

Study of bone cell changes in steroid-related femoral head necrosis using discarded tissue from routine hip replacement surgery

Submission date 24/02/2026	Recruitment status Recruiting	☐ Prospectively registered
		☐ Protocol
Registration date 03/03/2026	Overall study status Ongoing	☐ Statistical analysis plan
		☐ Results
Last Edited 25/02/2026	Condition category Musculoskeletal Diseases	☐ Individual participant data
		☒ Record updated in last year

Plain English summary of protocol

Not provided at time of registration

Contact information

Type(s)

Scientific, Principal investigator, Public

Contact name

Dr Xiaoxia Yan

ORCID ID

<https://orcid.org/0009-0002-4763-4476>

Contact details

Henan Province
Zhengzhou City
China
450000
+86 (0)18736095609
641594851@qq.com

Additional identifiers

Study information

Scientific Title

Case-control study of osteoblastic mitochondrial quality control disorder in glucocorticoid-induced osteonecrosis of the femoral head

Acronym

MQC-GONFH-PP

Study objectives**Ethics approval required**

Ethics approval required

Ethics approval(s)

approved 04/02/2026, Ethics Committee of Luoyang Orthopedic-Traumatological Hospital of Henan Province (Henan Provincial Orthopedic Hospital) (Henan Province, Luoyang City, 471200, China; +86 (0)15837982681; hnslyzggyllwyh@aliyun.com), ref: 2026KYKT0001-01

Primary study design

Observational

Secondary study design

Case-control study

Study type(s)**Health condition(s) or problem(s) studied**

Glucocorticoid-induced osteonecrosis of femoral head

Interventions

This is a non-interventional case-control study with a 1:1 matching design. The case group consists of patients diagnosed with glucocorticoid-induced osteonecrosis of femoral head (GONFH) who require total hip arthroplasty, and the control group consists of patients with femoral neck fracture who require total hip arthroplasty and are matched with the case group by age (± 5 years) and the same gender. No additional interventions are provided except routine clinical treatment for all participants. During the study, relevant samples are collected after total hip arthroplasty, and tests including Western Blot, qRT-PCR, transmission electron microscopy (TEM), immunohistochemistry (IHC), HE staining and Masson staining are performed to detect the expression levels of key molecules in the PINK1/Parkin signaling pathway, mitochondrial morphology and cristae structure, and the degree of osteoblast mitochondrial quality control disorder. Statistical analysis is used to explore the correlation between mitochondrial quality control disorder and GONFH Ficat stage.

Intervention Type

Other

Primary outcome(s)

1. Expression levels of key molecules in PINK1/Parkin signaling pathway (PINK1, Parkin and Drp1) measured using Western Blot and qRT-PCR at the end of sample collection, which is after total hip arthroplasty of the participants

Key secondary outcome(s))**Completion date**

31/12/2026

Eligibility

Key inclusion criteria

1. Patients diagnosed with glucocorticoid-induced osteonecrosis of femoral head (GONFH) or femoral neck fracture, who need total hip arthroplasty
2. Aged 18-70 years old
3. Femoral neck fracture patients are matched 1:1 with GONFH patients by age (± 5 years) and same gender
4. The interval between injury and total hip arthroplasty is less than 3 weeks for femoral neck fracture patients
5. GONFH patients meet Ficat stage II-IV
6. Voluntarily participate and sign the informed consent form

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

18 years

Upper age limit

70 years

Sex

All

Total final enrolment

0

Key exclusion criteria

1. Complicated with other metabolic bone diseases, such as severe osteoporosis, hyperparathyroidism
2. Complicated with other diseases that may cause abnormal bone metabolism, such as severe diabetes, gout
3. Complicated with malignant tumors

Date of first enrolment

01/03/2026

Date of final enrolment

31/10/2026

Locations

Countries of recruitment

China

Sponsor information

Organisation

Luoyang Orthopedic-Traumatological Hospital of Henan Province

ROR

<https://ror.org/05br7cm44>

Funder(s)

Funder type

Funder Name

State Administration of Traditional Chinese Medicine of the People's Republic of China

Alternative Name(s)

State Administration of Traditional Chinese Medicine, State Administration of TCM, SATCM

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

China

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available