Randomized Controlled Study Comparing Zimmer Natural Nail System Cephalomedullary Asia Nail with Anterior Support Screw (ASS) versus Conventional Technique

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VERSION: **1.0**
SPONSOR: **ZIMMER BIOMET Japan**

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LIST OF ABBREVIATIONS AND RELEVANT DEFINITIONS

AE	Adverse Event
CRF	Case report form
3D-CT classification (Nakano) 3-partB	Fracture in which greater and lesser trochanters are displaced together on a 3D-CT image, dividing the proximal femur into three parts.
3D-CT classification (Nakano)4-partB	Fracture in which greater and lesser trochanters are displaced separately on a 3D-CT image, dividing the proximal femur into four parts.
Jensen classification Type4	Unstable fracture with comminuted/displaced posterior-medial cortex on an X-ray image.
Jensen classification Type5	Unstable fracture with comminuted/displaced posterior-medial and posterior-lateral cortex on an X-ray image.
lateral classification (Ikuta) subtype P	Fracture occurring proximal to the attachment site of the iliofemoral ligament in which the proximal fragment is displaced posteriorly on an X-ray image.
AP3×ML3 classification	Classification of postoperative reduction in which anteroposterior (AP) and mediolateral (ML) X-ray images are each classified into three types. Anteroposterior images are classified as medial, anatomical, or lateral while ML images are classified as intramedullary, anatomical, or extramedullary; the combination of these two classifications results in a total of nine types of reduction.
Sliding	Migration of lag screws caused by loading.
TAD	Tip Apex Distance
Wiper motion	Displacement of the tip of nails within the medullary canal.
EC	Ethical committee
ITT	Intention to treat
IQR	Interquartile range
(S)AE	(Serious) Adverse Event
(S)ADE	(Serious) Adverse Device Event
SPONSOR	The sponsor is the party that commissions the organisation or performance of the research, for example a pharmaceutical company, academic hospital, scientific organisation or investigator. A party that provides funding for a study but does not commission it is not regarded as the sponsor, but referred to as a subsidising party
USADE	Unanticipated Serious Adverse Device Event

SUMMARY

STUDY TITLE	Randomized controlled study comparing Zimmer Natural Nail System Cephalomedullary Asia Nail with Anterior Support Screw (ASS) versus Conventional technique
DESIGN	Prospective, two arm, randomized, controlled, multi-center
OBJECTIVE	Determine the effectiveness of the ASS in terms of ZNN CM Asia with ASS provides better fixation compared to conventional technique
OUTCOME MEASURES	Patient demographic, Operative data, CT assessment, Walking ability, Adverse event
NUMBER OF CASES	Total 240 legs(1 group 120 legs) in Japanese patient population at maximum 15 sites
ELIGIBILITY	Patient who presented with primary trochanteric fracture, has 3-part B or 4-part fracture by 3D-CTcllasification (Nakano) and subtype P by lateral classification (Ikuta)
DURATION	Enrolment: 18months Follow-up: Preop, Operation, Immediate postop, 3weeks, 16week Enrolment period: 18 Months Central CT assessment: Postop 3 week Total study duration: 22Months

1. INTRODUCTION

1.1 BACKGROUND

In 2007, the portion of Japanese adults aged 65 years or older reached 21.5% of the total population; Japan has entered into a super-aging society. The percentage of elderly people is estimated to increase continuously [1]. The number of proximal femur fracture cases in 2007 in Japan was approximately 150,000 and this would be estimated increasing to 320,000 cases in 2040[2]. For these patients, there are a number of implants present in the market, and orthopaedic physicians are still keeping finding better practice to lessen postoperative complications in patients. The general features of Asian patients are anterior bow radius, high bending point, and short transition length. Achieving appropriate fixation and bony support is important in treatment of trochanteric fracture. Optimal positioning of a nail suitable for bone morphology of the Asian patients may be helpful for further reducing the incidence of postoperative complications.

The Zimmer Natural Nail System Cephalomedually Asia Nail (ZNN CM Asia Nail) which was developed for Asian patients has been selling in January 2013 in Japan. While previous multi-center studies[3] demonstrated the suitability of the device for the bone morphology of Japanese patients, displacement of bone fragments occurring in the early postoperative period remains a problem in treatment of trochanteric fracture with the ZNN CM Asia Nail. Fukuda et al. noted re-displacement of fracture resulting in lateral classification subtype P two weeks after surgery in 14% of patients in whom anatomical reduction was achieved immediately after surgery as confirmed by the lateral view [4]. A relatively large number of patients experiencing re-displacement are reported to have significant posterior-lateral displacement of bone fragments at the time of injury, which lead to lack of bony support posteriorly. Many researchers believe that it is desirable to have anterior-medial bony support for these patients. Maehara et al. proposed an adjunctive procedure of anterior support screw (ASS) placement which uses an additional cannulated cancellous screw anteriorly to the lag screw in order to achieve better support[5]. In ASS placement, a screw is inserted just below the anterior cortex, which is called screw augmentation technique. This prevents rotational displacement of bone fragments and may prevent the proximal reduced fragment from re-displacement. The procedure can be performed with the ZNN CM Asia Nail and standard surgical instruments without need of any special instruments.

The present study was designed to evaluate the impact of ASS's on maintenance of postoperative reduction when used in combination with the ZNN CM Asia Nail in Japanese patients who had closed trochanteric fracture.

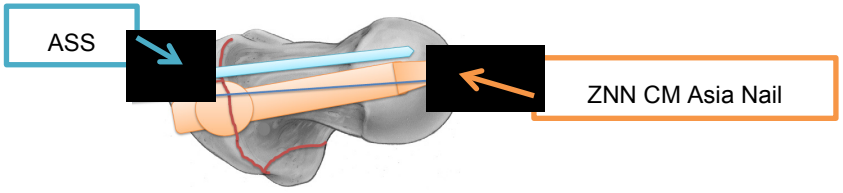

Fig1. Screw Augmentation Technique

1.2 DEVICE / IMPLANT DESCRIPTION

The devices used in this study are as follows:

-ZNN CM Asia Nail

-ZNN CM Lag Screw

-ZNN CM locking screw

-ZNN CM Nail Cap

All implants are made from titan alloy. With ASS group, ACE 4.5/5mm Cannulated Cortical Lag Screw 20mm Thread which made from titan alloy can be used.

Fig 2. ZNN CM Asia Nail with ASS

1.3 RATIONALE AND PURPOSE FOR CURRENT STUDY

The purpose of this study is to compare post-operative 3weeks fracture reduction maintenance rate between patients operated with ASS (investigational group) and patients operated without ASS (Control group) using same implant system (ZNN CM Asia, Zimmer Biomet).

2. STUDY DESIGN

This Study is a prospective, randomized, multicentre study, comparing the clinical outcomes ZNN CM Asia with the use of ASS versus ZNN CM Asia without ASS. A total 240 subjects will be recruited prospectively and randomized (enveloped method) according to a 1:1 scheme.

2.1 STUDY GROUPS/ TREATMENTS

Patients will be included that their trochanteric fracture classification is 3-partB or 4-part in 3D-CT classification (Nakano) with subtype P in lateral classification (Ikuta).

There will be two study groups with each 120 patients. Patients will be assigned to the investigational or the control group using 1:1 randomization. In the investigational group, patients will be treated in ZNN CM Asia with ASS technique. Patients in the control group will be treated in ZNN CM Asia with conventional technique.

Group 1 “Investigational”: Patients receiving a ZNN CM Asia with ASS technique.

Group 2 “Conventional Signature”: Patients receiving a ZNN CM Asia without ASS (conventional) technique.

2.2 NUMBER OF SITES AND SUBJECTS/PROCEDURES

240 cases will be enrolled and randomly assigned to either the investigational or the control group. This study will be conducted at maximum 15 Japanese hospitals.

The enrolment limit of 1 site is 48cases (20% of total enrolment) for well distribution between sites.

2.3 PRIMARY AND SECONDARY ENDPOINTS

Primary Endpoint

The maintenance rate of immediate post-operative reduction position versus 3 week post-operative Re-displacement (Lateral reduction classification[6]):

- SubtypeP: Femoral head fragment fall down into diaphysis medullary space.
- SubtypeN: Even a little contact between femoral head fragment and anterior cortical bone.
- SubtypeA: Femoral head fragment located outside of medullary space..

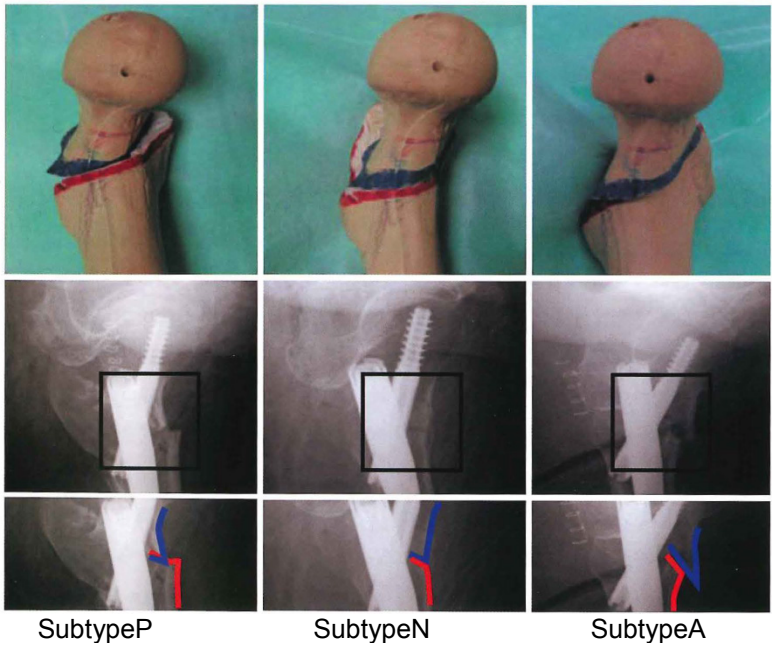

Fig.3 Lateral reduction classification

Secondary Endpoint

- Surgery time
- Post-operative reduction position (AP3×ML3)
- Pre-operative fracture classification and with or without open reduction
- CT assessment
- Safety evaluation

2.4 ASSESSMENT PROCEDURE

The study assessment period will be 22 months, 18 months recruitment and 16 months follow-up. The follow-up for all patients will be at the following time points: baseline (preoperative), surgery, 3 weeks (+/- 3days) and 16 weeks (+/- 4 weeks)*.

*16 weeks assessment is optional item

A. Preoperative:
    a. Informed Consent
    b. Randomization
    c. Historical Record
    d. Fracture Classification (CT/X-ray)

B. Operative:
    a. Operative Form
        i. Reduction (Open/ Closed)
        ii. Surgery Time (reduction, from skin incision to closure)
        iii. Implant Component Information (include diameter of sizer reamer)

C. Immediate postoperative and 3 week:
    a. CT Assessment
    b. Fracture Classification (If patient have not taken preoperative CT assessment)

D. 16 week (optional):
    a. CT Assessment
    b. Walking Ability

2.5 ASSESSMENT PARAMETERS AND METHODS

Preoperative data

After the patient has been consented he/she will be assigned randomly to either the investigational or control group. Demographic information will be collected, a detailed medical history will be obtained and a physical examination will be performed (including height and weight).

Clinical Assessment (optional assessment for 16 week)

Walking ability is optional item to assess the difference between investigational and control group.

Operative

The target reduction position is type Anterior (A), using suitable Nail size for medullary diameter.

CT Assessment

At immediate postoperative, 3 weeks and 16 weeks (optional) follow-up visit, femur CT images will be taken. In the CT images, patient personal information will be deleted and assessed comparison between immediate-postop and 3weeks postop, and additional 16 weeks evaluation by central CT reviewer.
CT imagine assessment is consist of Reduction Position, Sliding Length of Lag Screw, TAD, Tip position of Nail (including wiper motion) and Medullary Canal Occupation Rate.

Postoperative therapy

Each patient is permitted full load as soon as possible depending on their pain.

2.6 ASSESSMENT TIMELINE/ SCHEDULE

Each follow-up visit time point will be determined based on the date of surgery. Each follow-up visit has a specific allowed time window:

- Preoperative
- Immediate Postoperative (after surgery within 3days)
- 3weeks (+/-3days)
- 16weeks* (-4weeks) *optional assessment

In the table below the retrieved information is per follow-up visit is found.

Assessment	Preop	Operative	3days	3weeks +/-3days	16weeks (- 4weeks)
Informed Consent	X				
Randomization	X				
Historical Record	X				

Operative Record		X			
Fracture type［CT/X-ray］	X		(X)*1		
CT assessment	(X)		X	X	(X)
Walking ability	(X)*2				(X)
Complications		As needed			

・( ) is optional assessment item.

・*1 In the case of classified in X-ray in preoperative, reclassify the fracture type in postoperative CT.

・*2 In the case of asking questionnaire impossibility, ask their preinjury walking ability in postoperative.

2.7 ALLOWED WINDOW OF EACH SCHEDULE SEE 2.6

3. SELECTION AND WITHDRAWAL OF SUBJECTS

3.1 INCLUSION CRITERIA

In order to be eligible to participate in this study, a subject must meet all of the following criteria.

- Eligible for intramedullary nailing.
- Fracture type is classified as 3-partB or 4-part fracture in 3D-CT classification (Nakano), and combination with a subtype P in lateral classification (Ikuta) at preoperative CT assessment.
  (In the case of classified in X-ray at preoperative: Classified as Type 4 or Type5 in Jensen classification, and combination of subtype P in lateral classification (Ikuta))
- Japanese Male or female
- > 20 years of age
- Primary closed intertrochanteric fracture of the femur
- Subjects willing to return for follow-up evaluations.

Study Specific Requirements for Investigator/Site

- Site can take X-ray or CT imaging, which classifies the fracture type appropriately at preoperative, also can take CT imaging at immediate postoperative and 3 weeks.

3.2 EXCLUSION CRITERIA

A potential subject who meets any of the following criteria will be excluded from participation in this study.

Absolute contraindications include:

- Patient who cannot take CT image within 3 days and 3weeks after surgery.
- Uncooperative patient or patient with neurologic disorders who are incapable of following directions.
- Product contra indications:

- A medullary canal obliterated by a previous fracture or tumor.
- Bone shaft having excessive bow or deformity
- Lack of bone substance or bone quality which makes stable seating of the implant impossible.
- All concomitant diseases that can impair the functioning and the success of the implant
- Infection
- Insufficient blood circulation
- Skeletally immature patients

3.3 SUBJECT WITHDRAWAL

It is recognized that the subject's participation in this trial is entirely voluntary, and that she/he may refuse to participate and may withdraw from participation at any time without jeopardy to any future medical care. It is also recognized that the investigator, at his/her discretion, may withdraw a subject from this study based upon his/her professional judgment. In event of subject withdrawal, applicable local procedures should be followed.

If a patient is withdrawn or rescinds their consent, a "Lost to Follow-up" case report form should be completed detailing the reason for the patient withdrawal. The site should also notify their Ethical Committee (EC) if applicable. If a patient is withdrawn from the study by the investigator, the patient should be notified of their removal by a letter from the site or according to the local EC.

It is required that patients return within the defined follow-up period to complete all study assessment forms and radiographs. Patients that miss or will not return for follow-up are not considered "protocol deviations" or "lost to follow-up."

Specific criteria for withdrawal (if applicable)

If patients meet any of the following criteria, a subject withdrawal form should be completed, and below data documented on the form:

1. Patient rescinds consent in writing: Date of occurrence
2. Patient Death: Reason and date of death should be documented
3. Implant Removal: Date of revision, all component part numbers removed, and reason for revision

Replacement of individual subjects after withdrawal

Subjects will not be replaced, unless they do not have surgery or intraoperatively it has been recognized the patient is not eligible for a treatment with ZNN CM Asia.

Follow-up of subjects withdrawn from treatment

Subject withdrawn from the study will obtain standard medical treatment as foreseen at the investigational site.

4. PROTOCOL DEVIATION MANAGEMENT AND REPORTING

Any deviation from the protocol should be documented on the "Protocol Deviation" case report form.

5. ADVERSE EVENT MANAGEMENT AND REPORTING

Any adverse event should be documented on the Adverse Event case report form. A record of all adverse events, including details of the nature, onset, duration, severity, relationship to the device, relationship to the operative procedure and outcome, will be made on the relevant section(s) of the subject's CRF. The subject will be questioned about any adverse event(s) at each subsequent follow-up assessment visit.

Any serious adverse events (SAE/SADE/USADE) must be reported to head of institution and must be notified to other institutions participating in this study in accordance with Ethical Committee and Ethical Guidance for clinical study including human subject.

Adverse Event (AE):

An adverse event is any untoward medical occurrence in a patient receiving an investigational medical device that does not necessarily have to have a causal relationship with the device under investigation. An AE can therefore be any unfavorable and unintended sign (including abnormal laboratory finding), symptom, or condition temporally associated with the use of a medical device whether or not considered related to the medical device.

Serious Adverse Event (SAE):

A serious adverse event is an adverse event that

a) led to death

b) led to a serious deterioration in the health of the patient that

c) led to fetal distress, fetal death or a congenital abnormality or birth defect

1) resulted in a life-threatening illness or injury

2) resulted in a permanent impairment of a body structure or a body function

3) resulted in medical or surgical intervention to prevent permanent impairment to body structure or body function

4) required in-patient hospitalization or prolongation of existing hospitalization

A planned hospitalization for a pre-existing condition, or a procedure required by this protocol, without serious deterioration in health, is not considered a serious adverse event.

Adverse Device Effect (ADE):

An ADE is any untoward and unintended response to an investigational medical device.

Serious Adverse Device Effect (SADE):

A SADE is any untoward and unintended response investigational medical device that has resulted in any of the consequences characteristic of a serious adverse event or that might have led to any of these consequences if suitable action had not been taken or intervention had not been made or if circumstances had been less opportune.

Unanticipated serious adverse device effect (USADE)

Serious adverse device effect which by its nature, incidence, severity or outcome has not been identified in the current version of the risk analysis report (see section 10) .

6. MPLANT RETRIEVAL AND ANALYSIS OF REMOVED IMPLANTS

Should any implant failures occur, please contact the Study Manager or any other Zimmer Biomet personnel to coordinate the implant retrieval process.

7. STATISTICAL ANALYSIS PLAN

7.1 SAMPLE SIZE CALICULATION

The primary analysis for the study will compare the maintenance rate of immediate post-operative reduction position on the 3 week post-operative x-ray for Investigational (with ASS technique) vs. Control (without ASS technique). Sample size calculations for this study are done using data found in a paper by Maehara et al[5]. In this study, 87.5% of the patients with ASS technique were maintaining immediate post-operative reduction position, as compared to 72.7% in the conventional cohort. Our sample size calculation assumes the result in this study will be similar to what is reported in Maehara et al.

The null hypothesis is that the maintenance rate of immediate post-operative reduction position for the investigational group (with ASS technique) is less than or equal to that of the patients operated without ASS technique. The alternative hypothesis is the maintenance rate of immediate post-operative reduction position for the investigational group (with ASS technique) is greater than that of the patients operated without ASS technique.

Null Hypothesis：Ho: $\pi A - \pi B \leqq 0$
Alternative Hypothesis：HA: $\pi A - \pi B > 0$

Where πA represents the maintenance rate of immediate post-operative reduction position in investigational group on the 3 weeks postoperative CT and πB represents the maintenance rate of immediate post-operative reduction position in control group on the 3 weeks postoperative CT.
If we reject the null hypothesis, we can conclude that the ZMM CM Asia with ASS technique is superior to the conventional technique in trochanteric fracture with regard to the maintenance rate of immediate post-operative reduction position.

The sample size calculation was conducted anticipating the use of a Pearson's Chi-square test.

Alpha level: 5% (two sided)
Power: 80%
Investigational group maintenance rate for reduction position: 87.5%
Control group maintenance rate for reduction position: 72.7%

The resulting calculation gives n=113 per group. 120 patients per group will allow for up to 5% attrition.
Overall population per protocol: 240

7.2 DETAILED DESCRIPTION OF RANDOMIZATION

In this study, patients will be randomized in one of the two treatment arms: ZMM CM Asia with ASS technique (Investigational group) or ZMM CM Asia without ASS technique (Control group). The randomization scheme is based on equal numbers per group. The randomization will occur via a random number generator (computer) using a blocked randomization procedure. The block size will not be disclosed to the sites, and the doctor or other health care professional will not have influence on the randomization scheme. Sealed opaque envelopes, which will be prepared based on predetermined randomization assignment, will be provided to each study site before study initiation.

7.3 HANDLING OF MISSING AND INCOMPLETE DATA

Data will be considered "missing" for the primary endpoint if this outcome cannot be determined or is unavailable for a subject. Every effort will be made to collect the data necessary to evaluate the primary endpoint. Subjects who have been lost to follow-up and/or are missing CT data at 3 weeks will not be included in the primary study analysis.

Sensitivity analyses will be performed to assess the impact of missing data on the primary study analysis. These analyses may include a best-case and worst-case imputation as well as a tipping point analysis.

7.4 DATA ANALYSES

Data will be analysed using SAS 9.0 or higher. The Type I error rate for the primary study analysis will be 0.05. Comparisons for secondary, exploratory, and safety analyses will be two-sided comparisons using $\alpha = 0.05$, with no adjustment for multiple comparisons.

Primary Analysis: The primary analysis will be performed on the set of patients with non-missing CT data at 3 weeks (Full Analysis Set (FAS)). Sensitivity analyses will be presented for the intention-to-treat (ITT) patient group. A two-tailed Pearson's Chi-Square test at $\alpha = 0.05$ will be used to assess the study hypotheses and determine whether there is a statistically significant difference between investigational and control groups with regard to the maintenance rate of immediate post-operative reduction position.
Secondary Analysis: Analyses for secondary endpoints will be on the FAS, and will only use those cases with complete data for the endpoint being analysed.

Continuous data (e.g. age, BMI) will be reported using mean, standard deviation, median, and range. Comparisons between Investigational vs Control groups with regard to continuous baseline and secondary outcomes will be performed using standard statistical tests and will be chosen as appropriate for the scale and distribution of the measures being analyzed. For example, a t-test, Wilcoxon test, or one-way ANOVA (as appropriate) may be performed to assess differences in means/medians.

Categorical data (e.g. gender, classification of fracture) will be reported using frequency and percentage. Comparisons of Investigational vs Control with regard to categorical baseline, secondary and safety outcomes will be performed using standard statistical tests and will be chosen as appropriate for the scale and distribution of the measures being analyzed. For example, categorical outcomes may be compared for investigational and control groups using the Pearson's chi-square test.

7.5 STUDY REPORT

The primary analysis will be performed after all patients reach the 6 months follow up time point. Data will be analysed using the methods described in Section 7.4.

8. DATA COLLECTION, HANDLING AND RETENTION

8.1 SOURCE DOCUMENTATION REQUIREMENTS

No source data will be available to the Sponsor of the study according to local law.

8.2 CASE REPORT FORMS（CRF）

Data for this clinical trial will be collected and documented on the subject Case Report Forms (CRFs) provided in an electronic form. Authorized study site personnel will complete the digital CRFs only. CRFs must be reviewed by the investigator or his/her designees.

8.3 STUDY DOCUMENT RETENTION

Study documents should be retained for 5 years after the study is complete.

9. DATA REPORTING

Within 6 months of the study close the sponsor will present a final study report to summarize all data collected throughout the study duration, complications throughout the course of the data collection, and general findings.

The report will contain the results of all primary and secondary endpoints. Also, patient follow-up will be analyzed throughout the data collection according to the following definition and equations:

Lost To Follow-Up:
1. Death
2. Implant Removal: Date of revision, all component part numbers removed, reason for revision, and any relation to study device.
3. Revision of Components: date of revision, all component part numbers removed, and reason for revision Consent Rescinded

**Bearing revisions in which only the polyethylene is replaced will not be withdrawn from the study.*

Percentage Follow-up = # Patients with Follow-Up x 100

(Theoretically due – Lost To Follow-Up)

Percentage Accounted for = (# with Follow-Up + Lost To Follow-Up) x 100

Theoretically due

Both the sponsor and investigators will make reasonable efforts to publish the results of this trial.

10.RISK ANALYSIS

The following adverse event may occur.

- Wound infection
- Pain
- Nerve damage
- Damage of surrounding tissues
- Bone fractures
- Osteonecrosis
- Cardiovascular events(including thromboembolic events)
- Loss of reduction and/or fixation, implant migration
- Fatigue failure of implant
- Pseudoarthrosis, non-union, malunion, delayed or incomplete union
- Post-traumatic arthritis
- Inflammatory reaction
- Metal sensitivity
- Wear and/or corrosion of metal components

11.MONITORING PLAN

Zimmer Biomet, as the sponsor of this study, will monitor the data collection to ensure that the investigation is being conducted consistent with the protocol. The following describes the monitoring activities, which may take place during the course of the study.

11.1 FREQUENCY

Pre-Investigational Visit/Conference:

Prior to initiation of the study, the study manager will provide the investigator with all the necessary information to enable him to carry out his responsibilities. This prepares the site with an in-depth training on the protocol, case report forms, and data collection process for the length of the study. The study manager will also train the site on using the Zimmer Biomet Joint Assist database.

Monitoring of the Data

Monitoring of the data will occur at least annually, and as often as monthly.

11.2 SAMPLING PLAN

All data will be monitored for completeness and accuracy on at least an annual basis.

11.3 MONITORING TASKS

Zimmer Biomet will continually monitor the progress of the clinical trial. These activities include:

- Tracking of patient enrollment
- Review of all electronic patient data forms received by Zimmer Biomet for completeness
- Tracking of patients to ensure follow-ups are being completed at appropriate intervals
- Review of all adverse events
- Maintaining open communication with all investigational sites in order to ensure the quality of the clinical trial.
- In-house audits as needed

Upon completion of any type of monitoring, the site is responsible for resolving all discrepancies found in a timely manner. These will be sent to the site with an audit report by the study manager. All discrepancies found within the Joint Assist database will be queried and sent directly to the site. Delays in resolving queries are to be avoided at all costs; this provides the study with the most accurate data, prevents delay in reporting procedures & publication.

11.4 STUDY CLOSE-OUT

When a site has completed their data collection, a visit may be necessary by a Zimmer Biomet monitor to ensure all data has been obtained. Data will be reviewed for completeness, and monitored to ensure that all discrepancies have been resolved.

12.LABELING

The devices and products will be used in accordance with their instructions for use and/or approved labeling. The package insert for the device(s) in this study is included in the Investigator Binder.

13.ETHICAL AND REGULATORY REQUIREMENTS

13.1 CODE OF CONDUCT

The investigator will ensure that the clinical study is conducted in accordance with

1. Protocol
2. Ethical Guidance for clinical study including human subject (MHLW, Dec. 22, 2014)

13.2 INSTITUTIONAL REVIEW BOARDS/ETHICS COMMITTEE

The investigator must obtain appropriate Ethics Committee approval before the study can be initiated.

13.3 INFORMED CONSENT

Subjects (or the subject's legally authorized representative) will be provided with an informed consent and patient information sheet in order to give ample opportunity to review the consent and ask questions. The signed informed consent will be obtained before any study procedures begin. If the subject agrees to participate in the study, the subject/representative must sign the informed consent form. The witness and the investigator must also sign the informed consent form. A copy of the informed consent form should be given to the subject/representative. All subjects who meet all of the entry criteria will be considered for inclusion in this trial. Any subject meeting any of the exclusion criteria will be excluded from the trial.

The informed consent form must be approved by the institution’s EC.
Subjects will be informed of new information learned during the study, which may affect the subject’s decision to continue participation in the study.

An Informed Consent Log should be completed to document the existence of the signed informed consent form. The log will contain: Subject ID, date informed consent form signed, and the version signed.

13.4 SUBJECT CONFIDENTIALITY

The case report forms do not include any patient identifying information. Therefore, once the data is entered in the online database a patient can no longer be identified.

By assigning patients a unique ID number, their identity is protected in Joint Assist, the online database. The database is restricted, allowing a doctor to only view and enter data from his own patients. User

authentication is required to view research data. The data is transmitted to a centralized database through a secured (SSL) channel on the Internet. Data in transit is in 128-bit encryption. The access to the centralized database is limited to those who are responsible for maintaining the database.

14.PUBLICATION PLAN

Upon completion of all CT measurements and statistical analyses, representative investigator or the person who is designate by representative investigator, manuscript will be written in English or Japanese to meet peer-reviewed journal requirements.

15. REFFERENCES

1. Statistical Research and Training Institute. Statistics Bureau Ministry of Internal Affairs and Communication Japan. Statistics Japan 2013:8, http://www.stat.go.jp/data/nihon/index1.htm

2. The Guideline Committee of the Japanese Orthopaedics Association. Practice Guideline for Femoral Neck/ Trochanteric Fracture revised2. Nankodo, 2011:26

3. Tsuji H et al., The treatment result of ZNN CM Asia Nail for Trochanteric Fracture and Medullary Canal Occupation - The88 the Annual Meeting of the Japanese Orthopaedic Association Abstract. Kobe, 2015-05-21/24.

4. Fukuda H et al., The Preoperative Fracture Type in Postoperative Extramedullary Type in Femoral Trochanteric Fracture. J Jpn Soc Fract Rep 2013; 35(3):657-660.

5. Maehara T et al., Creative solution of the Internal Fixation for the Trochanteric Fracture of the Femur with Posterolateral bone fragments. J Jpn Soc Fract Rep 2016; 38(3): 820-823. 6. Fukuda F. Reduction Method for Postoperative Mechanical Stability. Orthop Surg Tech. 2014:4(3):53-59.

Appendix

Appendix 1 Declaration of Helsinki

Protocol:

Version/Date	Description of Changes to Protocol and/or Case Report Forms	Reason for Changes	Approved by Study Manager	Approved by Clinical Strategy
Version 1.0/ 17-JUN-2016	Original Protocol	N/A	Signature Date	Signature Date
			Signature Date	Signature Date
			Signature Date	Signature Date
			Signature Date	Signature Date
			Signature Date	Signature Date