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<td>Author(s)</td>
<td>Okumura, Koichi</td>
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<td>Citation</td>
<td>Kyoto University (京都大学)</td>
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<td>Issue Date</td>
<td>2018-03-26</td>
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<tr>
<td>URL</td>
<td><a href="https://doi.org/10.14989/doctor.k21005">https://doi.org/10.14989/doctor.k21005</a></td>
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Impact of Drain Insertion After Perforated Peptic Ulcer Repair in a Japanese Nationwide Database Analysis

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Background: Many perforated peptic ulcers (PPUs) require surgical repair due to diffuse peritonitis. However, few studies have examined the clinical effects of postoperative drainage after PPU repair.
This study aimed to investigate the drain insertion rates in patients who underwent PPU repair in Japan, and to clarify the impact of drain insertion on the postoperative clinical course.

Methods: A retrospective nationwide cohort study was performed using administrative claims data of patients who had undergone PPU repair between 2010 and 2016. These patients were divided into two groups based on whether or not they had received a postoperative abdominal drain. Using propensity score matching, we compared the incidences of postoperative interventions for abdominal complications between both groups.

Results: A total of 4869 patients from 324 hospitals were analyzed. At the hospital level, drains were placed in all PPU repair patients in 229 (70.7%) hospitals. At the patient level, 4401 patients (90.4%)
had drains inserted. The drain group was associated with a higher emergency admission rate, poorer preoperative shock status, longer anesthetic time, and a higher amount of intra-abdominal irrigation. In addition, the hospitals with higher hospital case volume and higher number of surgeons tended to avoid drain insertion. In the propensity score–matched patients, the drain group had a significantly lower incidence of postoperative interventions than the no-drain group (1.9 vs. 5.6%; risk ratio = 0.35; 95% confidence interval = 0.16-0.73; \( P = 0.003 \)). There were no significant differences between the two groups in postoperative 30-day in-hospital mortality, postoperative fasting duration, length of postoperative hospital stay, and hospitalization expenses per diem. The number needed to treat was calculated to be 27.5.

**Conclusion:** Postoperative drainage was performed in the majority of patients who underwent PPU repair in Japan. Drainage following PPU repair may facilitate patient recovery by reducing the need for postoperative interventions.

**Authors’ contributions**

KO contributed to the study conception and design, data collection, analysis, interpretation of the results, drafting of the manuscript, and critical review for important intellectual content. KH contributed to the study design, analysis, interpretation of the results, and critical review for important intellectual content. SK contributed to the study design, data collection, analysis, interpretation of the results, and critical review for important intellectual content. TN contributed to the study design, analysis, interpretation of the results, and critical review for important intellectual content. HH contributed to the study design, interpretation of the results, and critical review for important intellectual content. YS contributed to the study design, interpretation of the results, and critical review for important intellectual content. YI contributed to the study design, data acquisition, interpretation of the results, and critical review for important intellectual content. All authors read and approved the final version of the manuscript.
Acknowledgements

QIP data operations were supported by a Health Sciences Research Grant from the Ministry of Health, Labour and Welfare of Japan (Grant no. H27-iryo-ippan-001) and a Grant-in-Aid for Scientific Research from the Japan Society for the Promotion of Science (No. 16H02634). The funding sources had no role in the study design, data collection, analysis, interpretation of the data, or the decision to submit the manuscript for publication.

Disclosures: The authors declare no conflicts of interest.

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