[16]。我们认为手术的成功率与手术操作技巧密切相关,术中应该注意最大限度保护血供及输精管,从而减少并发症的发生。

目前对于腹腔镜睾丸下降固定术中是否缝合腹膜关闭内环口存在一定的争议,国内外关于腹腔镜睾丸下降固定术合并腹股沟斜疝的情况及术中如何处理的研究很少。有研究认为,在腹腔镜睾丸下降固定术后,内环口创面腹膜化后将有效闭合而无需缝合腹膜关闭内环口[17]。郭晖等[18]报道 97 例行腹腔镜治疗的隐睾患儿采取不缝合腹膜关闭内环口的方式,术后随访1 年,患侧均未发生腹股沟斜疝,其表示腹腔镜手术治疗隐睾不需要缝合内环口处腹膜,但该研究随访时间短,若能延长随访时间则更具有说服力。Khairi 等[19]将 442 例行腹腔镜睾丸下降固定术的患儿分为2 组,关闭组常规缝合腹膜关闭内环口,未关闭组则不缝合腹膜关闭内环口,术后随访期内未关闭组的患儿均未出现腹股沟斜疝。但是许多术者为了避免术后出现腹股沟斜疝均常规关闭内环口处腹膜组织,其手术时间更长,操作更需细致缓慢[20-21]。本研究开放组中术后1 例(0.8%)患儿发生腹股沟斜疝,与对照组相比差异无统计学意义;其余患儿随访过程中均未发生腹股沟斜疝。患儿常规在术后 3 个月、6 个月及 12 个月复查超声进行随访,而大部分家长如果术后 1 年超声复查显示下降固定的睾丸状态良好,后期复查随访意愿大大降低,因此尚不明确更长时间的随访是否有更多患儿会发生腹股沟斜疝。

综上,腹腔镜睾丸下降固定术中不缝合腹膜关闭内环口时,腹股沟斜疝的发生率很低,术中常规缝合腹膜关闭内环口可能不是必须的。

[参考文献]

[1] Sijstermans K, Hack WW, Meijer RW, et al. The frequency of undescended testis form birth to adulthood: a review[J]. Int J Androl, 2008, 32: 1 - 11. doi: 10.1111/j.1365 - 2605.2007.00770.x.

[2] Mehendale VG, Shenoy SN, Shah RS, et al. Laparoscopic management of impalpable undescended testes: 20 years experience [J]. J Minim Access Surg, 2013, 9(4): 149 - 153. doi: 10.4103/0972 - 9941.118822.

[3] He D, Lin T, Wei G, et al. Laparoscopic orchiopexy for treating inguinal canalicular palpable undescended testis[J]. J Endourol, 2008, 22(8): 1745 - 1749. doi: 10.1089/end.2007.0315.

[4] Blackburn SC, Adams SD, Mahomed AA. Risk of hernia occurrence where division of an indirect inguinal sac without ligation is undertaken [J]. J Laparoendosc Adv Surg Tech, 2012, 22(7): 713 - 714. doi: 10.1089/lap.2012.0011.

[5] Sfoungaris D, Mouravas V, Petropoulos A, et al. Prentiss orchiopexy applied in younger age group[J]. J Pediatr Urol, 2012, 8(5): 488 - 492. doi: 10.1016/j.jpurol.2011.10.007.

[6] Chang M, Franco I. Laparoscopic Fowler-Stephens orchiopexy: the Westchester Medical Center experience[J]. J Endourol, 2008, 22(6): 1315 - 1319. doi: 10.1089/end.2008.0158.

[7] Elder JS. Two-stage Fowler-Stephens orchiopexy in the management of intra-abdominal testes[J]. J Urol, 1992, 148(4): 1239 - 1241. doi: 10.1016/s0022 - 5347(17)36871 - 4.

[8] Ismail KA, Ashour MHM, El-Afifi MA, et al. Laparoscopy in the management of impalpable testis (series of 64 cases)[J]. Afr J Paediatr Surg, 2017, 14(4): 65 - 69. doi: 10.4103/ajps.AJPS_103_08.

[9] 李 敏, 杨金瑞. 230 例隐睾临床分析[J]. 中华泌尿外科杂志, 2004, 25(11): 348 - 350. doi: 10.3760/j: issn: 1000 - 6702.2004.05.020.

[10] Yang Z, Li S, Zeng H, et al. Laparoscopic orchiopexy versus open orchiopexy for palpable undescended testis in children: a prospective comparison study[J]. J Laparoendosc Adv Surg Tech A, 2020, 30(4): 453 - 457. doi: 10.1016/s0022 - 5347(17)36871 - 4.

[11] Samadi AA, Palmer LS, Franco I. Laparoscopic orchiopexy: report of 203 cases with review of diagnosis, operative technique, and lessons learned [J]. J Endourol, 2003, 17(6): 365 - 368. doi: 10.1089/089277903767923128.

[12] Lintula H, Kokki H, Eskelinen M, et al. Laparoscopic versus open orchidopexy in children with intra-abdominal testes [J]. J Laparoendosc Adv Surg Tech A, 2008, 18(3): 449 - 456. doi: 10.1089/lap.2007.0176.

[13] Yu C, Long C, Wei Y, et al. Evaluation of Fowler-Stephens orchiopexy for high-level intra-abdominal cryptorchidism: a systematic review and meta-analysis[J]. Int J Surg, 2018, 60: 74 - 87. doi: 10.1016/j.ijsu.2018.10.046.

doi:10.11659/jjssx.05E022030

·临床研究·

外侧锁定钢板联合髓内钛笼内固定治疗股骨远端 C3 型骨折的临床疗效

刘 兵,马翔宇,杨 超,周大鹏 (北部战区总医院骨科,辽宁 沈阳 110016)

[摘 要] **目的** 分析和探讨外侧锁定钢板联合髓内钛笼内固定治疗股骨远端 C3 型骨折的可行性及疗效,以期寻求治疗此类骨折的一种新的固定方法。**方法** 选取在本院进行治疗的 32 例股骨远端 C3 型骨折患者,均采用外侧锁定钢板联合髓内钛笼内固定治疗。采用美国特种外科医院(HSS)评分标准评估患者膝关节功能。**结果** 所有患者术后均获得随访,随访时间 6~30 个月,平均 18 个月。所有患者骨折均顺利愈合,骨折愈合时间 10~16 周,平均 12.8 周。随访期间所有患者均疗效满意,无切口感染发生,无膝关节内外翻畸形。患者术后 HSS 评分均显著高于术前,并持续增高至术后 6 个月($P<0.01$),术后 6 个月 HSS 评分为(86.82±2.48)分,其中膝关节功能优 14 例、良 16 例、中 2 例,优良率 93.8%。**结论** 外侧锁定钢板联合髓内钛笼能够有效固定股骨远端 C3 型骨折,兼顾了提供股骨远端内外侧柱稳定性和保护血运的治疗原则,术后膝关节锻练时间早,具有固定强度高、复位维持好、并发症少、优良率高等优点,是一种新的治疗股骨远端 C3 型骨折的可靠方法。

[关键词] 锁定钢板;钛笼;内固定;股骨远端骨折

[中图分类号] R683.42 [文献标识码] A [收稿日期] 2022-05-07

Clinical effect of lateral locking plate combined with intramedullary titanium cage internal fixation in the treatment of type C3 fracture of distal femur

LIU Bing, MA Xiang-yu, YANG Chao, ZHOU Da-peng (Department of Orthopedics, General Hospital of Northern Theater Command, Shenyang Liaoning 110016, China)

Abstract: Objective To analyze and explore the feasibility and efficacy of lateral locking plate combined with intramedullary titanium cage internal fixation in the treatment of type C3 fracture of distal femur, in order to find a new fixation method for such fractures. **Methods** A total of 32 patients with type C3 fracture of distal femur who were treated in our hospital were selected, and all of them were treated with lateral locking plate combined with intramedullary titanium cage internal fixation. The knee joint function of patients was evaluated by the American hospital for special surgery (HSS) score. **Results** All patients were followed up for 6 to 30 months, with an average of 18 months. All patients' fractures healed smoothly, and the fracture healing time was 10 to 16 weeks, with an average of 12.8 weeks. During the follow-up period, all patients had satisfactory curative effect, there was no incision infection or varus deformity of knee joint. The postoperative HSS scores of patients were significantly higher than those before operation, and continued to increase until 6 months after operation ($P<0.01$).

[基金项目] 辽宁省科学技术计划面上项目(2021-MS-038)

[通信作者] 周大鹏,E-mail:me3210@163.com

[14] Braga LH, Farrokhyar F, McGrath M, et al. Gubernaculum testis and cremasteric vessel preservation during laparoscopic orchiopexy for intra-abdominal testes: effect on testicular atrophy rates[J]. J Urol, 2019, 201(2): 378-385. doi:10.1016/j.juro.2018.07.045.

[15] Stedman F, Bradshaw CJ, Kufeji D. Current practice and outcomes in the management of intra-abdominal testes[J]. Eur J Pediatr Surg, 2015, 25(5): 409-413. doi:10.1055/s-0034-1383854.

[16] Roy C, Cullis PS, Clark C, et al. Retrospective analysis of testicular outcomes following laparoscopic two-stage Fowler Stephens orchidopexy[J]. J Pediatr Surg, 2020, 55(2): 300-303. doi:10.1016/j.jpedsurg.2019.10.030.

[17] Narayanan SK, Puthenvariath JN, Somnath P, et al. Does the internal inguinal ring need closure during laparoscopic orchiopexy with prentiss manoeuvre?[J]. Int Urol Nephrol, 2017, 49(1): 13-15. doi:10.1007/s11255-016-1438-1.

[18] 郭 晖,李 爽,王 军,等. 腹腔镜治疗隐睾内环口处腹膜破坏不缝合临床体会[J]. 中国男科学杂志, 2014(5): 53-55. doi:10.3969/j.issn.1008-0848.2014.05.014.

[19] Khairi A, Shehata S, El-Kholi N. Is it necessary to close the peritoneum over the deep inguinal ring during laparoscopic orchidopexy?[J]. J Pediatr Urol, 2013, 9(2): 157-160. doi:10.1016/j.jpurol.2012.01.005.

[20] Esposito C, Vallone G, Settimi A, et al. Laparoscopic orchiopexy without division of the spermatic vessels: can it be considered the procedure of choice in cases of intraabdominal testis?[J]. Surg Endosc, 2000, 14(7): 658-660. doi:10.1007/s004640000107.

[21] Metwalli AR, Cheng EY. Inguinal hernia after laparoscopic orchidopexy[J]. J Urol, 2002, 168(5): 2163. doi:10.1097/01.ju.0000033505.88180.96.

(编辑:贺绍梅)