Bệnh viện Trung ương Huế

TWO PORTS LAPAROSCOPIC SUTURE FOR PEPTIC ULCER PERFORATION: EXPERIENCE ON 62 CONSECUTIVE CASES

Pham Nhu Hiep[1]

ABSTRACT

Introduction: *Suture closure of perforation was done by 2 traditional ports with the aligned principle. We can deal all the needed procedure for the perforation: suture closure, patch with the great omentum on perforation site as well as the peritonitis washing and drainage.*

Objective: *to evaluate the feasibility, safety, and the early results of this technique.*

Material and method: *From 6.2008-8.2015 62 peptic ulcer perforations were operated by 2 ports laparoscopy (one 5mm working port for suture).*

Results: *Mean age 45.1 ± 14.6 ys. Mean time between perforation and surgery 9.3 ± 3.7 hours. Mean operation time: 54.3 ± 12.3 minutes. Mean hospital stay: 6.3 ± 1.2 days. There are not post-operation leakages or severe complications.*

Conclusions: *This modified technique was feasible, safe, efficacious and esthetic. It may be a less invasive laparoscopic surgical technique for scar-less surgical treatment of perforated peptic ulcers. Experience of the surgeon and selection of patients are very important.*

Key words: *two ports laparoscopic suture, peptic ulcer perforation*

I. INTRODUCTION

Laparoscopy suture perforated peptic ulcer usually uses 3 or 4 normal trocars and has been applied widely in many hospitals. Nowaday, laparoscopy for perforation peptic ulcer with new directions fits higher requirements for aesthetics, safety and feasible. By the way, mini-laparoscopy, single port laparoscopy, NOTES... were developed in the world for this disease [8], [14], [19].

At Hue Central Hospital, laparoscopic suture closure peptic ulcer has been done since 2000 and achieved good results. In June 2008, the first case was performed successfully by laparoscopic closure peptic ulcer with 2 normal ports, until now, this technique has been performed routine with good results.

Objective: Identify technical characteristics and study result laparoscopic suture of peptic ulcer perforation with 2 ports.

II. MATERIALS AND METHOD

2.1. Materials: Between June 2008 to August 2015, 62 peptic ulcer perforations were sutured by 2 ports laparoscopy at Hue Central Hospital, aged 19-76 (45.1 ± 14.6).

Patient criteria: Perforation time from hospitalization <24 hours, ASA ≤II (ASA I: 75.8%, ASA II: 24.2%), (Boey 0: 91.9, Boey I: 8.1).

Exclusion criteria:

Pyloric stenosis, gastrointestinal bleeding, gastric cancer, severe infections.

1. Hue Central Hospital

Corresponding author: Pham Nhu Hiep
Email: nhuhieppham@yahoo.com.vn
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Serious medical diseases attached.

2.2. Research Method: A prospective study. Processing data in MS Excel 2007 and Medcalc 11.

Surgical technique:

Insert first trocar 10mm under umbilical, pump CO_2 with 12mm Hg. Identify perforated peptic ulcer. The second trocar (5mm) was used on the left or right upper quadrant.

Identify characteristics and size of perforation peptic ulcer and lavage abdominal cavity with NaCl 9‰.

Suture perforated peptic ulcer by X or O stitch technique, with the aligned principle and whether or not omentum patch.

Where the perforated peptic ulcer is obscured by gallbladder or left liver, round ligament was hung in front by one stitch trans abdominal wall for good extraction.

Patients were examined after 2 weeks or 1 month with gastroscopy control and medical treatment.

III. RESULTS

Clinical characteristics

Table 1: Perforation time to operation (average: 9.3 ± 3.7 hours) (onset of symtoms)

Time	N		%
<6 hours	11		17.8
>6-12 hours	38		61.3
>12-24 hours	13		20.9
Total	62		100

Patients intra-operative characteristics

Table 2: Perforation characteristics

	Characteristics	N	%
Peritonitis	Localization	39	62.9
	General	23	37.1
Ulcer	Soft	40	64.5
	Sclerosis	22	35.5
	Stomachs	2	3,2
Ulcer position	Prepyloric	18	29
	Doudenal	42	67.8

Average perforation diameter: 3.8 ± 1.6 mm (2 - 9mm).

Table 3: Intra-operative technical characteristics

Characteristics	N	%
Left quadrant trocar 5mm position	54	88,7
Right quadrant	8	11,3
X stitch	56	90.3
Suture technique		
O stitch	6	9,7
Omental patch	36	58,1

Suture time: 15.5 ± 4.4 mins.

Volume lavage liquid 920 ± 592 ml. Abdomen drainage 96.7%. Operation time 54.3 ± 12.3 mins.

Table 4: Change operation technique

Characteristics	N	%
Hang round ligament in front of abdominal wall	3	4.8
Addition trocar	2	3.2
Conversion open	1	1.6

Postoperative results

Small bowel movement was 1.6. ± 0.6 days, postoperative reactivity 1.9 ± 0.6, removal abdominal drainage 3.2 ± 0.6, removal nasogastric drainage 3.6 ± 0.4, diet again on day 4

Hospital stays 6.3 ±1.2 days. No serious complication, only 1 case with infection trocar site (1.6%).

Discharged results after 2-3 weeks: were performed 49/62 patients.

Abdomen ultrasound: 100% without residual abscess, gastroscopy without peptic ulcer: 86.2%.

IV. DISCUSSION

Clinical characteristics

Carlos N. showed complication rates 24 hours before and after the surgery 24 hours group was 20.9%, 59.7%; while the mortality rate was 1%, 5.61% [12]. Therefore, the problem of choosing

patients for laparoscopic suture of peptic ulcer perforation with 2 normal trocars was very important, we indicated patients to hospitalization before 24 hours. Average time was 9.3 ± 3.7 hours. According to the research of Raimundas L., this duration was 8.3 hours. Other researches were earlier, with Kenneth T., Mustaria A., R. Bergamaschi, Jean p., Ho Huu Thien was 6.6, 6.4, 6, 4, 5.2 hours respectively [1], [3], [4], [5], [11], [20].

Patient characteristics occupied 75.8% ASA I. With technical studies selected patients was very important to ensure the safety of the surgery, we indicated the cases ASA ≤II.

Preoperative Boey score in our study had 57 cases (91.9%) 0 score, 5 cases (8.1%) was 1 score. Boey score was very important for ulcer perforation laparoscopic suture, showing the feasibility and safety of this procedure [9].

Perforated intra-operative characteristics

In our study, primary perforated positions accounted for 67.8% in duodenal, followed by prepyloric, small curvature had only 2 cases. Soft ulcer perforation 64.5% had more sclerosis ulcer perforation 35.5%.

Average perforation size was 3.8 ± 0.6mm (2- 9mm). With 2 ports, only 1 working port, so perforation position is very significant in our study, when the perforations are obscured by gallbladder or liver, it is difficult to suture closure.

Technical characteristics

With 1 working port in our research, suture techniques were done by inserting the needle into the abdomen cavity and keep the tail of stitch outside abdomen cavity by the 5mm trocar, sutured perforation by O or X stitch technique with or without covering omentum patch, just follow the aligned principle.

The O stitch technique suture in our research was performed with the perforation size of 2 mm, in the study of T w Siu, Kyo Y Song just did a stitch, together with or without covering omentum patch [15], [17].

The X stitch technique was performed when perforation was not too large, Research conducted by Ho Huu Thien, the X stitch was 91% similarity with us [2]; in the study of Hoang Thanh Binh was totally performed X technique and did not cover omentum patch. Marieotta J. had general view in 29 studies, there was 66% with omentum patch, 10% simple suture, the remaining 24% was then stitched together with or without lead-up omentum patch [2], [6].

About average suture time was 15.5 ± 4.4 minutes, in a study by Jean P. (2001), the average operation time was 25 minutes, according to research by Lee used Junhuyn single port laparoscopic suture time average of 20.7 minutes compared with our study was less.

With 2 ports, only one working port used to lavage, no other trocar support; so the patient position was changed when we performed abdomen cavity lavage.

In various studies, the lavage liquid volume also varied, according to Joerg K. was 5- 10 liters, Jean p. was 2 to 4 liters, Raimundas used 3-6 liters [4], [10], [11]. Our research results, the average volume used was: 920 ± 592ml. Our opinion does not use too much lavage liquid as other authors; using so much lavage liquid may increase the risk of spreading bacteria into the entire abdomen cavity, especially with localized peritonitis, the ability of lavage liquid suction was very difficult, besides it also increased the operation time. Together with similar results with us, Ho Huu Thien 1200 ± 520ml, Marieotta J is 1000 ml.

Abdomen cavity drainage also varied the view of the surgeon. Marieotta summarized 29 studies of laparoscopic suture peptic ulcer, the rate of peritoneal drainage is 79% and without inserting drainage is 21% [6].

In our study, only 2 cases did not insert drainage, the rest were inserted drainage, mostly placed drainage under the liver. The abdomen drainage tube inserted was nasogastric drain 14 F, at the 5mm trocar site and observed the control on-screen camera.

Technical change

6 cases of surgical techniques changed: 3 cases hanging round ligament in front of abdominal wall,

2 cases addition 1 trocar, 1 case of conversion to open surgery. In 3 cases hanging round ligament, the perforation position was obscured by the liver or gallbladder. Therefore, we used 1.0 Vicryl stitch hanging round ligament to show perforation and performed normally. One conversion case changed to open surgery due to lost needle into abdominal cavity when needle was removing outside.

Our average operation time was 54.3 ± 12.3 minutes. The operation time depended on peritonitis condition or the abdominal pain until surgery; especially the level of the surgeon.

Table 4.1. Operation time of other studies

Authors	Year	N	Number of trocars	Size (mm)	Mins
Hoàng Th B.	2008	52	3	10,10,5	70
Hồ Hữu Thiện	2009	111	3	10,5,5	71,7
Richky H.	2008	19	4	10,10,5,5	61
Mustaía	2007	35	4	10,10,5,5	42,1
Kirshtein	2005	68	3	10,10,5	59
T. Siu	2001	63	4	10,10,5,5	42
Joerg K.	2004	20	4	10,10,5,5	50
Raimundas	2005	60	4	10,10,5,5	66
Karinian	2009	27	3	10,5,5	55,7
KyoY.	2008	35	3	10,5,5	64,2
Jean p.	2001	30	4	10,10,10,5	92
Beena B.	2009	31	4	10,10,5,5	105
Junhuyn Lee	2011	13	1	20	90,2
Our study	2015	62	2	10,5	54,3

V. CONCLUSION

Two ports laparoscopic surgery can be indicated for the stomach perforations. in case of perforations were obscured by other organ or difficulties in operation, we can hang round ligament or add trocar to continue the operation.

With 2 port laparoscopy, it can be performed to suture and lavage. Apart from suture and knot through aligned principle, there is no difference of results from other conventional laparoscopy.

Suture perforation peptic ulcer with 2 ports laparoscopy is a safe, feasibility, effective and more aesthetic technique.

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