

腹腔镜下脐尿管全段切除术治疗脐尿管瘘的临床经验*

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[摘要] **目的:**探讨腹腔镜下脐尿管全段切除术治疗脐尿管瘘(UF)的技术要点和临床疗效。**方法:**2013年6月~2018年1月对我院收治的7例UF患者施行腹腔镜下脐尿管全段切除术,术前7例患者均行彩超检查和CT平扫三维成像发现,3例行脐尿管造影检查证实。术中沿脐上弧形切口进入分离脐尿管脐部,置入3个trocar,术中采用超声刀切开下腹正中腹,向下方游离脐尿管至膀胱顶部,自脐部至膀胱连接处整块切除脐尿管全段及部分膀胱壁,可吸收线连续缝合关闭膀胱裂口。7例均经手术探查及病理学结果证实。**结果:**7例均顺利完成腹腔镜手术,无中转开放。手术时间45~70 min,平均55 min;术中出血10~20 ml,平均15 ml;术后住院3~5 d,平均4 d;7例随访4~55个月,未发现感染、复发及癌变。**结论:**腹腔镜下脐尿管整块切除术治疗UF安全有效,具有手术时间短、康复快、出血量少、腹部美观、治疗效率高等优点。

[关键词] 腹腔镜;脐尿管切除术;脐尿管瘘

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Clinical experience of laparoscopic entire resection of urachus for treating urachal fistula

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Abstract Objective: To discuss the technique and clinical efficacy of laparoscopic entire resection of urachus for treating urachal fistula. **Method:** Between June 2013 and January 2018, 7 patients with urachal fistula received entire resection of the urachus in our hospital by laparoscopy with three trocar technique. Preoperative ultrasound examination and three-dimensional CT scanning were performed in all 7 patients, and 3 cases were confirmed by urachal radiography. The urachus was cut by ultrasonic scalpel, and then the entire urachus was clipped extending from the the umbilicus to the urinary bladder and part of top wall of urinary bladder. The urinary bladder was closed by resorbable suture. All seven cases were confirmed by surgical exploration and pathological results. **Result:** All the operations were completed under laparoscope without conversion to open surgery. The operation time ranged from 45 to 70 minutes (mean, 55 minutes). The intraoperative blood loss was 10 to 20 ml (mean, 15 ml). The patients were discharged form hospital 3 to 5 days after the operation (mean, 4 days). Among our cases, 7 achieved a mean of 28.6 months follow-up (4 to 55 months), during this period none of them developed infection, recurrence or carcinomatous change. **Conclusion:** Laparoscopic entire resection of urachus is feasible for urachal fistula. The method is simple and minimal invasive with good cosmetic outcomes and results in quick recovery.

Key words laparoscopy; resection of urachus; urachal fistula

脐尿管瘘(urachal fistula, UF)为脐部发育异常的先天性疾病。成人UF发病率很低,近0.3/10万,多见于男性^[1]。UF瘘管较细小者,症状不典型,尤其是成年患者,往往因伴发脐部间歇性漏尿,脐部反复疼痛,脐部和脐周皮肤急性慢性炎症而就诊。其治疗手段主要是手术切除瘘管,腹腔镜手术逐渐成为泌尿外科医生治疗UF的首选方法^[2]。

2013年6月~2018年1月对我院收治的7例UF患者施行腹腔镜下脐尿管全段切除术,效果良好,现报告如下。

1 资料与方法

1.1 临床资料

本组7例,男4例,女3例;年龄17~35岁,平均23岁。均以脐部间歇性渗尿及脐窝内反复红肿、感染就诊。病程1.5个月~12年,平均5.6年。入院时局部红肿合并感染3例,渗液4例,无消化道症状。体格检查见脐孔潮湿,有尿臭样气味,脐孔周围红肿,脐孔至膀胱区存在压痛,挤压脐下部未见分泌物。7例均行彩超检查发现,彩超检查表

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现为脐与膀胱之间的腹壁深层低回声条状影,其内可见断续等号样强光带。本组均行 CT 平扫+三维成像鉴别诊断,CT 矢状位图像重建显示病灶较为直观,全程显示整个未退化之脐尿管,表现为条索状连于脐部与膀胱顶部之间的脐尿管影,居于腹中线或略偏一侧,紧贴于腹横筋膜后方及腹膜前。2 例患者可以将 F4 输尿管导管插入脐部瘘孔行顺行造影,1 例患者行膀胱镜检查时可发现膀胱瘘孔并插入输尿管导管作逆行造影,另 4 例患者导管不能插入未行造影检查。术前均以静脉滴注抗生素预防感染治疗,术前 3 d 每日以 1% 碘伏行脐窝消毒 2 次。

患者纳入标准:①脐部尿瘘、间歇性渗液或脐窝反复感染保守治疗无效;②心肺功能好,能耐受气腹及全麻;③凝血功能好,无下腹部及盆腔组织广泛粘连;④排除脐尿管癌。

1.2 方法

气管插管全身麻醉,取平卧位,臀部垫高 10 cm,留置导尿管充盈注水 200 ml。术野皮肤常规消毒铺巾。在脐窝上方皱襞处弧形切开皮肤全层,长 2 cm,依次切开皮下筋膜、腹白线、腹横筋膜,顺脐孔正下方手指触到质硬管状组织,用血管钳于皮下绕脐两侧潜行分离脐尿管,紧贴脐孔皮下离断脐尿管,断端予以丝线结扎,脐孔断端以丝线缝扎,顺脐尿管分离至 Retzius 间隙,以手指钝性分离 Retzius 间隙成隧道状,切开腹膜并将脐尿管向下方分离。该切口置入 10 mm trocar,缝合该切口防止漏气,建立 CO₂ 气腹,压力 12 mmHg(1 mmHg=0.133 kPa)。气腹满意后,置入 30° 腹腔镜,接监视器,直视下于脐水平左右两侧腹直肌外缘处再分别置 5、10 mm trocar。腹腔镜下清晰可见脐部与膀胱之间有一直径约 0.5 cm 白色肌性条索状组织,即为脐尿管,沿前腹壁正中襞与膀胱顶部相连(图 1)。超声刀切开下腹正中壁层腹膜,将脐尿管上段结扎线提起向下游离至膀胱顶部,于脐尿管两侧找到脐内侧韧带,为闭锁的脐动脉,游离脐内侧韧带并 hem-o-lock 结扎切断,将脐尿管全段、脐内侧韧带连同顶部部分膀胱壁一并切除(图 2),创面 2-0 可吸收线连续缝合关闭膀胱裂口,再浆肌层间断包埋。将完全游离的脐尿管用标本袋从第一切口取出,送病理学检查。脐上第 1 个 trocar 切口逐层缝合,皮肤外翻缝合。术后随访内容为术后 1 个月检查切口有无完全愈合,是否排尿正常,术后 3 个月检查脐部有无渗液或异味,每隔 3 个月做 1 次彩超检查正中下腹壁有无液性或实性病变。

2 结果

7 例腹腔镜脐尿管全段切除术均获成功,无中转开放。手术时间 45~70 min,平均 55 min;术中

出血 10~20 ml,平均 15 ml;术后住院 3~5 d,平均 4 d,出院当天拔除导尿管。术后切除标本包括脐尿管全段、脐内侧韧带、部分膀胱壁(图 3),病理学检查(图 4)可见黏膜下间质血管增生,少量淋巴细胞、中性粒细胞浸润、平滑肌细胞、肉芽组织增生等,诊断为 UF。7 例随访 4~55 个月,平均 28.6 个月,其中 3 例随访 >3 年,所有患者切口愈合良好,排尿正常,未发现感染、复发、癌变。

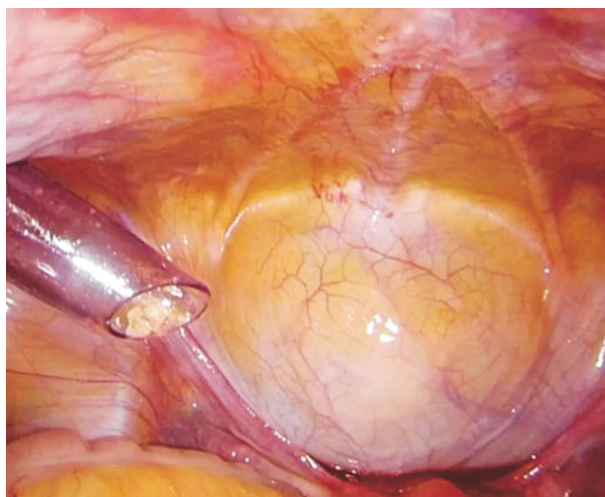


图 1 腹腔镜下所见脐尿管及双侧脐内侧韧带

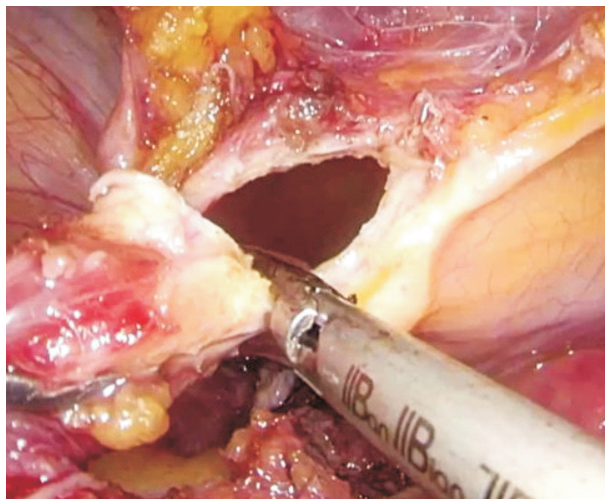
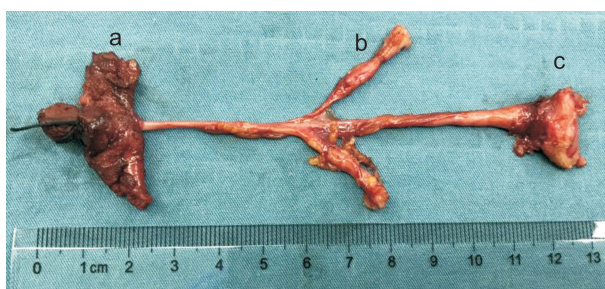


图 2 超声刀切开脐尿管膀胱连接部



a:脐尿管脐部;b:脐内侧韧带;c:脐尿管膀胱连接部。

图 3 术后切除标本

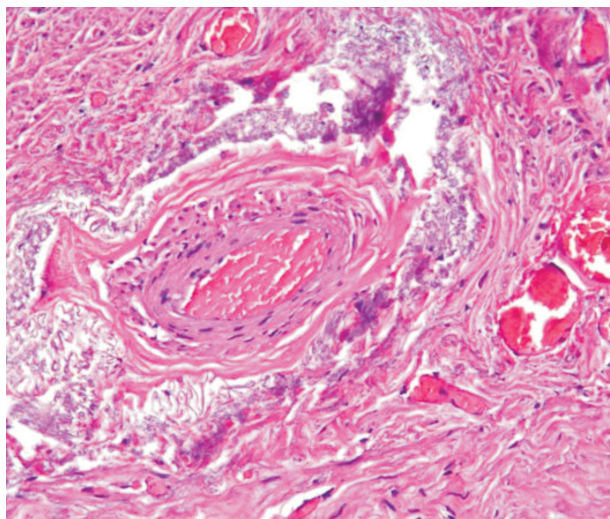


图4 病理学检查

3 讨论

胚胎发育在第5周时,原始的胚胎已经形成了初步的形状,在胚胎的腹侧有卵黄囊、尿囊与体蒂(即之后的脐带),尿囊根部与泄殖腔相通,后泄殖腔又分化为直肠和腹侧的尿生殖窦,后者参与膀胱和尿道的形成^[3]。膀胱扩大下降时,与其顶端相连的尿囊退化为脐尿管,此管向上连到脐,向下连到膀胱的尖部,胚胎期发育过程中脐尿管逐渐变细、闭锁成为脐正中韧带,为从膀胱前壁、顶部至脐部的中线结构,长度2~15 cm。脐尿管未闭畸形的类型根据脐尿管开放或部分闭锁的部位可分为:①脐尿管窦道;②脐尿管囊肿;③UF;④膀胱脐尿管憩室;⑤交通瘘。UF占有脐尿管畸形的15%左右^[4]。

了解脐尿管在胚胎发育的过程,有助于理解腹壁解剖结构的来源以及一些先天畸形的原因。腹腔镜手术的成熟改变了医生传统的手术视角,腹壁内面的解剖结构日益成为重要的手术标志。在肚脐下方的腹壁内面有5条皱襞,皱襞覆盖韧带,中间为脐正中韧带,左右各有对称的2条,内侧为脐内侧襞与脐内侧韧带,外侧为脐外侧襞与脐外侧韧带。脐正中韧带是闭锁的脐尿管、脐内侧韧带是闭锁的脐动脉,对应的手术切除范围分别是全段脐尿管、两侧脐内侧韧带,这三者在正常成人体内都已经闭锁没有实际作用。脐外侧韧带中则是腹壁下动脉,脐尿管位于耻骨后窝、腹横筋膜和腹膜之间的Retzius间隙,属于腹膜外间隙^[5]。

Araki等^[6]提出腹腔镜手术治疗UF的切除范围应包括脐尿管全段、脐内侧韧带以及与脐尿管相连的部分膀胱顶部。本组7例患者均行腹腔镜下脐尿管全段切除术,手术过程顺利,我们对手术操作技巧的体会如下:①第1个trocar位置的选择:取脐窝上方弧形切口2 cm,顺脐孔正下方寻找条

索状脐尿管,在保留肚脐皮肤的同时于脐孔真皮层下最大限度的切除脐尿管,顺脐尿管向下分离至Retzius间隙,以手指从此间隙向下方游离脐尿管至最低点。该切口可保留脐孔及术后美观,亦可整块切除脐部脐尿管,减少术后伤口感染及脐尿管复发相关并发症。②trocar的位置恰当与否决定术中操作舒适度,一般左、右trocar位置与脐水平线相平行,若左、右trocar位置过低,超声刀分离脐尿管上段时操作困难。③辨认脐尿管及脐内侧韧带。置入腹腔镜寻找脐正中襞和两侧脐内侧襞的腹壁内面解剖标志,其内即分别为脐尿管和脐内侧韧带。④游离脐尿管,直视下以血管钳围绕脐部下方游离脐尿管,置入腹腔镜后寻找脐正中襞,以此为标记,以超声刀剪开正中腹壁腹膜至膀胱连接部。如脐尿管形成囊肿或大窦腔,应将其从其周围和后方组织中分离出来。⑤分离至膀胱连接部时,进入耻骨后Retzius间隙,游离膀胱顶壁,环形切除脐尿管膀胱连接部。

从临床效果看该手术方法具有以下优点:①手术时间短、术中出血量少,术后2 d均可以进食,术后平均住院时间4 d,患者康复快、腹部美容效果理想、治疗效率高。②手术效果好,均无并发症,切口愈合良好无局部感染和全身感染,术后随访未发现复发、癌变。Baier等^[7]对29例UF患者施行腹腔镜下脐尿管切除术,统计术后复发率为10.3%(3/29),术后复发时间为3个月~7年,该学者采取的传统手术保留脐部的完整和美观,或为致复发率增高的主要原因。由于脐尿管残留的任何部分均可能发生癌变,且恶变概率较高,脐尿管癌占膀胱原发性腺癌的20%~40%^[8,9],包括脐部的脐尿管全段切除术是避免术后复发和癌变的关键。Hiroshi等^[10]对45例脐尿管未闭患者施行腹腔镜下脐尿管全段切除术,脐部切除后以真皮再生补片缝合作脐部整形术,术后随访期无脐尿管复发,患者美容效果满意度达80%。③手术操作更直观,在电子腹腔镜放大作用下,脐正中襞与周围界限很清晰易辨,从腹横筋膜下完整切除脐正中襞至膀胱顶部,即可完整切除UF。

综上所述,UF一旦确诊,均应早期行手术治疗。腹腔镜手术是治疗UF安全可行的方法,其成功实施的关键在于脐尿管的准确识别和整块切除。国内外也有学者采用2 μm激光、单孔腹腔镜或机器人施行手术切除脐尿管未闭^[11~13],但仅有个例报道,在有条件的医学中心可以开展。总之,腹腔镜下脐尿管全段切除术治疗UF安全有效,具有手术时间短、康复快、出血量少、腹部美观、治疗效率高等优点,值得在临床推广应用。

- 19 Zhang R, Han J, Daniels D, et al. Detecting the H3F3A mutant allele found in high-grade pediatric glioma by real-time PCR[J]. *J Neurooncol*, 2016, 126(1): 27–36.
- 20 Bender S, Tang Y, Lindroth A M, et al. Reduced H3K27me3 and DNA hypomethylation are major drivers of gene expression in K27M mutant pediatric high-grade gliomas[J]. *Cancer Cell*, 2013, 24(5): 660–672.
- 21 Schwartzenuber J, Korshunov A, Liu X Y, et al. Driver mutations in histone H3.3 and chromatin remodelling genes in paediatric glioblastoma[J]. *Nature*, 2012, 482(7384): 226–231.
- 22 Cordero F J, Huang Z, Grenier C, et al. Histone H3.3K27M Represses p16 to Accelerate Gliomagenesis in a Murine Model of DIPG[J]. *Mol Cancer Res*, 2017, 15(9): 1243–1254.
- 23 Presneau N, Baumhoer D, Behjati S, et al. Diagnostic value of H3F3A mutations in giant cell tumour of bone compared to osteoclast-rich mimics [J]. *J Pathol Clin Res*, 2015, 1(2): 113–123.
- 24 Bjerke L, Mackay A, Nandhabalan M, et al. Histone H3.3 mutations drive pediatric glioblastoma through upregulation of MYCN[J]. *Cancer Discov*, 2013, 3(5): 512–519.
- 25 Lewis P W, Müller M M, Koletsky M S, et al. Inhibition of PRC2 activity by a gain-of-function H3 mutation found in pediatric glioblastoma[J]. *Science*, 2013, 340(6134): 857–861.
- 26 Jha P, Pia Patric I R, Shukla S, et al. Genome-wide methylation profiling identifies an essential role of reactive oxygen species in pediatric glioblastoma multiforme and validates a methylome specific for H3 histone family 3A with absence of G-CIMP/isocitrate dehydrogenase 1 mutation[J]. *Neuro Oncol*, 2014, 16(12): 1607–1617.
- 27 Fontebasso A M, Gayden T, Nikbakht H, et al. Epigenetic dysregulation: a novel pathway of oncogenesis in pediatric brain tumors[J]. *Acta Neuropathol*, 2014, 128(5): 615–627.
- 28 Wagner E J, Carpenter P B. Understanding the language of Lys36 methylation at histone H3[J]. *Nat Rev Mol Cell Biol*, 2012, 13(2): 115–126.
- 29 Wen H, Li Y, Xi Y, et al. ZMYND11 links histone H3.3K36me3 to transcription elongation and tumour suppression[J]. *Nature*, 2014, 508(7495): 263–268.
- 30 Koelsche C, Schrimpf D, Tharun L, et al. Histone 3.3 hotspot mutations in conventional osteosarcomas: a comprehensive clinical and molecular characterization of six H3F3A mutated cases[J]. *Clin Sarcoma Res*, 2017, 7: 9.
- 31 Benitez J A, Ma J, D'Antonio M, et al. PTEN regulates glioblastoma oncogenesis through chromatin-associated complexes of DAXX and histone H3.3[J]. *Nat Commun*, 2017, 8: 15223.

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[参考文献]

- 1 Hassanbhai D H, Ng F C, Koh L T. Is excision necessary in the management of adult urachal remnants? a 12-year experience at a single institution[J]. *Scand J Urol*, 2018, 52(5–6): 432–436.
- 2 Bertozzi M, Riccioni S, Appignani A. Laparoscopic treatment of symptomatic urachal remnants in children [J]. *J Endourol*, 2014, 28(9): 1091–1096.
- 3 Castanheira de Oliveira M, Vila F, Versos R, et al. Laparoscopic treatment of urachal remnants[J]. *Actas Urol Esp*, 2012, 36(5): 320–324.
- 4 Sato H, Furuta S, Tsuji S, et al. The current strategy for urachal remnants[J]. *Pediatr Surg Int*, 2015, 31(6): 581–587.
- 5 沙建军, 吴小荣, 张连华, 等. 腹腔镜治疗成人脐尿管囊肿 3 例及文献复习[J]. *临床泌尿外科杂志*, 2011, 26(10): 764–766.
- 6 Araki M, Saika T, Araki D, et al. Laparoscopic management of complicated urachal remnants in adults [J]. *World J Urol*, 2012, 30(5): 647–650.
- 7 Baier R, Rumstadt B. Laparoscopic resection of urachal fistula[J]. *Surg Laparosc Endosc Percutan Tech*, 2011, 21(4): 295–296.
- 8 罗游, 杨立. 脐尿管癌诊断治疗进展[J]. *临床泌尿外科杂志*, 2015, 30(4): 376–379.
- 9 Gopalan A, Sharp D S, Fine S W, et al. Urachal carcinoma: a clinicopathologic analysis of 24 cases with outcome correlation[J]. *Am J Surg Pathol*, 2009, 33(5): 659–668.
- 10 Sasaki H, Kimura S, Shimada H, et al. Outcomes of laparoscopic resection of urachal remnants followed by novel umbilicoplasty[J]. *Int Urol Nephrol*, 2018, 50(12): 2167–2172.
- 11 李春昶, 王宝龙, 王延臣, 等. 经尿道 2 μm 激光脐尿管囊肿切除 1 例[J]. *临床泌尿外科杂志*, 2017, 32(10): 815–816.
- 12 Yanishi M, Kinoshita H, Yoshida T, et al. Laparoendoscopic single-site surgery for treatment of urachal remnants[J]. *Can J Urol*, 2017, 24(6): 9098–9102.
- 13 Rivera M, Granberg C F, Tollefson M K. Robotic-assisted laparoscopic surgery of urachal anomalies: a single-center experience[J]. *J Laparoendosc Adv Surg Tech A*, 2015, 25(4): 291–294.

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