



## Radiological Recovery Protocols for Outpatient Liver Biopsy, Vertebroplasty, and Peripheral Angiography: A Systemic Review



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### A B S T R A C T

#### Keywords:

Adverse effects  
Evidence-based practice  
Nurse-led care  
Postanesthesia nursing  
Vital signs

Same-day discharges after interventional and diagnostic radiological procedures occur in many health facilities. Evidence-based recovery protocols are essential to provide high-quality nursing care. The systemic review examines recovery protocols for three outpatient radiological procedures to look at variations in clinical practice. A systematic review of recovery protocols for liver biopsy, vertebroplasty, and peripheral angiography with titles and abstracts of articles were reviewed for relevance, followed by sourcing of the full text for relevant articles and data extraction. In total, 450 articles pertaining to liver biopsy, 930 articles pertaining to vertebroplasty, and 735 articles pertaining to peripheral angiography were identified; 17, 8, and 13 articles, respectively, were deemed relevant. For liver biopsy, there were 13 primary research articles with the remainder from secondary sources (i.e., protocols and guidelines). All vertebroplasty articles were secondary. There were 10 primary research articles for peripheral angiography. Overall, 13 of 38 articles were nursing authored. Marked variations in recovery management, particularly with timing of observations and mobility, were observed. In conclusion, there is varied practice with a limited evidence base to guide postprocedural recovery protocols for liver biopsy, vertebroplasty, and peripheral angiography. Evidence-based review of current practice to inform protocol refinement is recommended.

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### Introduction

#### Background

Liver biopsy performed under ultrasound guidance, vertebroplasty, and peripheral angiography are commonly performed as outpatient (day-case) radiological procedures (Anderson, 2001; Firpi et al., 2005; Karamshi, 2008; Kasthuri, Karunaratne, Andrew, Summer, & Chalmers, 2007). All involve significant periprocedural care incorporating nursing, radiological, and anesthetic support. Guidelines using evidence-based principles aim to ensure quality care that is safe and optimizes patient outcomes (Burn, 2013). Recovery guidelines for these procedures are dependent on potential

or actual complications and thus need to be evidence based. Radiological interventions under a direct visual field are quicker and frequently require less sedative and analgesic medications compared with their surgical counterparts. However, patients undergoing radiological procedures have special considerations, such as maintaining hemostasis, positioning, and exposure to contrast and radiation (Bixby, 2009). Elderly frailer patients are often the recipients and present further challenges for care postradiological procedures.

#### Purpose Statement

The aim of this systemic review was to examine nursing recovery protocols, guidelines, and primary research studies relating to postprocedural care for liver biopsy, vertebroplasty, and peripheral angiography in the outpatient radiological setting. In particular, details relating to complications, observation frequency, and time to mobilization were of interest.

This project did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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<http://dx.doi.org/10.1016/j.jradnu.2017.02.001>

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## Method

This systemic review followed the Preferred Reporting Items for Systemic Reviews and Meta-Analysis guidelines (Moher, Liberati, Tezloff, & Altman, 2009). Three subreviews were undertaken identifying primary research articles and secondary articles (protocols and guidelines) relating to postprocedural care for each of the three radiological procedures of interest.

The databases searched were CINAHL and MEDLINE. Search terms used were liver biopsy, vertebroplasty, and peripheral angiography with each of the following: adverse effects, after-care, evidence-based practice, monitoring, outpatient, post-procedure care, radiology nurses, recovery, and safety. Articles published in the last 15 years were searched (January 1, 1990–June 30, 2015). Non-English language and articles relating to pediatric patients (younger than 18 years) were excluded.

Articles relating to liver biopsy not performed under ultrasound guidance and cerebral or cardiac peripheral angiography were excluded. No distinction was made on the basis of the purpose of peripheral angiography: articles relating to both diagnostic and interventional purposes were included. Abstracts of all records were identified, and the complete article was sourced where indicated. Articles that concerned immediate

postprocedure care were included. Preprocedure, intraprocedure, and postdischarge care were excluded. An additional article relevant to vertebroplasty was identified at the time of peer review.

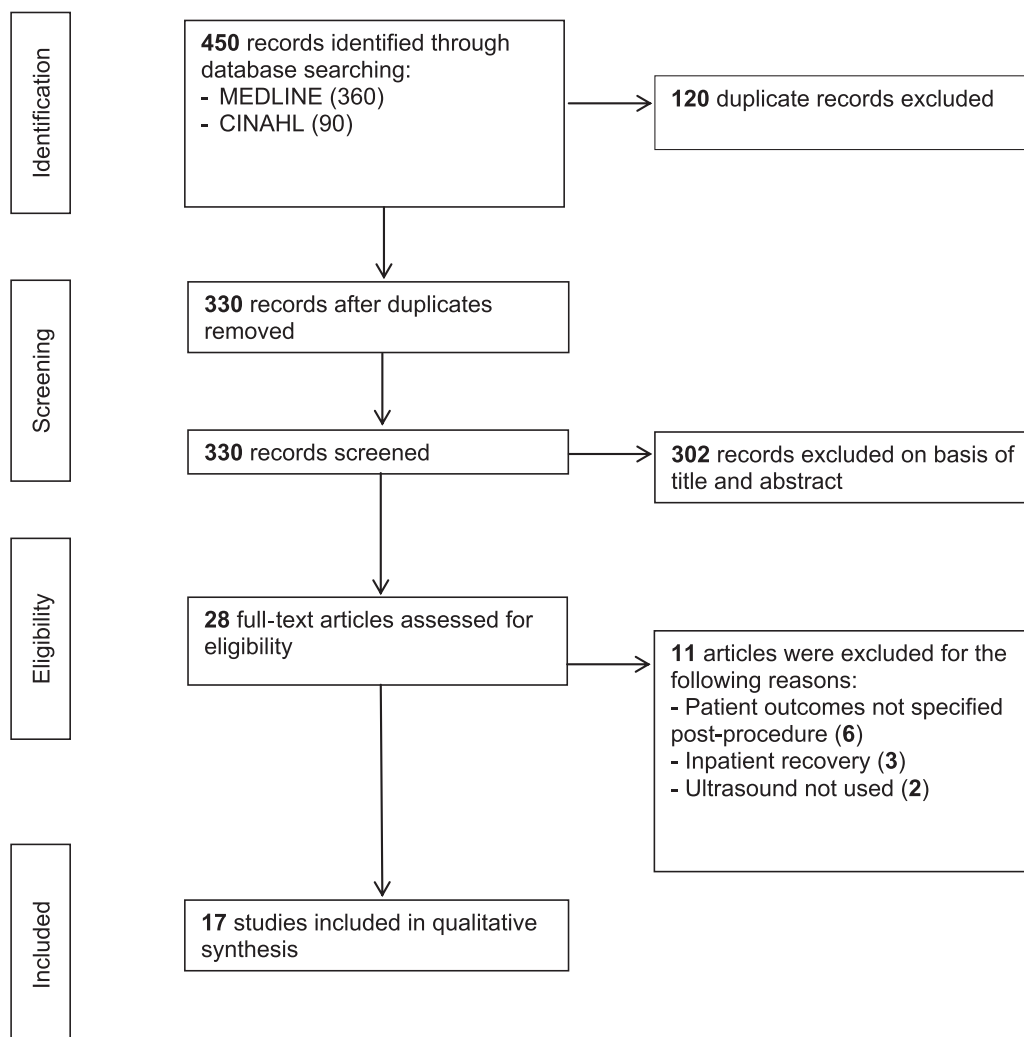
## Results

The search strategy yielded 450 unique records for liver biopsy, 930 for vertebroplasty, and 735 for peripheral angiography. Of these, 17, 8, and 13 articles were considered relevant, respectively (Figures 1–3). E-tables 1 to 3 summarize key details of the sourced articles.

### Liver Biopsy

The description of complications varied across studies, but the general consensus was that liver biopsy is a safe procedure when performed in an outpatient setting.

Monitoring after liver biopsy varied between 1 and 8 hr (median, 6 hr). Seven articles (41%) reported 15-min monitoring for the first 1 to 2 hr and then hourly until discharge. Almost half of the articles (7 or 41%) neglected to specify a clear monitoring time frame or used terms, such as regularly or frequently.



**Figure 1.** Flow diagram for liver biopsy studies identified, screened, and included in the systematic review.

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