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Cochrane Nursing Care Field – Cochrane Review Summary

Prepared for the

Orthopaedic Nursing Journal

Anaesthesia for hip fracture surgery in adults (Review)

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- **Background:**

A hip fracture, or more specifically a proximal femoral fracture, is defined as a fracture of the femur in the area of bone immediately distal to articular cartilage of the hip, to a level of about five centimetres below the border of the lesser trochanter. The elderly are the group at highest risk of this type of fracture, with an accidental fall the most common cause (Guay et al, 2016).

The majority of these fractures are treated surgically and hip fractures represent one of the most common emergency orthopaedic surgeries performed. Surgical treatment involves either internal fixation of the fracture or total or partial replacement of the joint with an arthroplasty. Anaesthesia for these procedures is in the form of a general or regional anaesthetic. A neuraxial block is a type of regional anaesthetic that involves a spinal, epidural or combined spinal/epidural block. The other type of regional anaesthetic used is a peripheral nerve block, which refers to placement of local anaesthetics around peripheral nerves or plexus outside the spine (Guay et al, 2016).

The choice of anaesthetic is critical when dealing with the elderly population as they are at high risk of mortality following a general anaesthetic due to their age and associated comorbidities. A recent study reported that the 0 to 30 day mortality of patients undergoing high or moderate cardiac risk procedures, for example hip fracture repair, is lower in patients where a neuraxial block was used as opposed to a general anaesthetic (Guay, 2014).

- **Objective/s:** .

This review aimed to determine the effectiveness of regional anaesthesia for hip (proximal femoral) fracture repair in adults compared to general anaesthesia.

- **Intervention/Methods:**

The review included only randomised controlled trials (RCTs) that compared any combination of the following interventions: neuraxial blocks, peripheral nerve blocks and general anaesthesia, in patients aged 16 and older, undergoing emergency hip fracture surgery.

The primary outcome measures considered in this review were:

- Mortality
- Pneumonia
- Myocardial infarction.

The secondary outcomes assessed included cerebrovascular accident, acute confusional state, deep vein thrombosis, return of patient to their home, congestive cardiac failure, acute kidney injury, pulmonary embolism, unsatisfactory surgical results, number of patients transfused, length of hospital stay, length of surgery, operative hypotension, urine retention and incomplete or unsatisfactory analgesia.

- **Results:**

In total, 31 studies (with 3231 participants) were included in this review, however not all studies contained evidence of the outcome measures and a total of 28 studies, representing 2976 participants provided data for the meta-analyses.

No differences were reported between the interventions for the primary outcome measures of mortality, pneumonia and myocardial infarction, and the quality of evidence found was rated as very low.

The authors reported that the risk of deep vein thrombosis decreased in patients who had undergone regional as compared to general anaesthesia. This occurred in patients where no specific precautions or just early mobilisation were used, and where potent thromboprophylaxis, for example low molecular weight heparin was not administered. No differences were identified between the interventions for any of the other secondary outcome measures.

- **Conclusions:**

The authors concluded that regional anaesthesia was associated with a decreased risk of deep vein thrombosis in patients, but only in the absence of potent thromboprophylaxis. The authors cautioned that the inclusion of older trials in the review, the oldest from 1977, meant that actual clinical practice may not be reflected in a number of included studies. In addition the lack of clear definitions for many of the outcome measures and the insufficient number of participants included for the vast majority of outcome measures, mean that it was not possible to eliminate a difference between the two surgical techniques for the other outcome measures.

There was some evidence to suggest that the use of ketamine without neuromuscular blocking agents may increase the risk of poor surgical results.

- **Implications for Practice:**

A review of evidence should focus on current clinical practice and avoid the inclusion of older studies that do not reflect best practice. The elderly represent a high risk group for general anaesthesia, and safer alternatives should continue to be researched. However clinicians should be mindful when trialling new techniques that a measure of their quality of life is always included as an outcome measure. This will facilitate person centred care by ensuring that not only are the risks and benefits of an intervention quantifiable, but that a qualitative measure of treatment success from the patient's perspective is also included.

References:

Guay, J., Parker, M.J., Gajendragadkar, P.R., & Kopp, S. 2016. Anaesthesia for hip fracture surgery in adults. (Review). *Cochrane Database of Systematic Reviews*, 2016, Issue 2, Art.No: CD000521 DOI: 10.1002/14651858.CD000521.pub3.

Guay, J., Choi, P., Suresh, S., Albert, N., Kopp, S. & Pace, N.L. 2014. Neuraxial blockade for the prevention of postoperative mortality and major morbidity: an overview of Cochrane systematic reviews. *Cochrane Database of Systematic Reviews*, 2014, Issue 1. DOI: 10.1002/14651858.CD010108.pub2.