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腹腔镜胆总管切开取石术后 MRCP 与 T 管造影的对照研究 *

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摘要 目的:评估磁共振胰胆管造影(Magnetic Resonance Cholangiopancreatography, MRCP)是否可以成为腹腔镜胆总管切开取石术后 T 管造影的替代方法。**方法:**回顾性分析我院普外科自 2017 年 1 月至 2020 年 12 月收治的胆总管结石患者的临床资料,共收集接受腹腔镜胆总管切开取石术+T 管引流术患者 263 例,将其中拔除 T 管前行 MRCP 者 54 例定为 MRCP 组,连续选取拔除 T 管前行 T 管造影者 54 例为 T 管造影组。对两组患者的检查结果、不良反应发生率、住院治疗比例、检查至拔 T 管时间、抗生素使用率、相关医疗费用等指标进行记录并分析。**结果:**T 管造影组与 MRCP 组诊断胆总管残余结石的阳性率、假阳性率和准确率无统计学差异($P>0.05$)。T 管造影组不良反应发生率、住院治疗比例、检查至拔 T 管时间、抗生素使用率和相关医疗费用均显著高于 MRCP 组,两组差异有统计学意义($P<0.05$)。**结论:**MRCP 可替代 T 管造影作为腹腔镜胆总管切开取石术后拔除 T 管前的诊断方法。

关键词:胆总管结石;MRCP;T 管造影;T 管引流术

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A Comparative Study of MRCP and T-tube Cholangiography after Laparoscopic Choledocholithotomy*

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ABSTRACT Objective: To evaluate whether MRCP can be used as an alternative to T-tube cholangiography after laparoscopic choledocholithotomy. **Methods:** The clinical data of 263 patients with choledocholithiasis who underwent laparoscopic choledocholithotomy combined with choledochoscopy and T-tube drainage from January 2017 to December 2020 were retrospectively analyzed. 54 cases who MRCP was performed before T-tube removed were defined as MRCP group. 54 continuous selected cases who T-tube cholangiography was performed before T-tube removed were defined as T-tube cholangiography group. The data of the incidence of complications, the proportion of hospitalization, the time of extubation, the proportion of antibiotic usage and the related medical costs were recorded and analyzed. **Results:** There was no statistical difference in the positive rate, false positive rate and imaging accuracy between T-tube group and MRCP group in diagnosis of residual common bile duct stones ($P>0.05$). The incidence of adverse reactions, the proportion of hospitalization, the time from imaging examination to extubation, the rate of antibiotic usage and the related medical costs in T-tube group were significantly higher than those in MRCP group, and the differences between the two groups were statistically significant ($P<0.05$). **Conclusion:** MRCP can replace T-tube cholangiography as a diagnostic method before removal of T-tube post Laparoscopic Choledocholithotomy.

Key words: Choledocholithiasis; MRCP; T-tube cholangiography; T-tube drainage

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前言

胆总管结石是普外科常见病、多发病。随着微创技术的发展与普及,腹腔镜胆总管切开取石术已成为治疗胆总管结石的重要手段之一^[1-6]。虽然胆总管一期缝合技术已经逐渐开展,但 T 管引流术仍是最安全可靠的处理方式^[7-10]。术后 T 管需要留置一段时间待窦道形成并确认无残余结石后方可拔出^[11]。经 T 管造影是确认残余结石最常用的方法,是拔除 T 管前的标配^[12]。T 管造影虽有简单、实用、经济、快速等优点;但也有其固有并发症,如造影剂毒副反应、逆行感染、X 线暴露等。MRCP 作为

一种无创检查对胆总管结石的诊断具有非常高的敏感性及特异性,甚至被推荐为胆囊结石术前的常规检查^[13,14];然而 MRCP 并没有广泛应用于 T 管引流术后的病人之中。本文通过回顾性分析接受腹腔镜胆总管切开取石术+T 管引流术治疗胆总管结石患者的临床资料,以评估 MRCP 是否可以成为 T 管造影的替代方法。

1 资料与方法

1.1 一般资料

回顾性分析我院普外科自 2017 年 1 月至 2020 年 12 月收

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治的胆总管结石患者的临床资料,共收集接受腹腔镜胆总管切开取石术+T管引流术患者263例,将其中拔除T管前行MRCP者54例定为MRCP组,连续选取拔除T管前行T管造影者54例为T管造影组。

1.2 T管造影方法

患者碘试敏阴性,空腹,夹闭T管远端,T管近端常规消毒,注射器刺入T管并缓慢推注造影剂(泛影葡胺或碘比醇),直至获得满意的X线图像。造影前后常规开放T管。

1.3 MRCP检查方法

患者空腹,常规进行1.5T或3.0T磁共振扫描。MRCP检查前后无需开放T管。

1.4 检查结果判读方法

发现充盈缺损并被后续检查或治疗证实为胆总管结石者判读为阳性。发现充盈缺损并被后续检查或治疗所否定者判读为阳假性。检查未发现可疑结石的充盈缺损并且拔除T管后1月内未再发现胆总管结石者判读为阴性。检查未发现可疑结石的充盈缺损但拔除T管后1月内再次发现胆总管结石者判读

为阴假性。检查准确率=(阳性结果+阴性结果)/总数。

1.5 观察指标

对两组患者的检查结果、不良反应、住院治疗比例、检查至拔T管时间、抗生素使用率和相关费用等指标进行记录并分析。

1.6 统计学方法

采用SPSS19.0软件处理实验数据,计量资料使用均数±标准差表示,采用t检验;计数资料比较采用 χ^2 检验; $P<0.05$ 定为差异具有统计学意义。

2 结果

2.1 一般临床资料对比

T管造影组54例患者中,男17例、女37例,平均年龄54.1岁,平均带T管时间22.5天,平均夹闭T管时间约9.6天。MRCP组54例患者中,男20例、女34例,平均年龄49.5岁,平均带T管时间21.1天,平均夹闭T管时间约9.1天。如表1所示,两组比较无显著差异。

表1 基本临床资料对比
Table 1 General Clinical Data

	T-tube cholangiography	MRCP	P
Number	54	54	
Age (years)	54.1±12.7	49.5±13.1	$P>0.05$
Sex (male/female)	17/37	20/34	$P>0.05$
Time of carrying T-tube (days)	22.5±4.2	21.1±2.3	$P>0.05$
Time of clamping T-tube (days)	9.6±3.2	9.1±3.4	$P>0.05$

2.2 影像结果分析

两组患者均成功获得清晰的胆道图像。两组共发现胆总管残余结石3例(2.7%),其中T管造影组2例MRCP组1例,3例患者均采用ERCP进行后续治疗。T管造影组发现假阳性4例,考虑为胆管内气泡影干扰引起的假阳性;2例即时反复T

造影证实为气泡影,1例因患者不适于次日行MRCP检查排除残余结石,1例带管1周后再次T管造影未发现胆总管内充盈缺损。两组均未发现假阴性病例。如表2所示,由于样本数量因素,两组在阳性率、假阳性率和准确率上没有显著统计学差异($P>0.05$)。

表2 检查结果对比分析
Table 2 Analysis of Imaging results

	T-tube cholangiography	MRCP	P
Positive	3.6%(2/54)	1.8%(1/54)	$P>0.05$
False positive	7.4%(4/54)	0.0%(0/54)	$P>0.05$
False negative	0.0%(0/54)	0.0%(0/54)	-
Imaging accuracy	92.6%(50/54)	100%(54/54)	$P>0.05$

Note: if the theoretical frequency is less than 5, the continuity correction χ^2 test is adopted.

2.3 不良反应观察

针对不良反应,于检查前开始连续观察24小时。MRCP组未观察到不良反应。T管造影组观察到造影相关不良反应21例(39%);其中属于轻度18例,经开放T管或简单对症处理缓解;属于中重度3例,包括急性胆管炎2例、急性胰腺炎1例,经积极的药物治疗后痊愈。不良反应症状包括:发热15人次、腹部胀痛8人次、恶心呕吐4人次、腹泻3人次、颜面潮红2人次、结膜充血1人次、皮肤荨麻疹1人次。两组不良反应对比,

差异有统计学意义($\chi^2=26.069, P<0.0001$)。

2.4 治疗方式及相关费用比较

如表3所示,T管造影组在收治入院比例、检查至拔T管时间、抗生素使用率和拔T管相关费用等方面均显著高于MRCP组,差异有统计学意义($P<0.05$)。两组门诊治疗病例中均无再住院病例,其中T管造影组因造影后出现发热症状社区静点抗生素4例、自行口服抗生素5例;MRCP组自行社区静点抗生素1例、口服抗生素2例。

表 3 治疗方式及相关费用对比分析

Table 3 Analysis of treatment methods and related costs

	T-tube cholangiography	MRCP	P
Hospitalization	57.4%(31/54)	16.7%(9/54)	$P<0.05$
Time from imaging examination to extubation (hours)	22.1± 2.7	6.3± 3.4	$P<0.05$
Antibiotic usage	40.7%(22/54)	11.1%(6/54)	$P<0.05$
Related medical costs (yuan)	756± 334	578± 172	$P<0.05$

3 讨论

随着腹腔镜和胆道镜技术的普及,胆总管结石的治疗日趋微创化且术后残余结石率明显降低^[1,15-17]。本组残余结石率为2.7%。虽然胆道一期缝合技术已经逐渐开展,但术后T管引流仍被认为是目前最安全可靠的处理方式^[8]。

T管造影因清晰的胆道成像一直是拔T管前的标配,但气泡干扰造成的假阳性使其诊断准确率大打折扣^[12,13,18]。胆管内气泡主要来源于T管内或注射器内,虽然可以通过开放T管、排空注射器内空气等方法减少,但有时确也不可避免。唐辉蓉等^[19]研究发现T管造影的假阳性结果亦由气泡干扰所致而MRCP检查未发现假阳性,这与我们的研究结果相一致。本组4例假阳性结果均由胆管内气泡干扰造成,虽然通过反复的胆道造影或MRCP可以明确,但这无疑增加了患者痛苦和医疗成本。同时T管造影还须医护人员陪同并推注造影剂,这既消耗人力资源又增加X线暴露风险^[18]。Williams E等研究表明MRCP诊断胆总管结石的敏感性为93-95%、特异性为96-97%^[20]。在本课题中MRCP对术后胆总管残余结石的敏感性和特异性均为100%。在本研究中由于阳性病例偏少,MRCP组和T管造影组在假阳性率和诊断准确率上没有显著统计学差异($P>0.05$),但仍可看出MRCP优于或不逊色于T管造影。而MRCP检查无须医护人员陪同又无X线暴露,这无疑使检查流程更简单安全^[21]。

由于统计方法的原因,国内文献报道的T管造影的不良发生率差异率较大(16.2%-42.7%)^[19,22]。在本研究中T管造影组观察到造影相关不良反应率为39%。T管造影的不良反应主要来源于造影剂的毒副反应和逆行感染。T管造影常用的造影剂包括以泛影葡胺为代表的离子型造影剂和以碘比醇为代表的非离子型造影剂。碘比醇等非离子型造影剂在降低造影剂的毒副反应方面有明确的优点,但价格昂贵。

造影剂的毒副反应一般轻微,但严重者可出现休克、心律不齐、心跳骤停等,因此造影前需进行造影剂试敏并准备肾上腺素等抢救药品^[23,24]。在本研究中T管造影组出现颜面潮红2例、结膜充血1例、皮肤荨麻疹1例,考虑为造影剂的毒副反应。无患者出现中重度的造影剂毒副反应。为了减少造影剂毒副反应,临床上大有碘比醇取代泛影葡胺之势,但随之而来的是医疗费用增加。

正常的胆汁是无菌的,但T管及滞留在T管内的胆汁为细菌的滋生提供了便利^[25,26]。在造影过程中细菌会随着造影剂逆行进入胆道,当胆道压力超过15 cm H₂O时就可能发生胆血

反流,而推注造影剂时压力又不易控制,因此T管造影具有发生胆道感染和全身感染的风险^[27]。本组有15例患者造影后出现发热症状,其中2例诊断为急性胆管炎。另外,T管造影时还可能发生胰管的逆行显影,尤其是胆胰合流部异常的病例^[28-30]。胰管的逆行显影可诱发急性胰腺炎的发生^[31-33]。本组病例中并发造影后急性胰腺炎1例。临床上主要是通过开放T管、应用抗生素、禁食水等方法预防或治疗T管造影时可能带来的逆行感染。

基于T管造影的不良反应,外科医师更倾向于将患者收治入院、选择高级的造影剂、造影前后预防性或治疗性应用抗生素、造影后开放T管24小时。相比之下MRCP作为一种无X线辐射、不应用造影剂的非侵袭性检查方法,在不良反应发生率、住院治疗比例、检查至拔T管时间、抗生素使用率和医疗费用等方面具有明显优势,且对胆总管残余结石的诊断准确率与T管造影无统计学差异。

综上所述,MRCP替代T管造影作为腹腔镜胆总管切开取石术后拔除T管前的辅助诊断方法具有很高的临床应用价值。

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