Laparoscopic transcystic common bile duct exploration and laparoscopic transductal common bile duct exploration in elderly patients with cholecystolithiasis combined with choledocholithiasis

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To the Editor: With the development of minimally invasive surgical technology, laparoscopic transcystic common bile duct exploration plus laparoscopic cholecystectomy (LTCBDE + LC) has become the first choice of treatment for cholecystolithiasis combined with biliary calculi. In addition, there is little prospective research.

We compared 150 patients who underwent LTCBDE + LC with 150 patients who underwent laparoscopic transductal common bile duct exploration (LTDBDE) + LC. All patients and participants were informed of the study and voluntarily provided informed consent.

There were no significant differences in the mean blood loss (38.3 ± 8.0 mL *vs.* 37.3 ± 8.1 mL; $t = 0.89$, $P = 0.282$), mean operation time (111.9 ± 10.2 min *vs.* 113.8 ± 11.2min; $t = 1.63$, $P = 0.132$), and success rate (141/150 *vs.* 146/150; $\chi^2 = 2.01$, $P = 0.101$) between the LTCBDE + LC and LTDBDE + LC groups. However, patients in the LTCBDE + LC group had a shorter stay in the hospital compared to those in the LTDBDE + LC group (4.31 ± 0.69 days *vs.* 4.73 ± 1.26 days; $t = 2.28$, $P < 0.001$). Patients in the LTDBDE + LC group also had a significantly lower average visual analog scale pain score at 8 h after surgery than patients in the LTCBDE + LC group (3.30 ± 1.06 *vs.* 2.25 ± 1.09; $t = 1.86$, $P < 0.001$). In this study, the LTCBDE + LC group experienced anal aerofluxus and removal of the drain tube earlier than did those in the LTDBDE + LC group (1.2 ± 0.4 days *vs.* 2.3 ± 0.5 days; $t = 3.65$, $P < 0.001$ and 2.49 ± 2.31 days *vs.* 3.85 ± 2.77 days; $t = 2.18$, $P < 0.001$). Additionally, patients in the LTCBDE + LC group returned to an oral liquid diet earlier than those in the LTDBDE + LC group (1.2 ± 0.4 days *vs.* 2.1 ± 0.4 days; $t = 2.43$, $P < 0.001$). The patients in the LTCBDE + LC group had a significantly lower total cost than that of the LTDBDE + LC group of patients (RMB $16{,}173 \pm 558.5$ Yuan *vs.* RMB $19{,}852 \pm 1481.3$ Yuan, $t = 4.11$, $P < 0.001$).

In the LTCBDE + LC group, with the assistance of a microincision and electrohydraulic lithotripsy, the transcystic success rate was 93.3%.

The incidence of post-operative complications in the LTCBDE + LC group was lower than that in the LTDBDE + LC group (12% [18/150] *vs.* 22.7% [34/150], $\chi^2 = 6.17$, $P = 0.015$) [Table 1].

The incidence of biliary leakage in the LTCBDE + LC group was smaller than that in the LTDBDE + LC group ($\chi^2 = 4.89$, $P = 0.033$). The LTCBDE + LC group had a significantly shorter time before resuming work compared with the LTDBDE + LC group (5.13 ± 1.05 days *vs.* 6.39 ± 1.15 days; $t = 3.82$, $P < 0.001$).

The procedure of LTCBDE and LTDBDE is associated with a shorter hospital stay and is more cost-effective when compared with endoscopic retrograde cholangio pancreatography (ERCP).[1] The most important point is that the transcystic laparoscopic approach gains access to the CBD and avoids choledochotomy or sphincterotomy, resulting in freedom from the T-tube- or ERCP-related complications.[2,3]

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Table 1: Post-operative data and complications in the LTCBDE + LC group and LTDBDE + LC group.

Variables	LTCBDE + LC ($n = 150$)	LTDBDE + LC ($n = 150$)	Statistics	P
Hospital stay (days)	4.31 ± 0.69 (3–5)	4.73 ± 1.26 (3–8)	2.28*	<0.001
Time to resume work (days)	5.13 ± 1.05 (3–7)	6.39 ± 1.15 (4–8)	3.82*	<0.001
Total cost (RMB, Yuan)	16,173 ± 558.5	19,852 ± 1481.3	4.11*	<0.001
VAS (1–10) pain score				
8 h after surgery	2.25 ± 1.09 (0–4)	3.3 ± 1.06 (2–7)	1.86*	<0.001
Nasogastric tube removed (days)	1.65 ± 0.95 (0–3)	1.85 ± 1.07 (0–3)	0.67*	0.087
Urethral catheters removed (days)	1.18 ± 1.09 (0–3)	1.21 ± 0.98 (0–3)	0.54*	0.823
First anal aerofluxus (days)	1.2 ± 0.4 (0.5–2)	2.3 ± 0.5 (1–3)	3.65*	<0.001
Oral liquid diet (days)	1.2 ± 0.4 (0.5–2)	2.1 ± 0.4 (1–3)	2.43*	<0.001
Drain tube removed (days)	2.49 ± 2.31 (1–14)	3.85 ± 2.77 (1–16)	2.18*	<0.001
Post-operative complications				
Bile leakage	5 (3.3)	14 (9.3)	4.89†	0.033
Retained CBD stones	3 (2)	2 (1.3)	0.32†	0.652
DVT	1 (0.7)	2 (1.3)	0.43†	0.562
Acute cholangitis	1 (0.7)	2 (1.3)	0.43†	0.562
Pancreatitis	5 (3.3)	8 (5.3)	0.68†	0.395
Haemobilia	1 (0.7)	2 (1.3)	0.43†	0.562
Post-operative hernia recurrence	2 (1.3)	4 (2.7)	0.56†	0.409

Data are presented as mean ± standard deviation (range) or n (%). *t test; †χ^2 test. LTCBDE + LC: Laparoscopic transcystic common bile duct exploration plus laparoscopiccholecystectomy; LTDBDE + LC: Laparoscopic transductal common bile duct exploration plus laparoscopiccholecystectomy; VAS: Visual analog scale; CBD: Commonbile duct; DVT: Deep venous thrombosis.

This research has demonstrated that LTCBDE + LC is associated with a lower total cost, better pain scores, lower complication rate, and shorter hospital stay compared with LTDBDE + LC.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients or their legal guardians have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published; due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

None.

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