Laparoscopic Surgery for Hinchey Classification III & IV Colonic Diverticulitis

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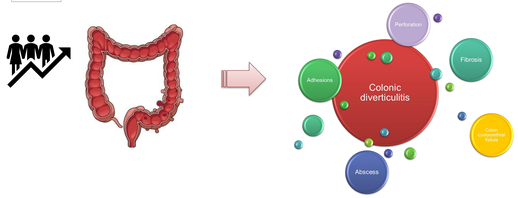
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INTRODUCTION

- In recent years, the prevalence rate of colonic diverticulum has been increasing in Japan [1,2]
- Treatment opportunities for colonic diverticulitis are also increasing

colonic diverticulitis

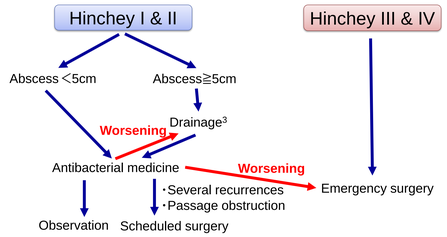
Various clinical symptoms and severity



➢ Determining appropriate treatment for colonic diverticulitis can be challenging

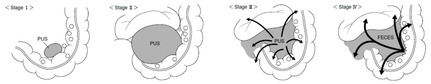
TREATMENT STRATEGIES FOR COLONIC DIVERTICULITIS

Juntendo University Urayasu Hospital



➢ **Some treatment strategies can be developed with reference to the Hinchey classification**

Hinchey Classification[4]



Stage Ⅰ : Pericolic abscess or phlegmon
Stage Ⅱ : Pelvic, intra-abdominal, or retroperitoneal abscess
Stage Ⅲ : Generalized purulent peritonitis
Stage Ⅳ : Generalized fecal peritonitis

SURGICAL TREATMENT FOR COLONIC DIVERTICULITIS

■ In the past , laparotomy was often selected for surgical cases of colonic diverticulitis. However, in recent years, there have been increasing reports of laparoscopic surgery [5,6]

Hinchey I & II

- Laparoscopic Surgery ＞ Open Surgery : Efficacy of single-stage resection and anastomosis [7]
  Reduced complication rate and postoperative pain
  Shorter hospital stay and improved QOL (Quality of Life)[8]

Hinchey III & IV

- Reports of the effectiveness of laparoscopic drainage are seen [9]
- Single-stage resection and anastomosis with laparoscopic surgery is controversial

Emergency Surgery for Colonic Diverticulitis in Our Department

Hinchey I & II ⇨ Laparoscopic surgery is first choice

Hinchey III & IV ⇨ The patient is often in poor general condition (generalized peritonitis, septic shock), and we often hesitate to choose laparoscopic surgery due to the intra-abdominal situation.

Key points of laparoscopic surgery for colonic diverticulitis

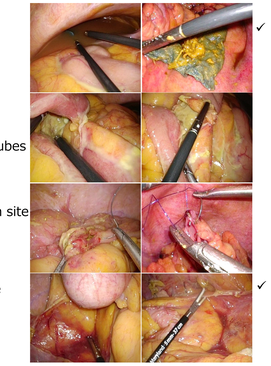
Hinchey III & IV

✓ Drainage of ascites (pus and fecal juices)
Effective use of gauze
- As a filter
- As a wrapping cloth (like a *furoshiki*)

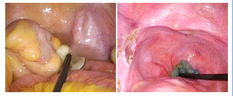
✓ Securing the surgical field of view
Using the handles of forceps and suction tubes
Avoid grasping the bowel wall

✓ Identification and control of the perforation site
Continuous suture closure as possible

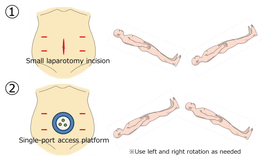
✓ Dissection and mobilization of the intestine
Dissecting along the embryological planes



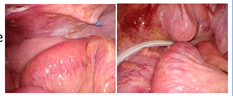
✓ Peritoneal lavage
Washing out deep spaces and between the mesentery
Use of positional changes and a small laparotomy incision



Use of positional changes and a small laparotomy incision



✓ Drain placement
Changing the direction of the port in the preperitoneal space
Securely place the drain to prevent dislodgement



AIM

- Clinical factors and treatment outcomes of patients with Hinchey III & IV colonic diverticulitis who underwent surgery in our department were reviewed.

METHOD

- Between January 1994 to December 2024
- 30 cases of Hinchey III & IV colonic diverticulitis that underwent surgery
- 19 patients underwent laparoscopic surgery (Lap group)
  VS
  11 patients underwent open surgery (Open group)
- Clinical factors, treatment results, and outcomes were retrospectively evaluated

◆ Hinchey classification was also applied to a case of right-sided colon

Statistical analyses
All statistical analyses were performed using JMP® 16 (SAS Institute Inc., Cary, NC, USA).
Statistical comparisons were performed using a Student's t-test. A Kaplan-Meier curve was calculated, and the survival difference was examined by using a log-rank test. P-values less than 0.05 were considered to be statistically significant.

RESULTS

Characteristics of the Patients

			(n＝30)
Age	(years)		66 (22-84)
Gender (Male/Female)	(n)		18 / 12
Body mass index (kg/cm²)			21.8 (15.1-35.3)
Location	(n)	C / A / T / D / S / RS	1 / 1 / 2 / 2 / 23 / 1
Hinchey Classification	(n)	Stage III / IV	16 / 14
Approach	(n)	Lap / Open	19 / 11
Comorbidity	(n) (%)		16 (53.3)
		Steroid therapy (n)(%)	11 (36.7)
		Diabetes (n)(%)	4 (13.3)
		Antithrombotic therapy (n)(%)	6 (20.0)
		Chronic renal failure (hemodialysis)	3 (10.0)

		Lap(n＝19)	Open(n＝11)	p value
Age	(years)	66 (22-82)	77 (49-84)	0.12
Gender (Male/Female)	(n)	19 / 9	13 / 9	0.52
Body mass index (kg/cm²)		22.9±1.1	21.1±1.3	0.31
Hinchey III / IV	(n)	14 / 5	2 / 9	0.0009
Location Right / Left	(n)	3 / 16	1 / 10	0.59
Emergency Surg	(n) (%)	19 (100)	11 (100)	-
Comorbidity	(n) (%)	9 (47.4)	5 (45.5)	0.91
WBC (μl)		10400 (2400-31400)	8000 (3300-14600)	0.08
CRP (mg/l)		13.9 (0.3-46.6)	14.9 (1.6-34.5)	0.68
SOFA		5.0±0.9	5.4±1.4	0.81
APACHE III		18.4±1.6	17.1±2.1	0.61
DIC		1.7±0.4	2.8±0.5	0.07

Outcomes

		Lap(n＝19)	Open(n＝11)	p value
Operation Time	(min)	165 (92-553)	150 (76-231)	0.35
Blood Loss	(mℓ)	50 (5-670)	32.5 (10-290)	0.75
Single-stage resection and anastomosis	(n) (%)	4 (21.1)	0 (0)	0.04
Permanent Stoma	(n) (%)	13 (68.4)	11 (100)	0.01
Peritoneal Lavage Volume	(mℓ)	4000 (500-13000)	7500 (1000-20000)	0.13
Number of Peritoneal Drains	(n)	1.5±0.2	2.2±0.3	0.07
Postoperative complications (CD≧3)*	(n)(%)	2 (10.5) Ileus: 1 Death within 30 days: 1	**6 (54.6)** Surgical Site Infection: 2 Intra-abdominal abscess: 2 Aspiration pneumonia: 1 Liver failure: 1 Cerebral infarction: 1 Death within 30 days: 2	0.009
Postoperative Stay	(days)	20.5±2.8	**41.8±6.8**	0.002

*the Clavien–Dindo Classification　　continuous variable：mean±SD, ordered variable：median (interquartile range)

DISCUSSION & CONCLUSIONS

✓ **Hinchey Ⅲ･･･Lap＞Open、Hinchey Ⅳ･･･Lap＜Open**

Lap ＝ Open　Operation time, amount of bleeding, amount of peritoneal lavage drainage
In Hinchey Ⅲ / Ⅳ cases, laparoscopic surgery and open surgery are equivalent.

Lap ＞ Open　Short postoperative hospital stay
Impact of primary resection anastomosis cases

Lap ＜ Open　High postoperative complication rates
Influence of Hinchey Ⅳ cases

⇨ **Laparoscopic surgery is acceptable for both Hinchey III and IV**

ACKNOWLEDGEMENTS

N/A.

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For more information, please refer to the following guidelines.

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