

AO Trauma Asia Pacific Research Grants 2022 Application Form

1. Project title

Comparison of walking ability and skeletal muscle mass after fragility fractures of the pelvis between the surgery group and conservative treatment group.

1.1 ☐ Basic Research

☒ Clinical Research

(Please choose ONE)

2. Rationale

The incidence of fragility fractures of the pelvis (FFP) is rising. Patients with FFP present with intense pain, loss of mobility, and diminution of independency, therefore resulting in a significant reduction in quality of life [1, 2].

The results of the systematic review highlight that whilst the quality of evidence for surgical fixation of FFP is poor, there is consistent data to support the idea that the majority of fracture patterns can be stabilized through minimally invasive methods, with a consequent reduction in pain. However, mobility, quality of life, and mortality are controversial [3].

Besides, FFP commonly occurs in frail individuals [1]. In hip fracture patients, sarcopenia and malnutrition are risk factors for the poor functional outcome, complications, and mortality [4,5]. By contrast, in patients with FFP, the association between skeletal muscle mass and nutritional status and functional outcomes is not clear.

3. Objective and success criteria

To determine the difference in recovery of walking ability and skeletal muscle mass after injury between the surgery group and the conservative treatment group

Contribute to the selection of future treatment strategies for patients with FFP

4. Hypothesis

Because surgery has been shown to reduce pain, rehabilitation is more advanced in the surgery group than in the conservative group, with greater recovery of walking ability and more skeletal muscle mass.

5. Method

5.1 Material

Design: multicenter case-control study

Setting: 1 university hospital and 2 affiliated hospitals in Japan

Patients: patients with FFP

Inclusion criteria

Patients over 65 years with FFP

Cognitive ability to understand the purpose of this study

Consent to participate in this study

Exclusion criteria

Past history of pelvic surgery

Mental disorder

less than a 3-month follow-up

high-energy trauma or pathological fracture

bedridden patients

5.2 Methodology

Age

Sex

Physical build (body height/weight)

Comorbid conditions

Waiting time for surgery

Type of surgery (none, open, percutaneous)

Death

CT scan at first medical examination and 3-months after injury

Blood test including serum albumin concentration at the first medical examination, before surgery, and 3-months after injury

5.3 Data analysis/statistics

Fracture classification (Rommens classification [6]) and assessment of skeletal muscle mass (psoas muscle index [7]) by CT

Nutritional assessment (geriatric nutritional risk index [8]) by serum albumin concentration and physical build

Functional outcomes after pelvic injury (Majeed score [9])

Walking ability (functional ambulation categories [10])

Statistics: Mann-Whitney U test, Fisher's exact test, Logistic regression analysis, Variance Inflation Factor (VIF)

6. Literature

- [1] Rommens PM, Hofmann A. Focus on fragility fractures of the pelvis. *Eur J Trauma Emerg Surg.* 2021;47:1-2.
- [2] Schmitz P, Lüdeck S, Baumann F, et al. Patient-related quality of life after pelvic ring fractures in elderly. *Int Orthop.* 2019;43:261-267.
- [3] Wilson DGG, Kelly J, Rickman M. Operative management of fragility fractures of the pelvis - a systematic review. *BMC Musculoskelet Disord.* 2021;22:717.
- [4] de Mello RGB, Dalla Corte RR, Gioscia J, et al. Effects of Physical Exercise Programs on Sarcopenia Management, Dynapenia, and Physical Performance in the Elderly: A Systematic Review of Randomized Clinical Trials. *J Aging Res.* 2019;2019:1959486.
- [5] Malafarina V, Reginster JY, Cabrerizo S, et al. Nutritional Status and Nutritional Treatment Are Related to Outcomes and Mortality in Older Adults with Hip Fracture. *Nutrients.* 2018;10.
- [6] Rommens PM, Arand C, Hofmann A, et al. When and How to Operate Fragility Fractures of the Pelvis? *Indian J Orthop.* 2019;53:128-137.
- [7] Hamaguchi Y, Kaido T, Okumura S, et al. Proposal for new diagnostic criteria for low skeletal muscle mass based on computed tomography imaging in Asian adults. *Nutrition.* 2016;32:1200-1205.
- [8] Bouillanne O, Morineau G, Dupont C, et al. Geriatric Nutritional Risk Index: a new index for evaluating at-risk elderly medical patients. *Am J Clin Nutr.* 2005;82:777-783.
- [9] Lefavre KA, Slobogean GP, Ngai JT, et al. What outcomes are important for patients after pelvic trauma? Subjective responses and psychometric analysis of three published pelvic-specific outcome instruments. *J Orthop Trauma.* 2014;28:23-27.
- [10] Holden MK, Gill KM, Magliozzi MR, et al. Clinical gait assessment in the neurologically impaired. Reliability and meaningfulness. *Phys Ther.* 1984;64:35-40.

7. Time table (milestones, pilot study, main study)

Data Completion: December 31, 2022

Final report: March 31, 2023

Desired number of cases are 50 patients of each the surgery group and the conservative group.

8. Finance

> All amount requested in Swiss francs

Personnel costs (per diems to surgeons cannot be included):

Material costs (cost of implants and surgical equipment cannot be included):

Statistical software; CHF 1,000

English language editing; CHF 4,000

Travel and accommodation costs: CHF 3,000

Total amount requested in Swiss francs for the project: CHF 8,000

9. Applicant(s)

9.1. Project leader (aged 40 years-old or below, please specify)

> (Surname, First name, Academic degree, Institution, Contact number and [email address](#), Past research experience)

***Is the project you have submitted funded by any other source?*

☐ Yes

☒ No

Surname: Sato

First name: Kohei

Academic degree: M.D.

Institution: Department of Orthopedic Surgery, Faculty of Medicine, Dentistry and
Pharmaceutical Sciences, Okayama University

Contact details:

2-5-1 Shikata, Kitaku, Okayama City, Okayama, 700-8558, Japan

Tel: +81- [REDACTED]

Fax: +81- [REDACTED]

E-mail: [REDACTED]@ [REDACTED]

Date of birth: [REDACTED]

9.2. Co-applicants

- > (Surname, First name, Academic degree, Institution, Contact number and email address, Past research experience)

1. Yorimitsu Masanori, M.D., Ph.D.

Institution: Department of Musculoskeletal Traumatology, Faculty of Medicine,
Dentistry and Pharmaceutical Sciences, Okayama University

Contact details:

2-5-1 Shikata, Kitaku, Okayama City, Okayama, 700-8558, Japan

Tel: +81- [REDACTED]

Fax: +81- [REDACTED]

E-mail: [REDACTED]@ [REDACTED]

Past research experience:

2. Sato Toru, M.D., Ph.D.

Institution: Department of Orthopaedic Surgery, Okayama Medical Center

Contact details:

1711-1 Tamasu, Kitaku, Okayama, 701-1192, Japan

Tel: +81- [REDACTED]

Fax: +81- [REDACTED]

E-mail:

10. History of previous AO Trauma Asia Pacific Research Grants (if any)

☐ Yes (please list out the application number, project title, and publication results)

☐ No

Kindly note: Previously successful grant applicants, who either did not report or finish their AO Trauma Asia Pacific Research Grant project in the past two years, may not be given additional funding.

Please submit your application directly to AO Trauma Asia Pacific,

Yoyo You, at: yoyo.you@aofoundation.org. Thank you!