

- 1) An error in death or birth data (n = 28)
- 2) More than one year elapsed since cancer diagnosis and surgery (n = 2,477)
- 3) Other surgeries within 30 days prior to radical resection (n = 502)
- 4) Radical resection before 2005 (n = 9,491)
- 5) Age at the time of surgery less than 20 years old or more than 90 years old (n = 186)
- 6) Radiation therapy before six months prior to surgery (n = 247)
- 7) Radiation therapy after six months of surgery (n = 4,044)
- 8) Stoma rebuilt at intervals of more than one year (n = 573)
- 9) More than 30 days had passed since the first operation until stoma construction (n = 1,417)
- 10) Radical resection performed twice or more (n = 201)
- 11) Those who were diagnosed with depression within 1 year before surgery (n = 1,848)

Supplementary Fig. 1. Exclusion criteria and the number of cases excluded.