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Using two types of ultrasound-guided nerve blocks to improve pain relief and recovery after hip replacement surgery in older adults

Submission date
16/09/2026

Recruitment status
No longer recruiting

Registration date
18/09/2026

Overall study status
Completed

Last Edited
16/09/2026

Condition category
Surgery

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol
Not provided at time of registration

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Study information

Scientific Title
Ultrasound-guided pericapsular nerve group block combined with lateral femoral cutaneous nerve block for postoperative analgesia and functional recovery in elderly patients undergoing hip arthroplasty

Study objectives
To investigate the effects of ultrasound-guided pericapsular nerve group block (PENGB) combined with lateral femoral cutaneous nerve block (LFCNB) versus fascia iliaca compartment block (FICB) on postoperative analgesia and functional recovery in patients aged 80 or above undergoing hip arthroplasty.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 01/01/2026, Ethics Committee of Rugao Hospital of Traditional Chinese Medicine (No. 269 Dama Road, Rucheng Subdistrict, Rugao City, Nantong, 226500, China; +86 87529132; rgszyyyb@163.com), ref: RGSZYYLL26004

Primary study design
Observational

Secondary study design
Case-control study

Study type(s)

Health condition(s) or problem(s) studied
Hip arthroplasty

Interventions
A prospective analysis was conducted on the clinical data of 80 patients who underwent hip arthroplasty from January 2026 to September 2026. Patients were divided into two groups according to the nerve block analgesia protocol, the PENGB + LFCNB group and the LFCNB group, with 40 cases in each group.
After admission to the operating room, intravenous access was established in all patients. Standard monitoring, including noninvasive blood pressure, electrocardiography, and pulse oxygen saturation, was routinely performed. All nerve block procedures were performed under strict aseptic conditions by a single anesthesiologist with more than 5 years of experience in ultrasound-guided regional anesthesia.
The local anesthetic mixture was prepared using the same formulation in both groups: 30 mL of 0.33% ropivacaine hydrochloride injection (Shaanxi Bosun Biopharmaceutical Co., Ltd., China; National Medical Products Administration approval No. H20244604) combined with 5 mg of dexamethasone (Fuding Kangle Pharmaceutical Co., Ltd., China; National Medical Products Administration approval No. H34022768). Adding dexamethasone as an adjuvant to local anesthetics can prolong the duration of analgesia in peripheral nerve blocks. This combination regimen is based on previous studies on nerve blocks in hip arthroplasty [7].
PENGB + LFCNB group: Patients were placed in the supine position, and the skin was routinely disinfected. Using an Edge II ultrasound system (Sonosite, USA), a 2–5 MHz curvilinear transducer was initially placed over the anterior inferior iliac spine (AIIS) and oriented toward the superior pubic ramus. The iliopubic eminence, femoral artery, pectineus muscle, and psoas tendon were identified. Under an in-plane approach from lateral to medial, the needle was advanced, and 20 mL of the aforementioned anesthetic mixture was injected into the musculofascial plane between the posterior aspect of the psoas tendon and the superior pubic ramus to perform the pericapsular nerve group block (PENGB) for hip analgesia.
Subsequently, the lateral femoral cutaneous nerve (LFCN) was identified within the fat pad located between the sartorius muscle and tensor fasciae latae muscle, inferior to the anterior superior iliac spine (ASIS). A total of 5 mL of the anesthetic mixture was injected to perform the lateral femoral cutaneous nerve block (LFCNB).
FICB group: Patients were placed in the supine position, and the skin was routinely disinfected. Using the same ultrasound system, a high-frequency linear transducer was placed over the iliac fascia plane superior to the inguinal ligament to identify the iliac fascia, iliopsoas muscle, and femoral artery. Under an in-plane approach from lateral to medial, the needle was advanced until the tip reached the potential space between the iliac fascia and iliopsoas muscle. A single injection of 30 mL of the aforementioned anesthetic mixture was then administered to perform the fascia iliaca compartment block (FICB).

Intervention Type
Drug/Device

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Ultrasound-guided pericapsular nerve group block combined with lateral femoral cutaneous nerve block (PENGB + LFCNB); Ultrasound-guided fascia iliaca compartment block (FICB)

Primary outcome(s)
1. Pain Scores measured using Visual Analogue Scale (VAS) at during movement at 2 h, 6 h, 12 h, and 24 h postoperatively

Key secondary outcome(s)

Completion date
31/10/2026

Eligibility

Key inclusion criteria
1. Age ≥ 80 years
2. Scheduled for total or hemi-hip arthroplasty
3. All patients underwent hip arthroplasty for the first time
4. American Society of Anesthesiologists (ASA) classificationas grade II or III

Healthy volunteers allowed
No

Age group
Senior

Lower age limit
80 Years

Upper age limit
98 Years

Sex
All

Total final enrolment
80

Key exclusion criteria
1. Presence of severe liver or kidney dysfunction
2. Abnormal coagulation function
3. Presence of severe cardiovascular disease (e.g., severe arrhythmia, heart failure)
4. Allergy to local anesthetics; presence of cognitive dysfunction or mental illness precluding assessment
5. Preoperative abnormal quadriceps muscle strength

Date of first enrolment
01/02/2026

Date of final enrolment
30/09/2026

Locations

Countries of recruitment
China

Sponsor information

Organisation
Health Commission of Nantong City, Jiangsu Province

Funder(s)

Funder type

Funder Name
Health Commission of Nantong City, Jiangsu Province

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available