

经皮肾镜超声气压弹道碎石联合钬激光内切开治疗肾输尿管上段结石伴狭窄

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[摘要] 目的:探讨经皮肾镜超声气压弹道碎石联合钬激光内切开治疗肾输尿管上段结石伴狭窄的安全性及疗效。方法:对 31 例患者采用标准通道经皮肾镜超声气压弹道碎石联合钬激光内切开治疗。31 例患者为医源性输尿管上段狭窄伴结石 23 例,先天性肾盂输尿管交界处狭窄伴结石 8 例;并发输尿管上段结石 11 例,肾结石 20 例。结果:31 例无一例中转开放,平均手术时间 (62.6 ± 8.6) min,恢复进食时间 (32 ± 6) h,下床活动时间 (3.2 ± 1.2) d。合并输尿管结石患者均予结石取净,肾结石患者 2 例下盏残留 8 mm 结石,结石取净率为 93.5%(29/31)。术后并发症 4 例,并发症发生率 12.9%,术后并发出血 1 例,予超选择肾动脉栓塞止血治愈,感染 2 例,予敏感抗菌素控制,双 J 管移位 1 例,予输尿管下调整位置。术后 3~6 个月复查,肾积水改善总有效率 87.1%(27/31),4 例肾积水无明显变化。随访 6~36 个月,2 例出现腰部酸胀、积水加重症状,予逆行输尿管镜下钬激光内切开+球囊扩张后好转,1 例反复感染肾积水加重予肾切除。结论:经皮肾镜超声气压弹道碎石联合钬激光内切开治疗肾输尿管上段结石伴狭窄结石清除率高、创伤小、手术安全有效。

[关键词] 经皮肾镜;超声碎石;肾盂输尿管交界处狭窄;内镜肾盂切开术

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Percutaneous nephrolithotomy combined with holmium laser urethrotomy for treatment of renal and upper segment of ureter calculi and stricture

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Abstract Objective: To explore the safety and efficacy of percutaneous nephroscope ultrasonic pressure bomb guided lithotripsy combined with holmium laser urethrotomy for treatment of renal and upper segment of ureter calculi and stricture. **Methods:** Thirty-one cases with iatrogenic upper ureteral stenosis in 23 cases, congenital ureteropelvic junction stenosis (ureteropelvic junction obstruction UPJO) in 8 cases, ureteral calculi in 11 cases, and kidney stones in 20 cases. All patients used a standard channel percutaneous nephroscope ultrasonic pressure bomb guided lithotripsy combined with holmium laser urethrotomy for. **Results:** Patients of 31 cases with no conversion to open operation, the average time were (62.6 ± 8.6) min, recovery time were (32 ± 6) h, and ambulation time were (3.2 ± 1.2) d. To the single channel of gravel, with ureteral calculi patients to net extraction, patients with kidney stones in 2 cases of lower calyceal calculi residual 8mm, and net extraction rate was 93.5%(29/31). Postoperative complications were 4 cases, and complication rate was 12.9%, including postoperative bleeding in 1 cases, whom underwent the super selective renal artery embolization for bleeding cured; infection in 2 cases, whom received sensitive antibiotics for infection control; double J shift in 1 case. Postoperative 3-6 month, hydronephrosis relieved, and the total effective rate was 87.1%(27/31). 4 cases of hydronephrosis showed no change. After 6-36 months follow-up, 2 cases of waist soreness, hydrocephalus exacerbation of symptoms received retrograde ureteroscopic holmium laser urethrotomy and balloon dilation. One case of repeated infection of hydronephrosis aggravated to nephrectomy. **Conclusions:** Percutaneous nephroscope ultrasonic pressure bomb guided lithotripsy combined with holmium laser urethrotomy for treatment of renal and upper segment of ureter stone with stenosis had a high stone-free rate, small trauma, safety and effectiveness.

Key words percutaneous nephroscope; ultrasonic lithotripsy; ureteropelvic junction stenosis; endoscopic incision of renal pelvis

医源性输尿管上段狭窄患者肾盂输尿管上段

粘连严重,解剖困难,大大加重了再次手术的难度,术中分离严重粘连的输尿管,易致输尿管缺血再次狭窄;先天性肾盂输尿管交界处狭窄(ureteropelvic

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junction obstruction UPJO)传统采用 Aderson-Hynes 离断肾盂成形术,由于部分患者合并结石,开放手术常不易使结石彻底清除,影响手术疗效。近年来随着腔内泌尿外科的发展及经皮肾镜技术的提高,标准通道经皮肾镜超声气压弹道以其创伤小,结石清除率高,深受患者亲睐。我们于2007年6月~2011年9月选择31例医源性上段输尿管狭窄或UPJO合并结石患者,进行经皮肾镜超声气压弹道碎石联合钬激光内切开治疗肾输尿管上段结石伴狭窄,报告如下。

1 临床资料

1.1 一般资料

本组31例,男16例,女15例,中位年龄35岁(15~67岁)。医源性输尿管上段狭窄伴结石23例,UPJO伴结石8例;合并输尿管上段结石11例,肾结石20例。入院后均予泌尿系B超检查、IVU或CTU检查肾积水情况、结石位置、肾皮质厚度,入选病例输尿管狭窄段长度均小于15mm,并予术前尿液培养,对尿培养阳性的2例患者予术前3~5天敏感抗生素治疗。

1.2 手术方法

患者全麻后,经尿道膀胱镜下逆行插管至患侧输尿管,插管成功后再采用俯卧位,腰部垫高,在B超引导下于第11肋间或第12肋下肩胛线至腋后线范围,将18G穿刺针穿刺进入肾中上盏或直接穿刺结石部位肾窦最薄处,用输液器将生理盐水连接输尿管导管,建立经皮肾通道,沿金属扩张套管外滑行置入F₂₄肾镜鞘。采用瑞士第三代EMS超声气压弹道碎石清石系统,使用气压弹道和超声联合碎石。采用灌注泵持续灌注及负压吸引装置持续负压吸引。术中随时可用彩超监测是否有结石残留。结石清除完毕后,自肾盂向输尿管置入安全导丝通过狭窄部位,予科以人钬激光仪,365μm钬激光光纤,设置功率为1.0~1.5J,脉冲为15~20Hz,予狭窄段后外侧充分切开,切开至肾周脂肪组织,长度超过狭窄环3~5mm,置入F₇双J管15例,F₇+F_{4.7}双J管16例。留置双J管3~6个月(部分病例中途更换双J管治疗)。

1.3 疗效评定

双J管拔除后,复查尿常规、B超测定肾积水宽度及肾皮质厚度,IVU了解上尿路造影剂的排泄情况,狭窄段输尿管是否通畅,在双J管更换病例中可直视下观察狭窄环的愈合情况。疗效评价标准①治愈:腰胀腰痛症状消失,肾积水明显减轻,结石清除,尿路造影通畅;②好转:症状消失或减轻,肾积水有所减少并维持稳定,尿路显影有改善;③无效:症状未见改善或加重,肾积水较前加重,残存结石合并感染。有效率为治愈和好转病例相加^[1]。

2 结果

31例无一例中转开放,平均手术时间(62.6±8.6)min,恢复进食时间(32±6)h,下床活动时间(3.2±1.2)d。均予单通道碎石,合并输尿管结石患者均予结石取净,肾结石患者2例下盏残留8mm结石,结石取净率为93.5%(29/31)。术后并发症4例,并发症发生率12.9%,术后并发出血1例,予输血、夹闭肾造瘘管出血仍不止,予超选择肾动脉栓塞止血治愈。术后感染2例,尿培养1例为耐超广谱内酰胺酶大肠杆菌,予泰能静滴后治愈,1例尿培养为粪肠球菌,予万古霉素静滴后治愈。双J管移位1例,为放置双J管时头端未进入膀胱内,予输尿管镜下调整位置。31例均获随访,平均随访时间12个月(3~35个月)复查,肾积水改善总有效率87.1%(27/31),4例肾积水无明显变化,无加重病例。随访6~36个月,2例残留结石病例结石稳定,未予进一步处理,2例出现腰部酸胀、积水加重症状,予逆行输尿管镜下钬激光内切开+球囊扩张后好转,1例患者术前为重度肾积水,术后反复感染,肾积水有加重趋势,予肾切除。

3 讨论

复发性肾输尿管结石再次手术治疗因粘连重,手术寻找输尿管困难,术后易发生输尿管缺血及再次狭窄,而输尿管狭窄与结石的存在又互为因果,必须同时积极处理。输尿管狭窄常继发肾积水及肾结石,结石对尿路上皮长期慢性机械性刺激。可致黏膜形成炎性息肉水肿,纤维瘢痕化狭窄,对内镜治疗输尿管狭窄,狭窄段长度尤为重要,AR-RABAL-MARTÍN对17例良性输尿管狭窄在内镜下冷刀切开,随访1~2年,88.5%患者取得了较好疗效,并指出内镜治疗输尿管狭窄的狭窄长度应控制在15mm以内^[2],乔勇对长段输尿管狭窄采用回肠代替输尿管成形手术,取得了较好效果^[3]。

先天性肾盂输尿管交界处狭窄患者由于患处肌性结构异常,外在纤维血管索压迫或腔内息等原因,使尿液引流困难,导致肾盂扩张,结石形成。离断式肾盂成形术切除了扩张的肾盂及交界处异常肌性组织,成为UPJO手术治的金标准。但对合并结石患者,由于结石刺激肾盂黏膜,肾周粘连,结石嵌顿肾盏,增加手术难度,开放取石,位于肾盏的结石残留率较高。AGARWAL等^[4]对UPJ合并肾结石患者行经皮肾取石联合一期后腹腔镜下肾盂成形术,取得了较好疗效,但该术式创伤较大,平均手术时间长达3.9小时。

经皮肾镜技术在有积水肾脏建立穿刺通道较为容易,肾积水后肾皮质变薄后,通道出血的概率大为减少,处理结石较为容易,超声气压弹道碎石较钬激光碎石有显著优势,首先使用气压弹道将较大结石击碎,紧接着可用超声系统将碎石吸入收集

瓶中,大大提高了碎石取石效率,并且残留结石率也明显下降^[5],对多发肾盏结石单通道清除结石困难者,可采用多通道力争一次性清除结石。

钬激光不仅有碎石的功能,对组织有良好汽化、切割及止血功能,切割深度约 0.2 mm,内镜下可以直视下切割,迅速止血,手术时术野清楚,徐庆康等^[6]对 56 例输尿管狭窄患者予输尿管镜下内切开,近期有效率达 84.0%,术后放置双 J 管时间不宜少于 3 个月,动物实验模型表明输尿管平滑肌再生需要 5 个月才能完成^[7]。对重度肾积水患者,放置双 J 管应超过半年,有条件患者采用同时置入两根双 J 管的方法, $F_7 + F_{4.7}$ 两根双 J 管同时置入,使输尿管管腔最小内径保持在 4 mm 以上,利于狭窄段输尿管扩裂后黏膜上皮生长,同时也利于尿液充分引流^[8]。

内镜处理 UPJO 合并结结石的患者的选择较为重要,术前予完善 CTU 的同时,予肾动脉及分枝 CTA 显像,对于有异位肾动脉压迫的病例,宜采用开放手术解除血管压迫,不宜盲目深度切开,引起不可控制的出血。CONLIN^[9]认为合并异位肾动脉压迫的病例可选择性进行内切开术,但对异位肾动脉大于 4 mm 者宜进行离断式肾盂成形术。对极度扩张的肾盂,肾盂裁剪缩小尤为重要,Aderson-Hynes 离断肾盂成形术应为其首选。

内镜治疗输尿管狭窄有一定再复发率,需行长时间随访,至少需 36 个月^[10],对于再次狭窄者,可行钬激光内切开的基础上行高压球囊扩张术,取得较好疗效,但严重的肾盂扩张和严重的梗阻是复发的主要原因^[11]。本组 1 例患者术前严重肾积水,肾脏失去弹性回缩功能,术后反复感染,造成引流双 J 管脓液阻塞,是手术失败的主要原因。该例患者最终行肾切除,因此术前筛选患者尤为重要。

随着科技的发展,机器人腹腔镜在泌尿外科广泛应用,以其优良影像技术、精巧可 360°旋转的机械臂,显示了其在腹腔镜泌尿外科的优越地位,HEMAL 等^[12]在首次肾盂成形术后再次狭窄 9 病例中,都取得了手术成功,但因其价格昂贵,未能在我国广泛普及。

总之,经皮肾镜超声气压弹道碎石联合钬激光内切开治疗输尿管上段结石伴狭窄创伤小,结石清除率高,患者下床活动恢复快,但远期疗效有待于进一步随访。

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