

Laparoscopic Hepatectomy: Technique and Outcomes of a 28-Case Series in 5-year Experience at Paolo Hospital, Phaholyothin, Bangkok, Thailand

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Abstract

Background: Laparoscopic hepatectomy is a highly advanced, challenging surgical technique for liver resection surgery which obviously provides a bunch of benefits for the patients such as smaller incisions, easier approach to difficult area of tumor site, less tissue trauma, less intraoperative blood loss, less postoperative pain, quicker return of bowel function, shorter recovery period, and lower morbidity rates. However, to achieve success is not easy. It needs a readiness of several success factors including an expert surgeon as well as a specialized and experienced surgical team, sufficient and effective laparoscopic assisted surgical devices. This is why laparoscopic hepatectomy is still not a common seen operable procedure for liver resection in all surgical centers. This case series is to review our developing experience in laparoscopic hepatectomy along a 5-year journey of Paolo Phaholyothin Hospital.

Methods: Twenty-eight patients undergoing laparoscopic liver surgery between January 2013 and August 2017 were reviewed. The data set includes patient characteristics, indication for surgery and tumor description, operative procedure and duration, conversion to open surgery rates, intraoperative blood loss and blood component replacement, postoperative analgesic requirement, pathological reports, surgical outcomes and length of hospital stay.

Results: Age range from 36 to 94 years, male/female: 13/15, mean BMI: 25.4, 20/28 of lesions were malignant, and 8/28 benign. Operations included major right/left lobe hepatectomy (n = 8), segmentectomy (n = 20), and mean operative time: 277 minutes (range 120 to 585). Neither conversion to open operation nor reoperation was done. Mean intraoperative blood loss: 390 mL (range 20-2000) with only 3 cases received blood transfusion. Mean doses of postoperative opioid requirement: 2 (range 1-5), resumption of oral intake on postoperative day 2, ability to walk without support within 48 hours, median length of hospital stay: 6.6 (range 3-11), and return to work within 2 weeks. No case of prolong bile leakage or postoperative bleeding was recorded. Along our continuing follow-up time range 2-50 months, only 3 of 20 malignant cases had local disease recurrence, only 1 died due to heart disease and extreme aging.

Conclusion: Laparoscopic liver resection surgery has obviously more several superior advantages for the patients than open surgery. Even though to achieve success it needs to overcome many factors, but it is worth for the surgeons to push themselves forward harder and more to be an expert in this procedure.

Keywords: Laparoscopic, hepatectomy, liver resection

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INTRODUCTION

Laparoscopic hepatectomy was first reported by Michel Ganger from Canada in 1992. In Thailand, this procedure has slowly been increasing and can be operated only in some hospitals. Laparoscopic hepatectomy is such an advanced laparoscopic surgery that needs high proficiency and high ability of the performer to control bleeding, to suture, and to resect the lesion especially in difficult areas. Furthermore, the cost is very high due to many high-tech gadgets required such as laparoscopic ultrasound probe, harmonic scalpel, sealing vessel device instrument. In our experience at Paolo Hospital, a 250-bed, tertiary-care, private hospital in Bangkok, Thailand, the first case of laparoscopic hepatectomy was successfully done in 2010 in the patient who was diagnosed with benign cystic lesion at segment 6. Thereafter, our cases were preferably carried out using more laparoscopic hepatectomy than open laparotomy.

Until now, more than 3,000 cases of laparoscopic hepatectomy have already been performed worldwide¹⁻⁶. If successful, it has been shown to be a very useful technique that will provide ultimately high benefits for the patients. Several various approach techniques have been applied for laparoscopic liver resection depending on tumor size and site, extent of resection, and surgeon preference. These include total laparoscopic, hand-assisted, hybrid technique, and robotic liver resection^{1,7,8}. This study was to demonstrate our experience in performing laparoscopic hepatectomy which consisted of both total laparoscopic and hand-assisted techniques.

METHODS

We explored our database completely back to 2013. Therefore, the patients undergoing laparoscopic hepatectomy between January 2013 and August 2017 were retrospectively unveiled in terms of clinical case series. Perioperative important data of every single case was collected. Preoperative data included age, sex, liver function, underlying disease, indication for surgery, tumor site and size. Intra-operative details contained of operative procedure and time, extent of resection, method for transection, intra-operative blood loss, and blood components replacement. Post-operative period included recovery outcomes (which defined as return to step diet, normal ambulation, and

cessation of parenteral analgesic requirement), surgical complications, length of hospital stay, pathological report and resection margin.

RESULTS

A total of 28 cases of laparoscopic hepatectomy were collected. Patient characteristics and other perioperative parameters of each individual patient were demonstrated in Table 1.

The age of patients ranged from 36 to 94 years with a male: female ratio of 13: 15. All patients in this series had a mean BMI of 25.4 Kg/m² and preoperative serum albumin > 3 g/dL. Eight of total underwent right or left lobe hepatectomy. The remaining underwent segmentectomy, mostly done with more than one segment. We started with a pure laparoscopic approach for all cases. Some cases needed to be converted to a hand-assisted technique because it was a large hepatic resection which required extended incision in order to remove the tumor.

No patient was converted to open laparotomy or even reoperation. Duration of operation ranged from 120 to 585 minutes with a mean of 277 minutes. The initial cases took longer operative time than the subsequences. However, major hepatectomy was more performed in the latter. No gas embolism and no morbidity were reported in this series. The pathological reports of all cases were summarized in Table 2.

Intraoperative blood loss varied from 20 mL- 2,000 mL, with a mean of 390 mL per each. Of these, there were only 3 cases who received blood transfusion intraoperatively (case number 8, 21, and 23, respectively in Table 1). The first case (No. 8) had preoperative hematocrit (Hct.) at 30%, and underwent laparoscopic right lobe hepatectomy. He received 2 units of packed red blood cells (PRCs) and 2 units of fresh frozen plasma (FFP) transfusion. The second case (No. 20), who had preoperative Hct. at 30% and underwent laparoscopic left lobe hepatectomy, received 1 unit of PRCs transfusion. The third case (No. 23) had preoperative Hct. at 21% and underwent laparoscopic right lobe hepatectomy. She received 2 units of PRCs transfusion. In our series, there were 4 cases (case No. 2, 8, 19 and 26) who had history of coronary heart disease and were taking antiplatelet medications (Clopidogrel, Aspirin). We discontinued it 3 days prior to surgery and restarted within 24 hours

Table 1 Demographic, intraoperative, and postoperative details of 28 patients undergoing laparoscopic hepatectomy

Patient	Age	Sex (M/F)	BMI	Underlying diseases	Pre-operative Diagnosis	Type of operation	Pathological Report	Tumor site (segment)	Tumor Size (cm.)	Operative time (minutes)	Blood loss (mL)	Blood transfusion	Postoperative IV opioids	Postoperative NSAIDs	Length of stay (days)	Follow up period (months)
1	74	M	25.39	HT, DLP, Hepatitis B		Laparoscopic segmentectomy	Cholangio CA	Seg-6	3x2.9x2.2	250	800	No	Pethidine 50 mg x 4	No	7	50
2	63	M	20.43	DM, CAD Postop Axillo-bifemoral bypass 3 years, CAB, Alcoholic liver cirrhosis		Lap Laparoscopic Right lobe Hepatectomy +segment 4b Hepatectomy +LC	HCC	Seg-7 Seg-6 Seg-5	4.2x4.6x6.5 1.8 x 1.9 1 x 0.8	225	500	No	Pethidine 50 mg X 5	No	8	46
3	44	F	16.82	CA ovary		Laparoscopic segmentectomy	Metastasis poorly differentiated carcinoma	Seg 4a	2 x 2.4	85	20	No	-	No	3	45
4	42	F	21.9	CA colon		Laparoscopic Right lobe Hepatectomy 5,6,7,8	Metastasis Adeno-carcinoma	Seg 7 Seg 5/8	1.2 x 1.1 1.9	445	300	No	Pethidine 30 mg x 5	No	8	45
5	79	F	31.22	DM, HT, DLP		Laparoscopic partial right lobe Hepatectomy	Cavernous hemangioma	Seg 6	5x6	150	500	No	Pethidine 50 mg	No	6	43
6	36	M	30.15	Hepatitis B		Laparoscopic Segmentectomy	HCC	Seg 6	4	245	1,000	No	MO 5 mg x 2	No.	8	37
7	42	F	23.55	No		Laparoscopic Segmentectomy	Benign non dysplastic nodule	Seg 2	1	210	150	No	MO 10 mg x 2	No	7	35
8	73	M	23.8	HT, DLP, DM, PCI 2556		Laparoscopic Right lobe Hepatectomy	HCC	Seg 8/7	4.7x4.4 x4.7	585	2,000	FFP 2u LPRC 2u	MO 10 mg X 5	No	10	31
9	67	M	29.64	HT, DLP, Left lobe Hepatectomy 5 years ago		Laparoscopic segmentectomy	HCC	Seg 5	3	365	300	No	Pethidine 50 mg x 1 dose	No	8	21

Table 1 (cont.) emographic, intraoperative, and postoperative details of 28 patients undergoing laparoscopic hepatectomy

Patient	Age	Sex (M/F)	BMI	Underlying diseases	Pre-operative Diagnosis	Type of operation	Pathological Report	Tumor site (segment)	Tumor Size (cm.)	Operative time (minutes)	Blood loss (mL)	Blood transfusion	Postoperative IV opioids	Postoperative NSAIDs	Length of stay (days)	Follow up period (months)
10	94	F	24.67	DM, HT		Laparoscopic Left lobe Hepatectomy + LC	Metastatic Adeno-carcinoma	Seg 2,3	4.4	245	200	No	MO 2 mg Pethidine 50 mg	No	5	20
11	55	F	20.58	CA Ovary		Laparoscopic Segmentectomy Hepatectomy	Metastatic Spindle cell tumor	Seg 5 (2 mass)	1.3x1.4x1.3 1.9x2.1x2.4	300	200	No	Pethidine 50 mgx11	No	7	18
12	51	M	31.23	No		Laparoscopic Segment V, VII Hepatectomy with Cholecystectomy	Local nodular hypoplasia	Seg 5 Seg 7	1.6 1.2	250	100	No	Pethidine 50 mg IM	No	3	17
13	36	F	27.2	No		Laparoscopic segmentectomy + Cholecystectomy	FNH (focal nodular hyperplasia)	Seg 6	2.4x2.2	340	150	No	-	Dynastat 40 mg	10	17
14	51	M	23.7	No		Laparoscopic lateral segmentectomy	Cavernous hemangioma	Seg 2 (2) Seg 3	1.7x1.0 2.1x2.5 0.5	120	100	No	Pethidine 50 mg	Dynastat 40 mg	7	17
15	43	M	25.1	No		Laparoscopic Right lobe Hepatectomy	Hepato-cellular carcinoma	Seg 5,6,7,8	4.6 x 6.5	285	450	No	Pethidine 50 mg x 3	Dynastat 40 mg	6	17
16	68	F	31.6	HT, DLP		Laparoscopic right partial lobe Hepatectomy + Cholecystectomy	Low grade dysplastic nodule	Seg 8 Seg 6	1.2 1.0	240	100	No	Pethidine 50 mg x 3 doses	No	5	15
17	66	M	24.97	DM, HT, DLP		Laparoscopic segmentectomy	HCC	Seg 7	2	350	200	No	Pethidine 50 mg	No	8	13
18	61	F	28.90	DM, Chronic Hepatitis B		Laparoscopic Segmentectomy 3,7+8 + LC	HCC	Seg 3 Seg 7	0.8 4.5	300	500	No	MO 2 mg x 2 Pethidine	No	9	13
19	58	M	37.73	DM, HT, CAD, DLP, liver cirrhosis		Laparoscopic segmentectomy	HCC	Seg 7/8	2.1	335	100	No	MO 10 mg x 2	No	10	13

Table 1 (cont.) emographic, intraoperative, and postoperative details of 28 patients undergoing laparoscopic hepatectomy

Patient	Age	Sex (M/F)	BMI	Underlying diseases	Pre-operative Diagnosis	Type of operation	Pathological Report	Tumor site (segment)	Tumor Size (cm.)	Operative time (minutes)	Blood loss (mL)	Blood transfusion	Postoperative IV opioids	Postoperative NSAIDs	Length of stay (days)	Follow up period (months)
20	63	M	23.9	No		Laparoscopic left lobe Hepatectomy	Metastatic Adeno-carcinoma	Seg 2 Seg 4	2 4	230	700	LPRC 1	MO 10 mg	No	4	11
21	68	F	24.19	No		Laparoscopic segmentectomy + lap resection at cul de sac	Metastatic Adeno-carcinoma	Seg 5	3.1 x 3.4 x3.4	255	200	No	No	No	6	11
22	54	F	22.71	No		Laparoscopic left lobe Hepatectomy	Metastatic Adeno-carcinoma	Seg 3	2.8	165	200	No	MO 4 mg	No	5	10
23	61	F	19.11	HT, DM, DLP		Laparoscopic Right lobe Hepatectomy	Poorly differentiated Carcinoma	Seg 5/6	6.2x9.2 x11	493	900	LPRC 2u	MO 10 mg	Dynastat 40 mg X1 dose	11	10
24	63	M	21.99	Chronic Hepatitis C		Laparoscopic Right lobe Hepatectomy	HCC, Poorly differentiated	Seg 7/6 Seg 8 Seg 5	4.9x3.4 x4.2 1.5x1.2	545	400	No	MO 10 mg x 2	Dynastat 40 mg 1 dose	9	10
25	69	F	24.74	HT		Laparoscopic partial right lobe Hepatectomy + Cholecystectomy	Cavernous hemangioma	Seg 6	4.3x4.2 x2.8	120	50	No	MO 5 mg X 2	No	4	9
26	75	M	23.8	HT, DLP, DM, PCI (2556)		Laparoscopic segmentectomy + Cholecystectomy	HCC	Seg 2,3	2	265	300	No	MO 10 mg X 3		5	4
27	69	M	30.2	CA colon, Post Lap Cholecystectomy		Laparoscopic segmentectomy	Metastatic Adenocarcinoma	Seg 6 (3)	0.9 0.62	205	300	No	Pethidine 50 mg x 3	No	4	2
28	47	F	24	No		Laparoscopic left lobe Hepatectomy	Cavernous hemangioma	Seg 2 Seg 3 Seg 4	5.7 2 2	180	200	No	Pethidine 50 mg x 3	No	3	2

Abbreviations: M: Male; F: Female; BMI: Body mass index; Seg: Segment; HCC: Hepatocellular carcinoma; DM: Diabetes mellitus; HT: Hypertension; DLP: Dyslipidemia; CAD: Coronary artery disease; CAB: Coronary artery bypass; PCI: Percutaneous coronary intervention; LPRC: leukocyte-poor red cells; FFP: fresh frozen plasma

Table 2 Pathological Reports

Pathological Report	N (cases)
HCC	10
Metastasis Adenocarcinoma	7
Cavernous Hemangioma	4
Local Nodular hyperplasia	2
Dysplastic nodule	2
Cholangiocarcinoma	2
Metastasis spindle cell carcinoma	1

postoperatively. The mean blood loss of these 4 cases was 725 mL which was more than overall average (390 mL), and only one case (No. 8) received blood transfusion. Moreover, 2 of these 4 cases underwent major right lobe hepatectomy. If excluded of these two, the mean blood loss would be only 200 mL.

A tube drain was placed in every patient and taken out on the 4th postoperative day or until there was no show of any bile or blood. The patients required opioid-based analgesic requirement varied from 1 to 5 doses (mean = 2), postoperatively. Oral intake was resumed on the 2nd postoperative day. All patients were able to walk by themselves within 48 hours. Length of postoperative hospital stay ranged from 3 to 11 days (median = 6.6).

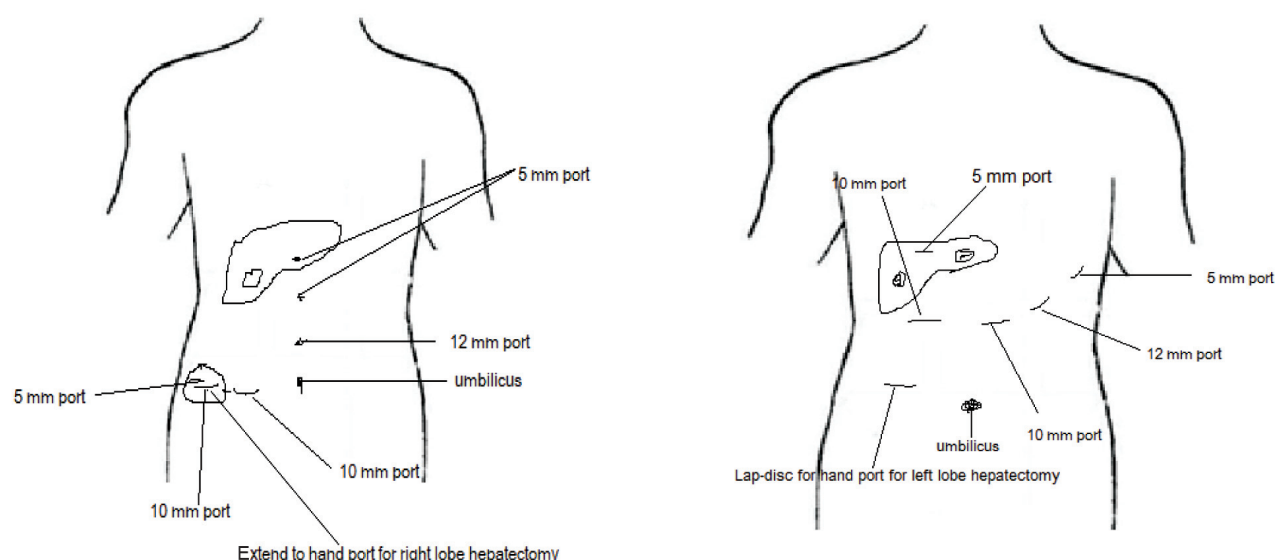
We had followed up our patients with a mean

period of time of 20.7 months (range 2-50). They were able to be back to work within two weeks. All patients achieved relief from their symptoms completely. Among the patients who were diagnosed with cancer, there were three cases of tumor recurrence. Of these, one (No. 10) died eight months later with heart disease and metastasis, while the other two (No. 2 & 8) underwent the second laparoscopic hepatectomy two years later and were still followed up.

DISCUSSION

Laparoscopic hepatectomy is an advancement of the continuing evolution of minimally invasive surgery (MIS). The utmost integration of surgical skills is essentially required for laparoscopic hepatectomy in parallel with the adaptation of laparoscopic technique to this procedure including hi-hilar dissection, biliary or vascular repair, mobilization of the liver, and transection of the parenchyma^{9,10,11,12,13}.

Laparoscopic hepatectomy shows a great variety of advantages over open hepatectomy. Laparoscopic hepatectomy causes immensely less tissue damage and thus helps significantly reduce postoperative pain, shorter hospital stay, and earlier return to daily activities^{14,15,16,17}. In addition, there were two published case-control studies^{11,18} and one cohort study¹⁹ recently showed that laparoscopic hepatectomy provided lower

**Figure 1** Hand Port and Trocar position (25)

blood loss, reduced morbidity, and fewer operative complications. With regard to an overall malignant disease, there was no significant difference either in tumor recurrence or in long term survival^{18,20,21}. Furthermore, the cosmetic advantages of laparoscopic hepatectomy are obviously excellent. Earlier resumption of oral intake is also a great advantage. For these reasons, the laparoscopic approach should be brought to account for both benign and malignant liver disease^{15,19,11,18,22,23,24}.

Our case series showed that laparoscopic approach was able to be applied for liver resections of malignant and benign conditions as it provides ultimate advantages to our patients. No major or minor complications were detected. Only 2 patients received 2 units of PRC and another patient used 1 unit of PRC blood transfusion. All these 3 cases had initially low hematocrit level before surgery. A mean postoperative hospital stay was 6.6 days and within 2 weeks they all were able to return to their work. Only 2 patients had a tumor recurrence which later achieved success to re-resection by laparoscopic technique. One patient in this series (No. 9) had history of previous open left lobe hepatectomy and still could undergo laparoscopic technique in the second time of operation.

In our complicated cases, patients had underlying disease such as coronary artery disease with status post PCI or major vascular bypass and continued antiplatelet. Stopping the medication only 3 days prior to surgery, and restarting immediately within 24 hours after hepatectomy was interestingly observed that not much bleeding occurred and no evidence of any complications from vascular thrombosis detected.

In our initial experience, we began with laparoscopic peripheral liver resection. After passing the learning curve, we performed major right and left hepatic resection for those who had a large tumor using hand-assisted port to bring out a wide specimen after performing vascular and bile duct ligation.

In all cases, we used an intra-operative laparoscopic ultrasound probe for locating the tumor and vascular supply and for planning a resection margin. Although some cases had inevitably inferior vena cava or hepatic vein injury, it was successfully controlled by increasing abdominal pressure, providing pressure by hand to compress, or using a gauze pack, and applying a Ligaclip. During parenchymal resection, we used the

bipolar cauterization to stop small vessel bleeding, while carefully identified the large vessels and ligated with a Ligaclip, or sometimes with a horizontal mattress suture.

After completing a resection, we carefully checked the raw surface. If there was any bile or capillary leakage, we stopped it by horizontal mattress suture or individual figure of eight suture using an absorbable material. Thus, this was the reason why all our cases had no prolonged bile leakage or postoperative bleeding.

Advantages of the hand port include:

- Tactile feedback
- Facilitation of liver mobilization
- Ability to manually compress the liver
- Elimination of the need to make a separate extraction site incision
- Easiness to stop bleeding or control major vascular impingement
- Help to suture the liver parenchyma in some difficult areas

Conversely, disadvantages of the hand port include:

- Lack of domain
- Interference with the laparoscopic trocars and instruments
- Risk of hand port Incisional hernia
- Increase of postoperative pain
- Need of a learning curve to use a hand port precisely

As per our records, we demonstrated a range of 2 to 50 months survival period of patients undergoing laparoscopic hepatectomy which was equivalent to the open technique. For malignant cases, the pathological report also demonstrated an adequate free margin. Additionally, there was no later report of port-site metastases or intra-abdominal dissemination of tumor recurrence throughout our follow-up time.

CONCLUSION

Our result has emphasized that laparoscopic liver resection is indeed worth and safe for both benign and malignant diseases. It offers the uncountable benefits for the patients. However, an important consideration is undeniable that laparoscopic liver resection must be performed by a proficiently trained surgeon.

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REFERENCES

1. Nguyen KT, Gamblin TC, Geller DA. World review of laparoscopic liver resection - 2,804 patients. *Ann Surg* 2009; 250:831-41.
2. Nguyen KT, Geller DA. Laparoscopic liver resection - current update. *Surg Clin North Am* 2010;90:749-60.
3. Buell JF, Cherqui D, Geller DA, et al. The international position on laparoscopic liver surgery: the Louisville Statement, 2008. *Ann Surg* 2009;250(5):825-30.
4. Tsuchiya M, Otsuka Y, Tamura A, et al. Status of endoscopic liver surgery in Japan: a questionnaire survey conducted by the Japanese Endoscopic Liver Surgery Study Group. *J Hepatobiliary Pancreat Surg* 2009;16:405-9.
5. Vigano L, Tayar C, Laurent A, Cherqui D. Laparoscopic liver resection: a systematic review. *J Hepatobiliary Pancreat Surg* 2009;16:410-21.
6. Reddy SK, Tsung A, Geller DA. Laparoscopic liver resection. *World J Surg* 2011;35:1478-86.
7. Sasaki A, Nitta H, Otsuka K, et al. Ten-year experience of totally laparoscopic liver resection in a single institution. *Br J Surg* 2009;96:274-9.
8. Kitisin K, Packiam V, Bartlett DL, Tsung A. A current update on the evolution of robotic liver surgery. *Minerva Chir* 2011; 66:281-93.
9. D'Albuquerque LAC, Herman P. Hepatectomia por videolaparoscopia: Realidade? *Arq Gastroenterol* 2006; 43(3):243-6.
10. Herman P, Coelho FF, Lupinacci RM, et al. Ressecções Hepáticas por videolaparoscopia. *ABCD. Arq Bras Cir Dig* 2009;22:226-32.
11. Kofron AJ, Geller D, Gamblin TC, Abecassis M. Laparoscopic liver surgery: shifting the management of liver tumors. *Hepatology* 2006;44:1694-700.
12. Machado MAC, Makdissi FF, Almeida FAR, et al. Hepatectomia Laparoscopi-cano Tratamentodas Metastases Hepaticas. *Arq Gastroenterol* 2008;45(4):330-2.
13. Machado MA, Makdissi FF, Galvao FH, Machado MC. Intrahepatic Glissonian approach for laparoscopic segmental liver resections. *Am J Surg* 2008;196:e38-42.
14. Ardito F, Tayar C, Laurent A, et al. laparoscopic liver resection for benign disease. *Arch Surg* 2007;142:1188-93; discussion 1193.
15. Robles Campos R, Marin Hernandez C, Lopez Conesa A, et al. Laparoscopic resection of the left segments of the liver: the "ideal technique" in experience centers?. *Cir Esp* 2009; 85:214-21. Spanish.
16. Cho JY, Han HS, Yoon YS, Shin SH. Outcomes of laparoscopic liver resection for lesion located in right side of the liver. *Arch Surg* 2009;144:25-9.
17. Gagner M, Rogula T, Selzer D. Laparoscopic liver resection: benefits and controversies. *Surg Clin North Am* 2008;4:451-62.
18. Lee KF, Cheung YS, Chong CN, et al. Laparoscopic versus open Hepatectomy for liver tumours: a case control study. *Hong Kong Med J* 2007;13:442-8.
19. Carswel KA, Sagias FG, Murgatroyd B, et al. Laparoscopic versus open left lateral segmentectomy. *BMC Surg* 2009;9:14.
20. Nguyen KV, Geller DA. Is laparoscopic liver resection safe and comparable to open liver resection for hepatocellular carcinoma? *Ann Surg Oncol* 2009;16:1765-7.
21. Pilgrim CHC, To H, Usatoff V, Evans PM. Laparoscopic Hepatectomy is a safe procedure for cancer patients. *HPB* 2009;11:247-51.
22. Cugat E, Marco C. Laparoscopic liver surgery. A mature option?. *Cir Esp* 2009;85:193-5. Spanish.
23. Gigot JF, Glineur D, Santiago Azagra J, et al. Hepatobiliary and Pancreatic Section of the Royal Belgian Society of Surgery and the Belgian Group for Endoscopic Surgery. Laparoscopic liver resection for malignant liver tumours: preliminary results of a multicenter European study. *Ann Surg* 2002;236:90-7.
24. Machado MAC, Makdissi FF, Herman P, Surjan RC. Intrahepatic glissonian approach for pure laparoscopic left hemihepatectomy. *J Laparoendosc Adv Surg Tech A* 2010; 20:141-2.
25. Cardinal JS, Reddy SK, Tsung A, Marsh JW, Geller DA. Laparoscopic Major Hepatectomy: Pure laparoscopic approach versus hand-assisted technique. *J Hepatobiliary Pancreat Sci* 2013;20:114-11.

บทคัดย่อ การผ่าตัดก้อนเนื้องอกในตับด้วยวิธีการส่องกล้อง จากประสบการณ์ 5 ปีย้อนหลังของโรงพยาบาลเปาโล พหลโยธิน

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วัตถุประสงค์: เพื่อทำการรวบรวมและติดตามประเมินผลของการผ่าตัดก้อนเนื้องอกในตับด้วยวิธีการส่องกล้องในระยะเวลา 5 ปีย้อนหลัง

วิธีการศึกษา: ทำการรวบรวมข้อมูลผู้ป่วยที่มารับผ่าตัดก้อนเนื้องอกในตับด้วยวิธีการส่องกล้องย้อนหลัง ตั้งแต่เดือนมกราคม 2556 ถึงเดือนสิงหาคม 2560 โดยรวบรวมข้อมูล อายุ, เพศ, โรคประจำตัวของผู้ป่วย, ดัชนีมวลกาย, การวินิจฉัยโรค, ขนาดของเนื้องอก, หัตถการที่ทำการผ่าตัด, ตำแหน่งที่ผ่าตัด, ระยะเวลาในการผ่าตัด, ผลพยาธิวิทยา, ปริมาณเลือดที่เสีย, ปริมาณเลือดที่ให้, ภาวะแทรกซ้อนของการผ่าตัด, ระยะเวลาที่นอนโรงพยาบาล, ปริมาณและความถี่ของยาแก้ปวดที่ให้, ระยะเวลาในการติดตามโรค

ผลการศึกษา: มีผู้ป่วยทั้งหมด 28 ราย อายุ 36 ถึง 94 ปี เพศชาย 13 ราย เพศหญิง 15 ราย ดัชนีมวลกายเฉลี่ย 25.4 Kg/m^2 เป็นการผ่าตัดตับกลีบขวา หรือกลีบซ้ายทั้งกลีบทั้งหมด 8 ราย ที่เหลืออีก 20 ราย เป็นการผ่าตัดตับแบบตัดออกเพียงบางส่วน ระยะเวลาในการผ่าตัดเฉลี่ย 277 นาที ไม่มีรายใดที่ต้องเปลี่ยนเป็นการผ่าตัดแบบเปิดหน้าท้อง เสียเลือดเฉลี่ย 390 ซีซี มี 3 รายที่ต้องให้เลือด ผลพยาธิวิทยาเป็นมะเร็ง 20 ราย ไม่เป็นมะเร็ง 8 ราย ใช้ยาแก้ปวดชนิดฉีดเข้าหลอดเลือดเฉลี่ย 2 ครั้ง/ราย ระยะเวลาอยู่โรงพยาบาลเฉลี่ย 6.6 วัน ไม่มีรายใดเกิดภาวะแทรกซ้อนจากการผ่าตัด หรือเสียชีวิตจากการผ่าตัด ระยะติดตามผู้ป่วยหลังผ่าตัดโดยเฉลี่ย 20.7 เดือน

สรุป: การผ่าตัดก้อนเนื้องอกในตับด้วยวิธีการส่องกล้องในเวลา 5 ปีที่ผ่านมาถือเป็นการผ่าตัดที่สามารถใช้รักษาทั้งก้อนเนื้องอกชนิดที่เป็นมะเร็งและไม่ใช่มะเร็งได้ ผลการผ่าตัดสามารถทำสำเร็จทุกรายได้ด้วยการส่องกล้องและมีความปลอดภัย ไม่มีผู้ป่วยที่มีภาวะแทรกซ้อนหรือเสียชีวิตจากการผ่าตัดเลย