



Is a Second Ultrasound Necessary After a Negative Initial Scan in Patients Presenting with DVT Symptoms Following Recent Total Hip or Knee Replacement?

Pandya C¹, Mackay F², Hussein A¹, Pickering G¹, Majkowski L¹
¹ Barnsley District General Hospital
² University of Sheffield Medical School

Introduction

- **Total hip replacement (THR) and total knee replacement (TKR)** carry a high risk of **venous thromboembolism (VTE)**, including **deep vein thrombosis (DVT)**.
- **NICE guidelines** recommend using the **Wells score, D-dimer testing, and venous ultrasound (USS)** for DVT assessment.
- Postoperative **D-dimer levels are often elevated** due to surgical inflammation, limiting their diagnostic accuracy.
- Current guidelines do not account for this, creating **uncertainty about the need for repeat ultrasound** after a negative initial scan in postoperative patients.

Methods

Design: Retrospective review
Setting: Barnsley District General Hospital
Period: 1 September 2024 – 1 September 2025
Inclusion criteria:
Recent THR or TKR
Clinical suspicion of DVT (positive **Wells score**)
Elevated **D-dimer**
Exclusion criteria: Non-attendance for one or both ultrasound scans
Data collected:
Type of arthroplasty (THR/TKR, elective/trauma)
D-dimer levels (including age-adjusted threshold)
Timing of presentation
First and second ultrasound results

Aims

Primary aim: Determine whether a **second ultrasound** is necessary in patients with suspected DVT after THR or TKR when the initial scan is negative.
Secondary aim: Assess whether **age-adjusted D-dimer thresholds** are useful for postoperative risk stratification.

Results

Characteristic			
No. patients analysed	61	Positive DVT on first scan	1 (1.6%)
Mean age	72 years	Negative first scan	60
Median time from surgery to presentation	12 days	Positive on second scan	2 (3%)
Elective vs Trauma	60:1	Age-adjusted D-dimer exceeded	100%
		TKR: THR	38:23

1 elective patient had a positive 2nd scan. Their 1st scan was technically difficult with suboptimal images.
In elective patients, no patient had a positive 2nd scan after a negative 1st scan with satisfactory image quality

Conclusions

D-dimer testing is unnecessary to justify ultrasound when clinical suspicion is sufficient.
A **single, technically sound ultrasound** is adequate if negative.
Repeat imaging should be reserved for:

- **Trauma-related arthroplasty** (e.g., hip fracture THR)
- **Technically suboptimal initial scans**

Discussion

Elevated **postoperative D-dimer** is **nonspecific** and should not delay ultrasound imaging when DVT is suspected.
Repeat scanning rarely identified new DVTs (<3%) and only when the first scan was technically limited or in trauma cases.
Routine **second ultrasound** offers **limited additional diagnostic yield** in **elective arthroplasty** patients.