

# THE EFFECTS OF LAPAROSCOPIC VERSUS OPEN RESECTION FOR STAGE II OR III RECTAL CANCER ON SHORT- AND LONG-TERM OUTCOMES

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## Introduction

Laparoscopic surgery is considered as an acceptable treatment for rectal cancer based on the outcomes of four multi-center randomized trials.

However, two trials reported that the circumferential resection margin (CRM) could be threatened in laparoscopic surgery.

### ◀Purpose▶

The purpose of the present study was to clarify the short- and long-term outcomes of laparoscopic versus open surgery for patients with stage II and III rectal cancer in our institution.

## Patients and Methods

### ◀Patients▶

- From April 2008 to March 2018
- Retrospective analysis
- Patients who underwent radical surgery for stage II and III primary rectal cancer were included.
- The patients with synchronous metastases or receiving preoperative therapy were excluded.

### ◀Methods▶

- Patient characteristics, perioperative data, and pathological data in the laparoscopic surgery group (LAP; n=65) were compared with those in the open surgery group (OPEN; n=51) using the chi-square test or the Mann-Whitney U test.
- Kaplan-Meier curves were used to estimate local recurrence and overall recurrence rates. Differences in survival between these groups were evaluated using the log-rank test.

## Results

### ◀Patients characteristics and surgical outcomes▶

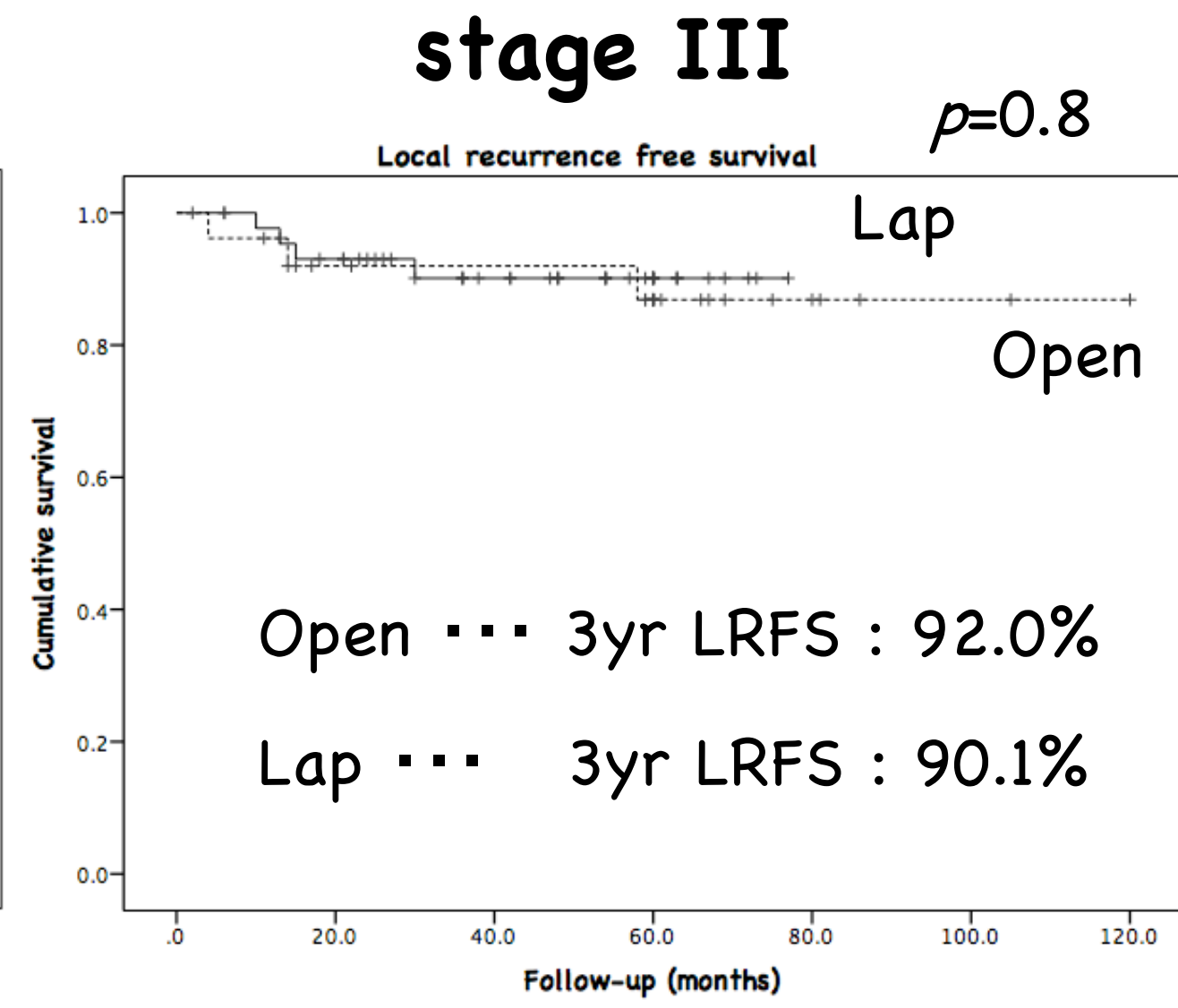
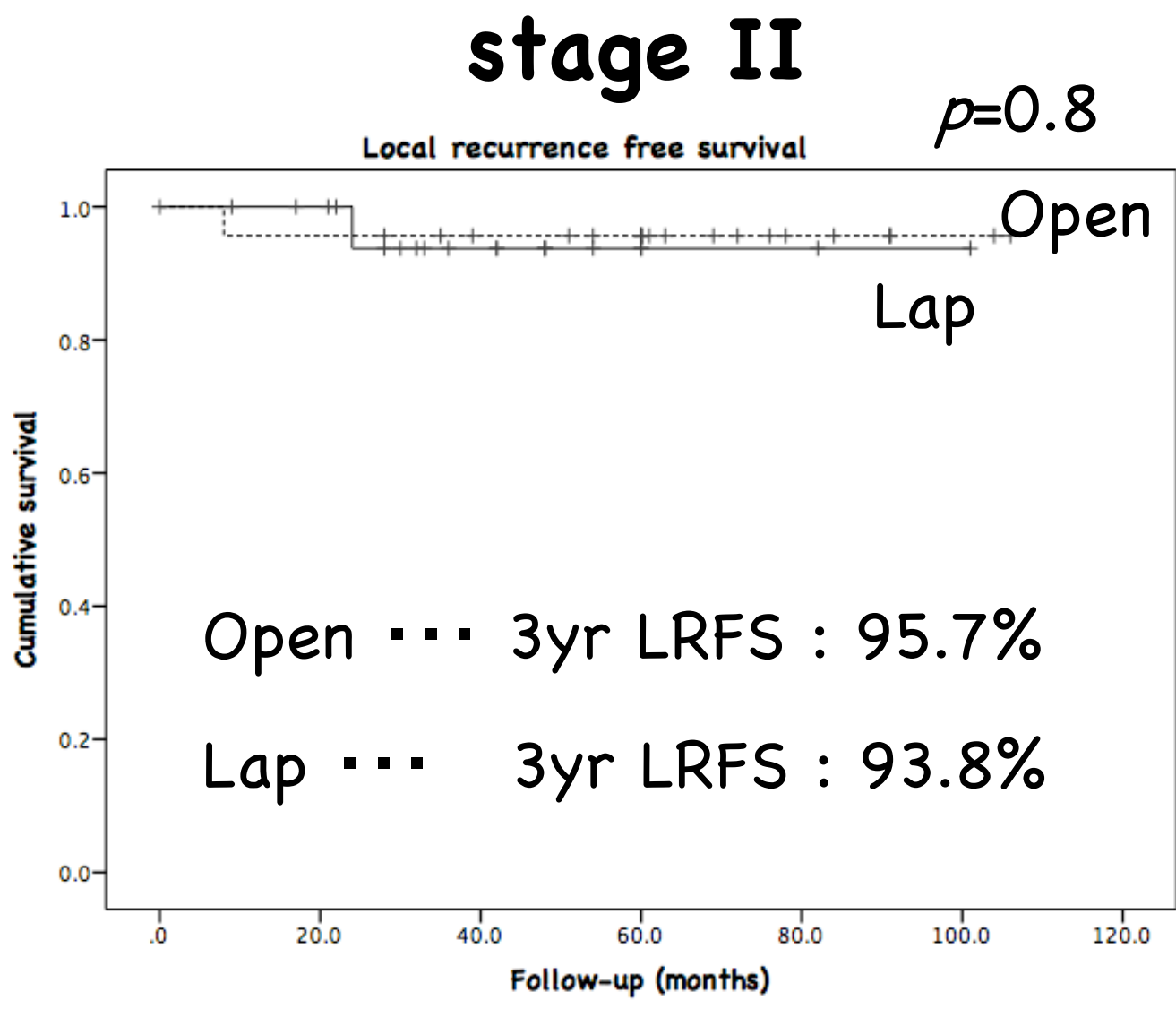
| Variables                                 |          | LAP n=65            | OPEN n=51           | P value |
|-------------------------------------------|----------|---------------------|---------------------|---------|
| Age, y, median (range)                    |          | 68 (35–88)          | 69 (34–86)          | 0.3     |
| Gender, M/F, n (%)                        |          | 40 (62%) / 25 (38%) | 36 (71%) / 15 (29%) | 0.3     |
| Location, n (%)                           | Upper    | 28 (43%)            | 12 (23%)            | 0.04    |
|                                           | Middle   | 11 (17%)            | 9 (18%)             |         |
|                                           | Low      | 26 (40%)            | 30 (59%)            |         |
| Operative Procedures, n (%)               | AR       | 55 (84%)            | 31 (61%)            | <0.001  |
|                                           | ISR      | 5 (8%)              | 2 (4%)              |         |
|                                           | APR      | 1 (2%)              | 13 (25%)            |         |
|                                           | Hartmann | 4 (6%)              | 5 (10%)             |         |
| Combined resection of other organs, n (%) |          | 3 (5%)              | 12 (23%)            | 0.003   |
| Lateral lymph node dissection, n (%)      |          | 14 (21%)            | 24 (47%)            | 0.004   |
| Conversion, n (%)                         |          | 1 (2%)              | –                   |         |
| Operative time, min, median (range)       |          | 339 (199–702)       | 395 (173–854)       | 0.07    |
| Blood loss, mL, median (range)            |          | 20 (0–858)          | 688 (26–28483)      | <0.001  |

### ◀Postoperative and pathological outcomes▶

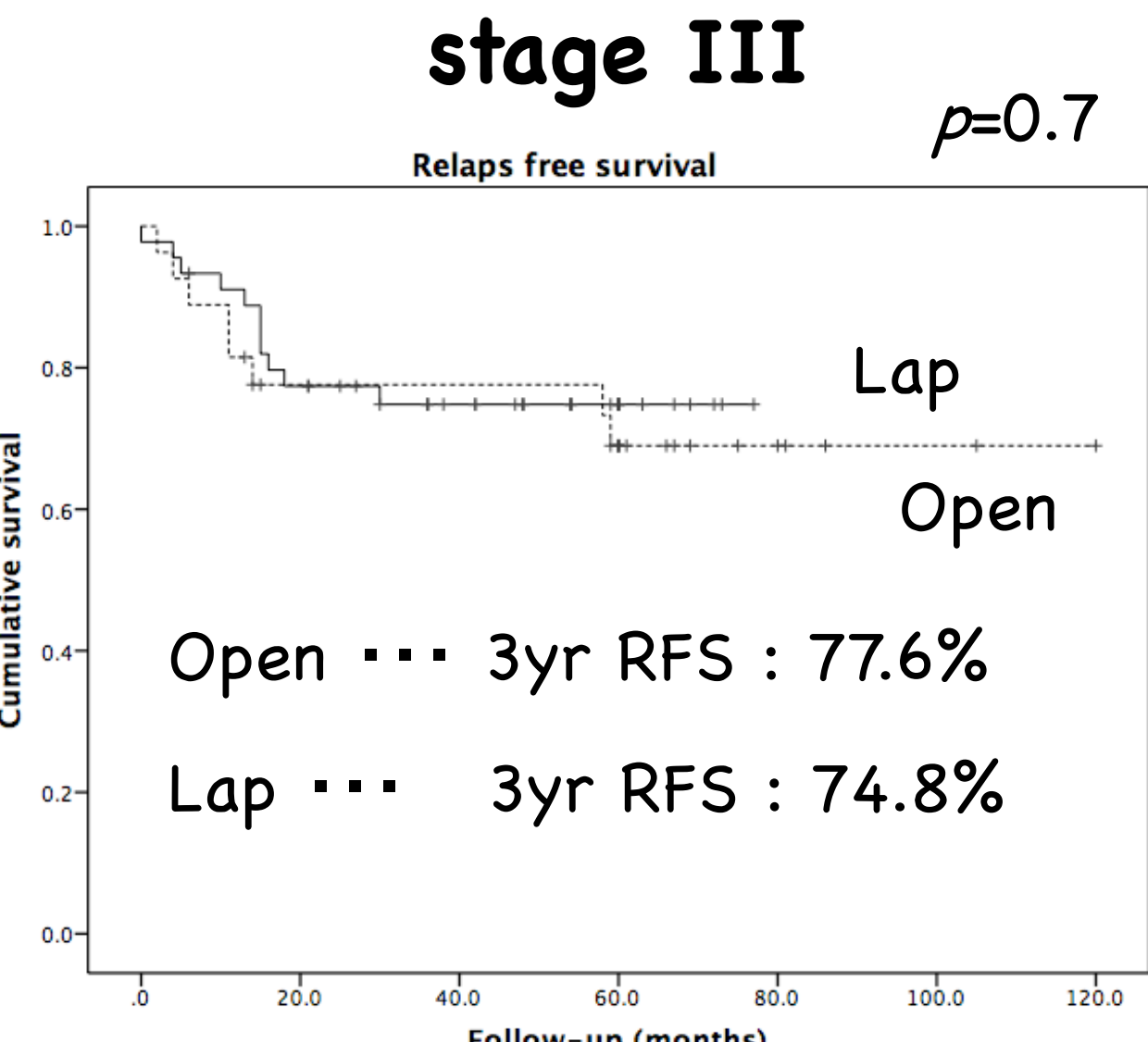
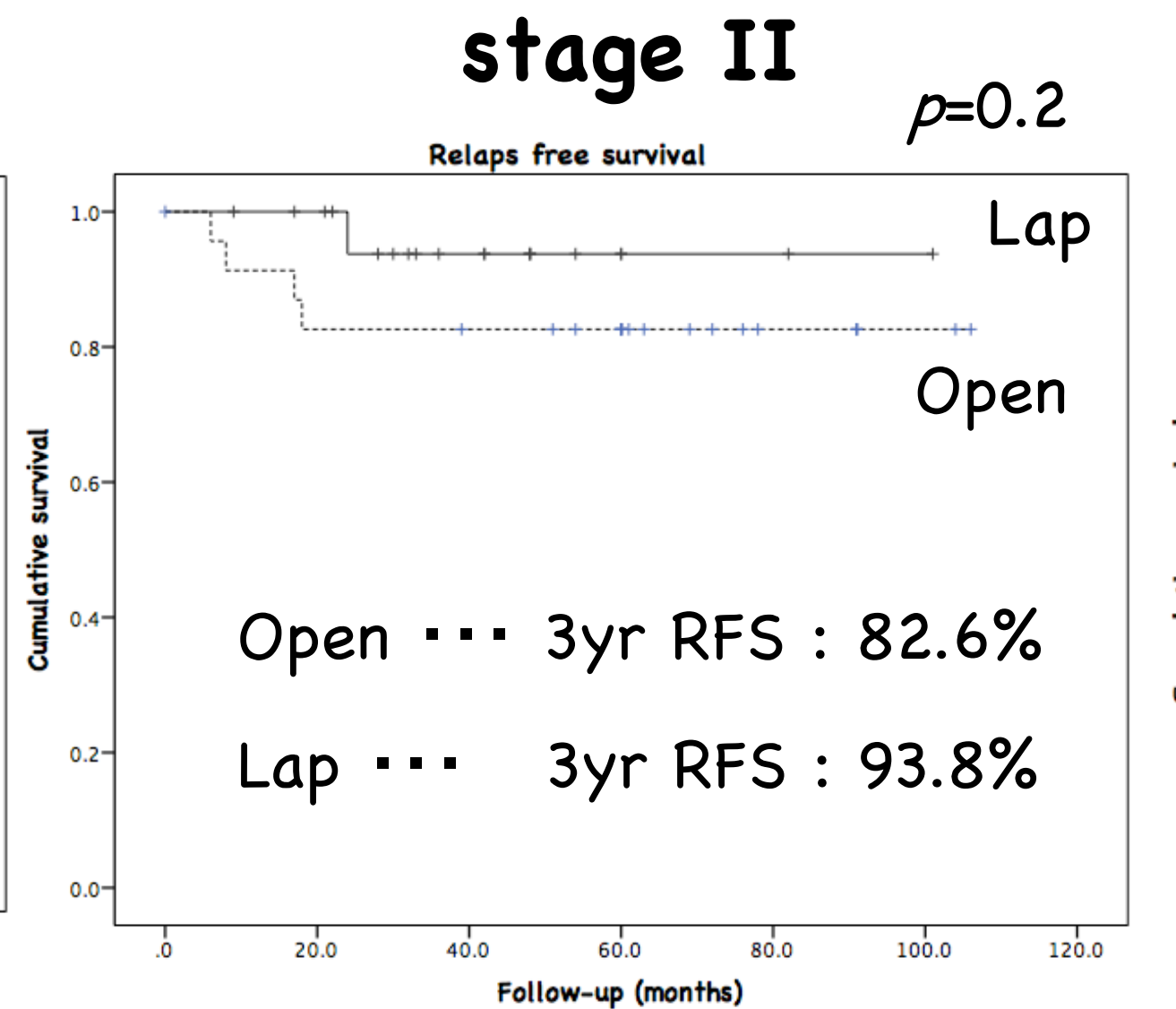
| Variables                                        |         | LAP n=65    | OPEN n=51   | P value |
|--------------------------------------------------|---------|-------------|-------------|---------|
| Anastomotic leakage, n (%)                       | grade2  | 0           | 0           | 0.2     |
|                                                  | grade3a | 2 (3%)      | 1 (2%)      |         |
|                                                  | grade3b | 5 (8%)      | 2 (4%)      |         |
| Overall complication, n (%)                      | grade2  | 13 (20%)    | 12 (23%)    | 0.7     |
|                                                  | grade3a | 4 (6%)      | 6 (12%)     |         |
|                                                  | grade3b | 7 (11%)     | 4 (8%)      |         |
| Postoperative hospital stay, day, median (range) |         | 12 (7–128)  | 22 (5–111)  | 0.002   |
| Tumor size, mm, median (range)                   |         | 40 (10–105) | 50 (25–140) | 0.01    |
| T stage, n (%)                                   | T1      | 12 (18%)    | 0           | 0.002   |
|                                                  | T2      | 8 (12%)     | 3 (6%)      |         |
|                                                  | T3      | 40 (62%)    | 37 (72%)    |         |
|                                                  | T4      | 5 (8%)      | 11 (22%)    |         |
| Stage, n (%)                                     | II      | 20 (31%)    | 24 (47%)    | 0.07    |
|                                                  | III     | 45 (69%)    | 27 (53%)    |         |
| CRM involvement (< 1mm), n (%)                   |         | 1 (2%)      | 7 (14%)     | 0.05    |
| Follow-up, months, median (range)                |         | 47 (6–101)  | 60 (2–120)  |         |
| Adjuvant chemotherapy, n (%)                     |         | 41 (63%)    | 34 (67%)    | 0.6     |

### ◀Kaplan-Meier curves of local recurrence-free survival and relapse-free survival▶

#### ◀Local recurrence▶



#### ◀Overall recurrence▶



## Conclusions

The positive CRM was significantly lower in the Laparoscopic surgery group, and survival curves did not differ significantly between laparoscopic and open surgery groups. Although some patient characteristics differ between these groups, laparoscopic surgery is considered to be acceptable and preferable treatment for stage II and III rectal cancer.