

doi: 10.13241/j.cnki.pmb.2022.06.015

腹腔镜下经腹膜前疝修补术与李金斯坦疝无张力修补术 治疗老年腹股沟疝患者的疗效对比分析 *

聂 鑫 沙盈盈 宣 谅 胡勇杰 郑 晓 孙久运[△]

(上海中医药大学附属岳阳中西医结合医院甲疝外科 上海 200437)

摘要 目的:对比腹腔镜下经腹膜前疝修补术(TAPP)和李金斯坦(Lichtenstein)疝无张力修补术两种手术方式治疗老年腹股沟疝患者的疗效。**方法:**收集 2018 年 8 月 -2020 年 7 月于上海中医药大学附属岳阳中西医结合医院甲疝外科治疗的 118 例老年(≥ 60 岁)腹股沟疝患者的临床资料进行回顾性分析,根据不同的手术方法分组,68 例患者行 TAPP 作为 TAPP 组,50 例患者行 Lichtenstein 疝无张力修补术作为 Lichtenstein 组。比较两组患者手术时间、术中出血量、术后切口视觉模拟量表(VAS)评分、排气时间、住院时间及术后近远期并发症发生率。**结果:**两组患者手术时间比较无显著差异($P>0.05$);TAPP 组患者术中出血量、排气时间和住院时间均显著低于 Lichtenstein 组 ($P<0.05$);TAPP 组患者术后不同时点切口 VAS 评分均显著低于 Lichtenstein 组 ($P<0.05$);TAPP 组患者近期并发症发生率显著低于 Lichtenstein 组 ($P<0.05$); 两组患者远期并发症发生率比较无显著差异 ($P>0.05$)。**结论:**与 Lichtenstein 疝无张力修补术比较,TAPP 是治疗老年腹股沟疝患者安全有效的手术方法,可减轻患者术后疼痛感,患者恢复更快,并发症发生率更低,值得推广及应用。

关键词:老年;腹股沟疝;TAPP;Lichtenstein 疝无张力修补术;疗效

中图分类号:R656.21 **文献标识码:**A **文章编号:**1673-6273(2022)06-1069-05

Comparative Analysis of Curative Effect of Laparoscopic Transabdominal Preperitoneal Hernia Repair and Lichenstein's Tension-Free Hernia Repair in the Treatment of Elderly Patients with Inguinal Hernia*

NIE Xin, SHA Ying-ying, XUAN Liang, HU Yong-jie, ZHENG Xiao, SUN Jiu-yun[△]

(Department of Thyroid and Hernia Surgery, Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, 200437, China)

ABSTRACT Objective: To compare the curative effect of laparoscopic transabdominal preperitoneal hernia repair (TAPP) and Lichtenstein's tension-free hernia repair of two types of surgery in the treatment of elderly patients with inguinal hernia. **Methods:** Clinical data of 118 elderly patients (≥ 60 years) with inguinal hernia in department of Thyroid and Hernia Surgery in Yueyang Hospital of integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine from August 2018 to July 2020 were retrospectively analyzed. According to different surgical methods, 68 patients received TAPP as the TAPP group, and 50 patients received Lichtenstein's tension-free hernia repair as the Lichtenstein group. The operative time, intraoperative blood loss, postoperative visual analog scale (VAS) score, exhaust time, hospital stay and postoperative short-term and long-term complication rate were compared between the two groups. **Results:** There was no significant difference in operation time between the two groups ($P>0.05$). The intraoperative blood loss, exhaust time and hospital stay in the TAPP group were significantly lower than those in the Lichtenstein group ($P<0.05$). The VAS scores of incision at different time points after operation in TAPP group were significantly lower than those in Lichtenstein group ($P<0.05$). The incidence of short-term complications in the TAPP group was significantly lower than that in the Lichtenstein group ($P<0.05$). There was no significant difference in the incidence of long-term complications between the two groups ($P>0.05$). **Conclusion:** Compared with Lichtenstein's tension-free hernia repair, TAPP is a safe and effective surgical method for the treatment of elderly patients with inguinal hernia, which can reduce postoperative pain, faster recovery and lower complication rate, and which is worthy of promotion and application.

Key words: Elderly; Inguinal hernia; TAPP; Lichtenstein's tension-free hernia repair; Curative effect

Chinese Library Classification(CLC): R656.21 **Document code:** A

Article ID: 1673-6273(2022)06-1069-05

* 基金项目:上海中医药大学附属岳阳中西医结合医院青年孵育项目(2018YJ09);上海市卫生计生委科研课题青年项目(20174Y0082)

作者简介:聂鑫(1990-),男,硕士,主治医师,从事疝与腹壁疾病的基础及临床研究,E-mail: sunjiuyunyyyy@163.com

△ 通讯作者:孙久运(1968-),男,硕士,副主任医师,从事甲状腺疾病及疝与腹壁外科疾病方向的研究,E-mail: sun772653@163.com

(收稿日期:2021-08-24 接受日期:2021-09-20)

前言

腹股沟疝是外科临床中的常见病及多发病,其发病率随年龄增长而增加,对我国医疗卫生事业的发展带来严峻挑战^[1]。根据我国成人腹股沟疝诊疗指南(2018年版),治愈成人腹股沟疝的唯一有效方式就是手术治疗,以植入聚丙烯补片为主的无张力疝修补术是治疗腹股沟疝的金标准^[2]。李金斯坦(Lichtenstein)疝无张力修补术是开放式无张力疝修补手术的代表术式,操作简单,容易掌握,学习周期短,术后效果良好,该手术通过使用一块与人体组织相容性好的带网孔的补片覆盖疝缺损^[3-5]。由于老年腹股沟疝患者自身脏器功能衰退,而且多数患者合并内科系统疾病,经过传统开放手术治疗后,术后并发症发生率较高,恢复慢。随着腹腔镜微创技术的快速发展及日渐成熟,腹腔镜下经腹膜前疝修补术(TAPP)目前已成熟地运用于腹股沟疝的治疗中,其凭借创伤小、恢复快及术后并发症少等诸多优势,越来越受到医师及腹股沟疝患者的青睐^[6-8]。本研究收集2018年8月-2020年7月于我科进行Lichtenstein疝无张力修补术、TAPP手术治疗的118例老年腹股沟疝患者的临床资料进行回顾性分析,对比这两种术式的临床疗效,结

果如下所述。

1 资料和方法

1.1 一般资料

回顾性分析2018年8月-2020年7月于上海中医药大学附属岳阳中西医结合医院甲疝外科进行手术治疗的118例老年腹股沟疝患者的临床资料,纳入标准:(1)所有患者年龄≥60岁;(2)诊断标准符合我国《成人腹股沟疝诊断和治疗指南(2018年版)》制定的标准^[2],且每位患者在手术治疗前均进行腹股沟区超声明确诊断,符合Lichtenstein疝无张力修补术、TAPP手术指征。排除标准:(1)患者既往有下腹部手术史或复发疝;(2)嵌顿疝或绞窄疝,伴有腹膜炎、肠梗阻或肠坏死等;(3)切口疝、双侧疝或巨大复杂腹壁疝;(4)凝血功能异常,肝、肾功能不全或其他严重全身系统疾病等手术绝对禁忌证。剔除标准:(1)腹腔镜中转开放的手术患者;(2)腹腔镜下发现对侧隐匿疝行双侧疝修补的患者。根据采用的不同手术方法分为TAPP组(给予TAPP治疗)68例和Lichtenstein组(给予Lichtenstein疝无张力修补术治疗)50例。两组患者基线资料比较无明显统计学差异($P>0.05$),详见表1。

表1 TAPP组及Lichtenstein组患者基线资料比较
Table 1 Comparison of baseline data between TAPP group and Lichtenstein group

Groups	n	Male/female	Indirect/direct hernia	Age (years)
TAPP	68	59/9	60/8	70.31±6.26
Lichtenstein	50	44/6	45/5	71.64±6.14
χ^2/t		0.040	0.092	1.150
P		0.842	0.762	0.252

1.2 手术方法

TAPP组:(1)全身麻醉后,采用头低足高15°仰卧位,留置导尿,常规消毒铺巾。脐上缘做1cm切口,穿刺针穿刺进腹建立气腹,维持压力14mmHg,置入腹腔镜探头,以左、右腹直肌外侧缘平脐水平分别做5mm切口,Trocarr套管穿刺置入操作钳。(2)进腹后仔细辨认脐正中韧带、脐内侧韧带和脐外侧韧带,根据疝的部分辨别疝的类型,观察对侧有无隐匿疝。(3)由脐内侧韧带到髂前上棘沿内环口上2cm弧形切开腹膜,先分离Retzius间隙,注意显露耻骨梳韧带,保护死亡冠及静脉丛血管,再向外侧分离Bogros间隙,注意保护腹壁下血管及疼痛三角内的神经。(4)对于斜疝,疝囊可完整剥离或横断,对于直疝,疝囊回纳后,将疝外假疝囊缝于耻骨梳韧带上,使精索腹壁化6-8cm。对于女性患者,子宫圆韧带根据与腹膜粘连情况,以充分壁化不影响放置补片为前提,决定是否保留。(5)充分游离腹膜前间隙,置入聚丙烯补片,使其平铺覆盖于耻骨肌孔区域,使用医用胶水固定,可吸收线缝合腹膜,关闭气腹,撤出腹腔镜器械,缝合体表戳孔。TAPP手术图片见图1a-c。Lichtenstein组:(1)全身麻醉后,留置导尿管,常规消毒铺巾。取腹股沟切口,长约5-6cm,逐层切开腹壁至腹外斜肌腱膜,打开外环口,分离腱膜上、下两叶,注意保护髂腹下神经和髂腹股沟神经。(2)游离或横断疝囊,缝合断端,通过内环口回纳腹腔。(3)将精索游离

腹壁化,取聚丙烯补片,尾端剪开,置于精索后方,内侧越过耻骨结节2cm,尾端缝合缩小内环,使精索不压迫。(4)充分展平补片,缝合固定,使外环容一指尖通过为宜,逐层缝合伤口。Lichtenstein手术相关图片见图2a-c。

1.3 评价指标

(1)围术期指标:记录两组患者手术时间、术中出血量、排气时间、住院时间。(2)切口疼痛评估:采用视觉模拟量表(VAS)评估两组患者术后6 h、12 h、24 h切口的疼痛程度,评分范围为0-10分,分值越高,提示疼痛程度越强烈^[9]。(3)记录术后并发症包括近期并发症(血清肿、血肿、切口感染)、远期并发症(肠瘘、慢性疼痛)发生率。

1.4 统计学方法

将数据进行汇总整理,建立数据库,使用SPSS24.0软件将全部数据进行统计学的分析,计量资料进行正态性和方差齐性检验,满足正态分布,采用均数±标准差($\bar{x}\pm s$)表示并行t检验,计数资料使用(%)表示,行 χ^2 检验; $P<0.05$,则数据的差异有统计学意义。

2 结果

2.1 两组围术期指标比较

两组患者手术时间比较无显著差异($P>0.05$);TAPP组患

者术中出血量、排气时间和住院时间均显著低于 Lichtenstein 组($P<0.05$)，见表 2。

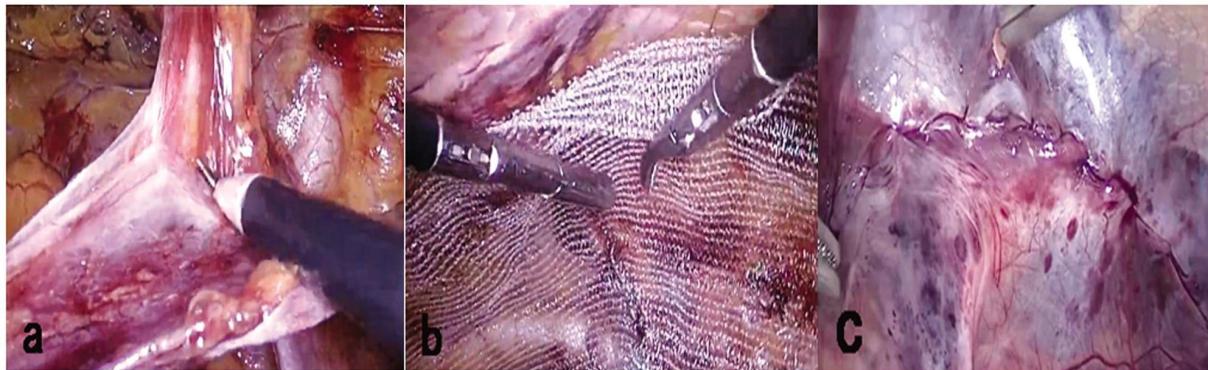


图 1 TAPP 手术相关图片

Fig.1 Pictures related of TAPP surgery

Note: a: The hernia sac and spermatic cord were stripped, and the anterior peritoneal space was dissociated. b: Smooth the mesh and cover the pecten completely. c: Continuous suture was used to close the peritoneum.

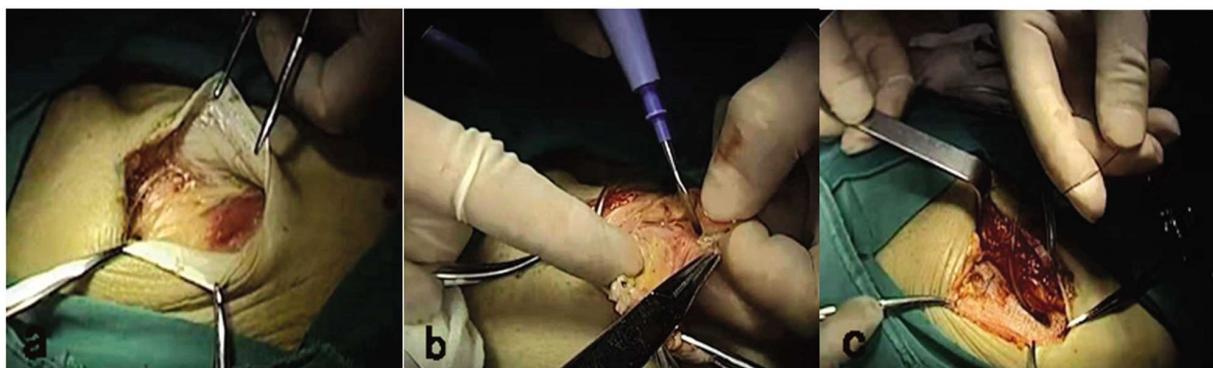


图 2 Lichtenstein 手术相关图片

Fig.2 Pictures related to Lichtenstein surgery

Note: a: cut the aponeurosis of external oblique abdominal muscle and separate the upper and lower lobes of aponeurosis.

b: Dissection of hernia sac and ventral wall of spermatic cord. c: The patch was placed behind the spermatic cord and sutured.

表 2 两组患者围术期指标比较($\bar{x}\pm s$)

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

Groups	Operative time(min)	Intraoperative blood loss(mL)	Exhaust time(h)	Hospital stay(d)
TAPP(n=68)	60.03± 3.40	14.95± 2.84	15.03± 2.65	3.16± 1.03
Lichtenstein(n=50)	59.10± 3.51	21.13± 3.82	18.98± 2.83	4.42± 1.81
t	0.448	-10.084	-7.774	-4.787
P	0.150	0.000	0.000	0.000

2.2 两组术后不同时点切口疼痛比较

Lichtenstein 组($P<0.05$)，见表 3。

TAPP 组患者术后不同时点 VAS 评分均显著低于

表 3 两组术后不同时点切口疼痛比较($\bar{x}\pm s$)

Table 3 Comparison of incision pain at different time points between the two groups($\bar{x}\pm s$)

Groups	6 h after operation	12 h after operation	24 h after operation
TAPP(n=68)	3.05± 1.01	2.53± 0.95	2.03± 0.84
Lichtenstein(n=50)	5.87± 1.26	4.69± 1.13	3.58± 1.09
t	-13.833	-11.258	-8.725
P	0.000	0.000	0.000

2.3 术后近远期并发症比较

TAPP 组患者近期并发症发生率显著低于 Lichtenstein 组

($P < 0.05$)；两组患者远期并发症无显著差异($P > 0.05$)，见表 4。

表 4 TAPP 组及 Lichtenstein 组患者术后并发症的比较

Table 4 Comparison of postoperative complications between TAPP group and Lichtenstein group

Complications	TAPP(n=68)	Lichtenstein(n=50)	χ^2	P
Short-term complications				
Seroma	4	3		
Hematoma	1	4		
Infected	0	3		
Total	5(7.35%)	10(20.00%)	4.153	0.042
Long-term complication				
Intestinal fistula	0	0		
Chronic pain	2	4		
Total	2(2.94%)	4(8.00%)	3.415	0.065

3 讨论

根据我国第七次人口普查结果显示,60岁及以上人口占18.7%,我国已经明显步入老龄化社会^[10]。腹股沟疝作为外科常见疾病之一,手术是治愈腹股沟疝的唯一有效方式,传统的有张力疝修补术,由于其较高的复发率,目前已经被以植入修复材料的无张力疝修补术所替代^[11-13]。Lichtenstein 疝无张力修补术为开放式无张力疝修补术的代表,从20世纪80年代出现至今,因其操作简单,容易掌握,学习周期短,术后效果良好,在疝外科临床治疗中得到广泛的应用^[14-16]。Lichtenstein 疝无张力修补术通过前入路开放切口进入腹股沟管,将补片放置于精索后方,加强腹股沟管后壁,但术中需要充分解剖腹股沟管,而且固定补片需要较多的缝合操作,容易损伤血管及神经,造成术中出血及术后疼痛不适。补片放置腹壁中的层次较浅,而且无法完整覆盖耻骨肌孔,一定程度增加疝复发的概率^[17,18]。随着现代腹腔镜手术的发展,TAPP 是一种通过后入路的腹膜前疝修补术,与传统前入路开放式疝修补术操作思路相反,操作难度大,学习周期较长,但熟练掌握后,与传统开放式疝修补术相比,TAPP 具有诸多优势:(1)手术切口小、创伤小,术后恢复快且满足美容的要求;(2)治疗双侧疝而不需要做对侧切口,而且对于单侧疝可以及时发现对侧的隐匿疝;(3)治疗复发疝可以绕过陈旧手术瘢痕区域,充分展示解剖结构,降低再次复发的风险^[19-21]。

本研究结果显示,两组患者手术时间比较无明显统计学差异($P > 0.05$),说明外科医师熟练掌握 TAPP 技术后,操作时间与 Lichtenstein 疝无张力修补术相同。TAPP 通过戳孔从后入路进行腹膜前修补,无需逐层切开腹壁,切口损伤减少,而且腹腔镜下操作视野放大,操作钳精细操作,避免损伤血管及神经等解剖结构,直接减少术中出血量及术后疼痛程度^[22,23],本文的结论也显示 TAPP 组患者术中出血量少于 Lichtenstein 组,且术后切口疼痛程度较轻。老年腹股沟疝患者术后常常由于胃肠蠕动减弱而出现腹胀不适,TAPP 术后患者因创伤小、疼痛轻,可以早期下床活动有利于促进胃肠蠕动排气而改善腹胀,因此

TAPP 组患者术后比 Lichtenstein 组更早排气,住院时间更短。

腹腔镜下疝修补术为了将补片更好的平整铺于腹膜前,要分离出足够大的腹膜前间隙空间,而且固定补片要使用生物胶水或钉枪,术后可能引起血清肿^[24,25],但血清肿大部分可以通过自身或理疗后吸收,积液较多者则可以通过抽吸而促进愈合,不会引起严重不良后果^[26]。TAPP 对腹壁结构损伤较小,不用过多解剖腹股沟管结构,简化了补片固定的方式,减少了缝针可能带来的损伤及异物反应,避免术后患者出现感染^[27],因此术后近期并发症的发生率低于 Lichtenstein 组。

肠瘘是疝修补术后罕见并发症,通常继发于补片感染,引起周围组织及肠管的粘连,严重的感染迁延不愈,腐蚀穿破肠管造成肠瘘,本研究两组患者术后均未发生肠瘘。慢性疼痛是腹股沟疝术后的常见并发症,通常由于术中损伤腹股沟区域的神经造成,TAPP 术中不用对腹股沟管过度解剖,将补片缝合固定于腹股沟韧带及联合腱上,避免了对髂腹股沟神经及髂腹下神经的损伤,有效预防术后慢性疼痛的发生^[28]。TAPP 术将补片放置于腹膜前,完整覆盖耻骨肌孔,比 Lichtenstein 疝无张力修补术的修补面积更大,补片植入位置更深,可有效降低复发率^[29,30];由于本研究纳入样本量较小,两组患者远期并发症未能体现出统计学差异。

综上所述,TAPP 和 Lichtenstein 疝无张力修补术是治疗老年腹股沟疝患者安全有效的方法。相比 Lichtenstein 疝无张力修补术,TAPP 治疗老年腹股沟疝的疗效更优,创伤小、恢复快、术后并发症发生率低,值得临床推广应用。

参考文献(References)

- [1] 唐健雄. 成人腹股沟疝诊疗指南(2018年版)解读[J]. 临床外科杂志, 2019, 27(1): 14-17
- [2] 中华医学会外科学分会疝与腹壁外科学组, 中国医师协会外科医师分会疝和腹壁外科医师委员会. 成人腹股沟疝诊断和治疗指南(2018年版)[J]. 中华胃肠外科杂志, 2018, 21(7): 721-724
- [3] 王桐生, 高宏, 丁磊, 等. 腹腔镜完全腹膜外疝修补术与李金斯坦术式治疗复发腹股沟疝患者的疗效[J]. 中华疝和腹壁外科杂志(电子版), 2019, 13(4): 318-321

- [4] Li J G . A meta-analysis of totally extraperitoneal prosthetic compared with Lichtenstein tension-free repair of groin hernia in adults [J]. World Chinese Journal of Digestology, 2015, 23(10): 1683
- [5] 梁国栋, 徐壮, 杨玉波. 腹腔镜经腹膜前疝修补术和李金斯坦手术对老年腹股沟疝患者的临床疗效 [J]. 中华疝和腹壁外科杂志 (电子版), 2019, 13(6): 589-592
- [6] Goksoy B, Azamat IF, Yilmaz G, et al. The learning curve of laparoscopic inguinal hernia repair: a comparison of three inexperienced surgeons [J]. Wideochir Inne Tech Maloinwazyjne, 2021, 16 (2): 336-346
- [7] Moodie B, Koto ZM. Retrospective audit of laparoscopic inguinal hernia repair at a South African tertiary academic hospital [J]. S Afr Surg, 2020, 58(4): 187-191
- [8] Inagaki Y, Matsuo K, Nakano Y, et al. Acute colonic pseudo-obstruction and rapid septic progression after transabdominal preperitoneal hernia repair: a case report[J]. BMC Surg, 2021, 21(1): 191
- [9] Faiz KW. VAS--visual analog scale[J]. Tidsskr Nor Laegeforen, 2014, 134(3): 323
- [10] 李璐. 从七普数据看我国人口老龄化 [J]. 中国经贸导刊, 2021, 3 (15): 62-64
- [11] El-Komy H, El-Gendi A, Abdel-Salam W, et al. Self-fixing parietex progrip versus the standard sutured prolene mesh in tension-free repair of inguinal hernia: effect on testicular volume and testicular blood flow[J]. Updates Surg, 2018, 70(4): 513-520
- [12] 杨栋, 吴晓明, 刘丰, 等. 腹股沟疝腹腔镜下修补术与无张力修补术应用于老年患者的综合疗效研究 [J]. 现代生物医学进展, 2016, 16(18): 3492-3495
- [13] Symeonidis D, Diamantis A, Baloyiannis I, et al. Systemic immune response after open tension-free inguinal hernia repair under different anesthetic alternatives: a prospective comparative study [J]. G Chir, 2020, 41(1): 103-109
- [14] Jain SK, Hameed T, Jain D, et al. The Role of Antibiotic Prophylaxis in Lichtenstein Repair of Primary Inguinal Hernia: A Prospective Double-Blind Randomized Placebo-Controlled Trial[J]. Niger J Surg, 2021, 27(1): 5-8
- [15] Wieser M, Rohr S, Romain B. Inguinal hernia repair using the Lichtenstein technique under local anesthesia (with video)[J]. J Visc Surg, 2021, 158(3): 276-278
- [16] Westin L, Sandblom G, Gunnarsson U, et al. Health economic analysis of total extraperitoneal repair versus Lichtenstein surgery for inguinal hernia: data from a randomized clinical trial [J]. BJS Open, 2021, 5(3): zrab026
- [17] Avci EK, Capar AE, Tugmen C, et al. A Management of Ureteral Obstruction After Lichtenstein Tension-Free Hernia Repair in a Kidney Transplant Recipient: A Case Report[J]. Transplant Proc, 2021, 53(4): 1275-1278
- [18] Li B, Zhang X, Man Y, et al. Lichtenstein inguinal hernia repairs with porcine small intestine submucosa: a 5- year follow-up. a prospective randomized controlled study[J]. Regen Biomater, 2021, 8(1): rbaa055
- [19] Needham V, Camacho D, Malcher F. Initial experience using a hand-held fully articulating software-driven laparoscopic needle driver in TAPP inguinal hernia repair[J]. Surg Endosc, 2021, 35(6): 3221-3231
- [20] Gundogdu E, Guldogan CE, Ozmen MM. Bilateral Inginal Hernia Repair: Robotic TAPP Versus Laparoscopic TEP [J]. Surg Laparosc Endosc Percutan Tech, 2020, 31(4): 439-443
- [21] Ortenzi M, Williams S, Solanki N, et al. Laparoscopic repair of inguinal hernia: retrospective comparison of TEP and TAPP procedures in a tertiary referral center[J]. Minerva Chir, 2020, 75(5): 279-285
- [22] 王伟, 赵宇斌. TAPP 与传统腹股沟疝无张力修补术对成人腹股沟疝手术应激及疼痛影响的对比研究[J]. 医学临床研究, 2021, 38(4): 504-507
- [23] 张昕, 顾远辉, 李小飞, 等. 腹腔镜 TAPP 术和 "两针" 连续腹膜缝合技术在腹股沟疝修补术中的应用 [J]. 中国现代普通外科进展, 2021, 24(5): 357-359, 363
- [24] Saito T, Iwamoto S, Murotani K, et al. Efficacy of celecoxib as preemptive analgesia for patients undergoing laparoscopic inguinal hernia repair: a randomized trial[J]. Surg Today, 2021, 51(7): 1118-1125
- [25] Patel V, Gupta T, El-Medani F, et al. Laparoscopic Inguinal Hernia Repair: Transabdominal Preperitoneal or Totally Extraperitoneal? Results of a 14-year Prospective Study[J]. Chirurgia (Bucur), 2020, 115 (5): 600-608
- [26] Köckerling F, Simons MP. Current Concepts of Inguinal Hernia Repair[J]. Visc Med, 2018, 34(2): 145-150
- [27] Asuri K, Mohammad A, Prajapati OP, et al. A prospective randomized comparison of sexual function and semen analysis following laparoscopic totally extraperitoneal (TEP) and transabdominal pre-peritoneal (TAPP) inguinal hernia repair[J]. Surg Endosc, 2021, 35(6): 2936-2941
- [28] Paasch C, Fiebelkorn J, Berndt N, et al. Correction to: The transversus abdominis plane block reduces the cumulative need of analgesic medication following inguinal hernia repair in TAPP technique: a retrospective single center analysis among 838 patients[J]. Hernia, 2020, 24(6): 1419-1420
- [29] Shi YH, Xiao DS, Dai LB, et al. Comparison of the effect of mesh-plug, Lichtenstein, transabdominal preperitoneal, and totally extraperitoneal hernia repair: A network meta-analysis [J]. Rev Assoc Med Bras (1992), 2020, 66(5): 687-691
- [30] Lydeking L, Johansen N, Oehlenschläger J, et al. Re-recurrence and pain 12 years after laparoscopic transabdominal preperitoneal (TAPP) or Lichtenstein's repair for a recurrent inguinal hernia: a multi-centre single-blinded randomised clinical trial [J]. Hernia, 2020, 24 (4): 787-792