

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Risk factors affecting in-hospital mortality after hip fracture: retrospective analysis using the Japanese Diagnosis Procedure Combination database
<b>AUTHORS</b>	Naoko Shoda, Hideo Yasunaga, Hiromasa Horiguchi, Shinya Matsuda, Kazuhiko Ohe, Yuho Kadono and Sakae Tanaka

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Jorma Panula MD PhD Chief of Surgery Pori City Hospital Finland  I wish to declare that I do not have any competing interest.
<b>REVIEW RETURNED</b>	15/02/2012

<b>THE STUDY</b>	<p>The circumstances related to in-hospital mortality after hip fracture are well described in this report. However, the value or novelty of main conclusion (surgical treatment was associated with lower rates of in-hospital mortality) remains obscure for me.</p> <p>Conservative treatment is at present rarely used because of poor outcome and prolonged hospital stay. According to Cochrane review (Handoll, Parker July 2008), conservative treatment will be acceptable where modern surgical facilities are unavailable.</p> <p>The authors state -correctly- that conservative treatment is often chosen for patients with severe comorbidities. The proportion of patients (17%) with conservative treatment seems to be suprisingly high. What might be the reasons for this? In addition, the authors state (Discussion, 3rd Paragraph) that these rates of 83% vs. 17% were similar to those in previous reports, however, they do not give any reference for this statement.</p> <p>The authors do not clearly report the proportion of patients with delays to surgery of 5 days or longer. The finding of these patients' increased mortality is interesting and important because controversy about this issue exists. This delay is rather long - what might be the reasons for it?</p>
<b>RESULTS &amp; CONCLUSIONS</b>	<p>I refer to my comments above.</p> <p>The title and the main aims and conclusion(s) might be reconsidered.</p> <p>(Subject headings and Keywords are not relevant - typographic errors??)</p>
<b>GENERAL COMMENTS</b>	<p>This is an interesting epidemiologic analysis of an important issue. The report has a nice compact structure and the number of patients (80,800) is outstanding.</p>

<b>REVIEWER</b>	Karl-Göran Thorngren, M.D.,Ph.D.,professor Department of Orthopedics Lund University Hospital Sweden
<b>REVIEW RETURNED</b>	29/02/2012

<b>GENERAL COMMENTS</b>	Interesting study with a lage material worth publishing even if waiting times to operation and hospitalisation times are higher than in many European Countries. This gives higher mortality. Non-operative treatment is a seldom used option in Nothern Europe.
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<b>REVIEWER</b>	Yukiharu Hasegawa, MD, PhD Nagoya UNiversity Graduate School of Medicine  I have no competing interest.
<b>REVIEW RETURNED</b>	05/03/2012

<b>GENERAL COMMENTS</b>	The conclusion is not correct. This article will mislead surgical treatment will improve the servival rate. Many patients who do not operate will be a poor medical condition. This is an essential problem of the databse of the DPC system. ASA grage 3-4 will be not a good candidate for surgical tretament. The author should be descrieb about the preoperative conditditions.
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## VERSION 1 – AUTHOR RESPONSE

### Response to the reviewers

We thank the reviewers for taking the time to evaluate the paper and indicate ways to improve it. We have addressed all of their concerns and have listed our responses in order below and have made changes to the original manuscript, as requested. All the changes made are highlighted in yellow in the supplementary file.

#### 1) Response to the comments of Dr. Jorma Panula

Conservative treatment is at present rarely used because of poor outcome and prolonged hospital stay. According to Cochrane review (Handoll, Parker July 2008), conservative treatment will be acceptable where modern surgical facilities are unavailable.

The authors state -correctly- that conservative treatment is often chosen for patients with severe comorbidities. The proportion of patients (17%) with conservative treatment seems to be suprisingly high. What might be the reasons for this? In addition, the authors state (Discussion, 3rd Paragraph) that these rates of 83% vs. 17% were similar to those in previous reports, however, they do not give any reference for this statement.

⇒Thank you for your comment. Sakamoto, K. et al. reported that surgical treatment was chosen for 85.6% of the femoral neck fractures and 88.2% of the trochanteric fractures in the Japanese Orthopaedic Association's 3-year project observing hip fractures at fixed-point hospitals (J Orthop Sci 11(2): 127-134), which was similar to our results, and included as reference #21. However, we agree with you that the conservative treatment is rarely chosen for hip fracture patients recently, and we were also surprised at the high rate (17%) of the patients treated conservatively in the present study. The preference of the conservative treatment may be due to the insurance system in Japan, which

allows patients a longer hospital stay than in the US or other Western countries.

The authors do not clearly report the proportion of patients with delays to surgery of 5 days or longer. The finding of these patients' increased mortality is interesting and important because controversy about this issue exists. This delay is rather long - what might be the reasons for it?

⇒The proportion of patients with delays to surgery of 5 days or longer was 53.6%. As you pointed out, it is of particular interest whether the delay of surgery in fact affects the mortality of hip fracture patients. However, the reason for the delay cannot be specified in the DPC database.

The title and the main aims and conclusion(s) might be reconsidered.

⇒According to you comment, we changed the title to “Risk factors affecting in-hospital mortality after hip fracture: retrospective analysis using the Japanese Diagnosis Procedure Combination database”.

The conclusion was changed to “male gender, advancing age, high number of comorbidities and surgical delay were associated with higher rates of in-hospital mortality in patients with hip fractures.”

(Subject headings and Keywords are not relevant - typographic errors??)

⇒The word “Mortality” in the Keywords was changed to “Mortality”.

This is an interesting epidemiologic analysis of an important issue. The report has a nice compact structure and the number of patients (80,800) is outstanding.

⇒Thank you for your comments.

## 2) Response to the comments of Dr. Karl-Göran Thorngren

Interesting study with a large material worth publishing even if waiting times to operation and hospitalisation times are higher than in many European Countries. This gives higher mortality. Non-operative treatment is a seldom used option in Northern Europe.

⇒Thank you for your comments. I agree with you that the longer waiting time to operation and hospitalization period may be the reason for the high mortality in our study.

## 3) Response to the comments of Dr. Yukiharu Hasegawa

The conclusion is not correct. This article will mislead surgical treatment will improve the survival rate. Many patients who do not operate will be in a poor medical condition. This is an essential problem of the database of the DPC system.

ASA grade 3-4 will be not a good candidate for surgical treatment. The author should be describe about the preoperative conditions.

⇒Thank you for your pertinent comment. I agree with you that it is possible that the patients undergone conservative treatment were in a poor medical condition, which may affect the survival of the patients per se. However, the mortality was higher in patients with conservative treatment even under the multivariate analysis and after the stratification according to the number of comorbidities and age, and we believe that the conservative treatment itself increased the risk of mortality in our study. However, I agree with you that the choice of the conservative treatment can be affected by various factors that we did not analyze in the present study, and further studies are required.

### VERSION 2 – REVIEW

<b>REVIEWER</b>	Jorma Panula M.D. Ph.D. Chief of Surgery Pori City Hospital Finland  I have no competing interests.
<b>REVIEW RETURNED</b>	07/04/2012

<b>THE STUDY</b>	In Page 12 Lines 17-21, the word "when" is missing?
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