

Intra-Operative Anaesthetic Management of Neck of Femur Fractures

Key Points

- Standardise intra-operative care of patients with fractured neck of femur, to improve overall mortality and morbidity
- A patient centred and MDT approach to Neck of Femur Fracture care
- All patients should be considered for neuraxial anaesthesia unless contraindicated
- Peripheral nerve blocks should always be considered
- Cautious use of sedation techniques
- Appropriate monitoring and management of haemodynamics

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Abbreviations

AA	Association of Anaesthetists
AAGBI	Association of Anaesthetists of Great Britain and Ireland
ASAP	Anaesthesia Sprint Audit Practice
BP	Blood Pressure
GPAS	Guidelines for the Provision of Anaesthetic Services
ICU	Intensive Care Unit
NG	Nasogastric
NICE	National Institute for Health and Care Excellence
NOF	Neck of Femur
RCOA	Royal College of Anaesthetists
SBP	Standing Blood Pressure
SIGN	Scottish Intercollegiate Guidelines Network
TCI	Target Controlled Infusion

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1. Introduction

Surgeries for neck of femur fractures are one of the commonest orthopaedic procedures in the elderly. There has been a steady rise in the number of UK hospital admissions with fractured femurs in the past 20 years from 49,020 in 1998 to 65,645 in 2017, with predicted rise to 100,000 by 2033.

Mortality rates are also higher in this population, influenced by significant medical comorbidities and often poor baseline functionality. There have, however, been improvements in the 30 day mortality nationally from around 8.3% in 2009 to 6.7% in 2017 as per the National Hip Fracture Database.

Several organisations including NICE, SIGN and AAGBI have released guidelines in the past few years, to standardise and improve hospital care of these patients. All the guidelines highlight the importance of a patient-centred approach with multidisciplinary decision making during peri-operative care. There was, however, no agreement about ideal anaesthetic technique, with no definite mortality or morbidity benefit with either.

A recent consensus group, with leading anaesthetists from 28 different countries were consulted as part of the International Fragility Fracture Network and there was also no agreement on ideal anaesthetic option, but they emphasised the importance of local pathways and agreed standards of care.

Our guidelines are based on the 2011 AAGBI guidelines 'Management of proximal femoral fractures; the subsequent ASAP (Anaesthesia Sprint Audit Practice) audit in 2014; and the 2020 AA Guideline for the management of hip fractures, which included minor changes to the 2011 guideline. The AAGBI guidelines endorsed the SIGN 2009 recommendation that a neuraxial technique should be considered for all patients undergoing neck of femur fracture repair unless contraindicated, as well as intra-operative nerve blocks as adjuncts for pain relief and techniques to avoid haemodynamic instability like low volume neuraxial blockades.

4. The Guideline

4.1 Regional Anaesthetic

Is ideal but may be contra-indicated or inappropriate.

1. **Peripheral nerve block** – Fascia Iliaca Nerve block in anaesthetic room
2. **Neuraxial blockage**
 - 25G Sprotte or Whitacre
 - Low volume Heavy Bupivacaine < 10mg (<2ml of 0.5%) bad side down / Prilocaine 2% 3.5-4 mls / plain Bupivacaine 0.25% 3.5-4 mls.
 - Avoid intrathecal opiates especially morphine or diamorphine, restrict use to only fentanyl
3. **Minimal Sedation** (with capnography desirable as per RCOA GPAS for conscious sedation)
 - Avoid more than 2 agents
 - Consider Propofol TCI or midazolam boluses
4. **Supplemental oxygen**

4.2 General Anaesthetic

1. **Peripheral nerve block** – Fascia Iliaca Nerve block in anaesthetic room
2. **Consider Inhalational induction** or co-induction techniques for haemodynamic stability
3. **Spontaneous Ventilation**, Supraglottic Airway +/- NG tube if indicated.

4.3 General Considerations

1. Anaesthetic monitoring as per AAGBI
2. Anaesthetised by a Consultant or Specialist with similar clinical trauma or orthopaedic experience
3. Close Blood pressure monitoring
 - Maintain SBP >100mmHg or >80% of pre-op
 - Low threshold for invasive arterial blood pressure monitoring
4. Awareness and caution about Bone Cement Implantation Syndrome
5. Maintain temperature control with warmed air/ fluids and regular monitoring
6. Skin and pressure sore awareness
7. Avoid combining Neuroaxial and General Anaesthesia

5. Monitoring Compliance of Guideline

Regular re-auditing of practice with standards outlined in the guideline.

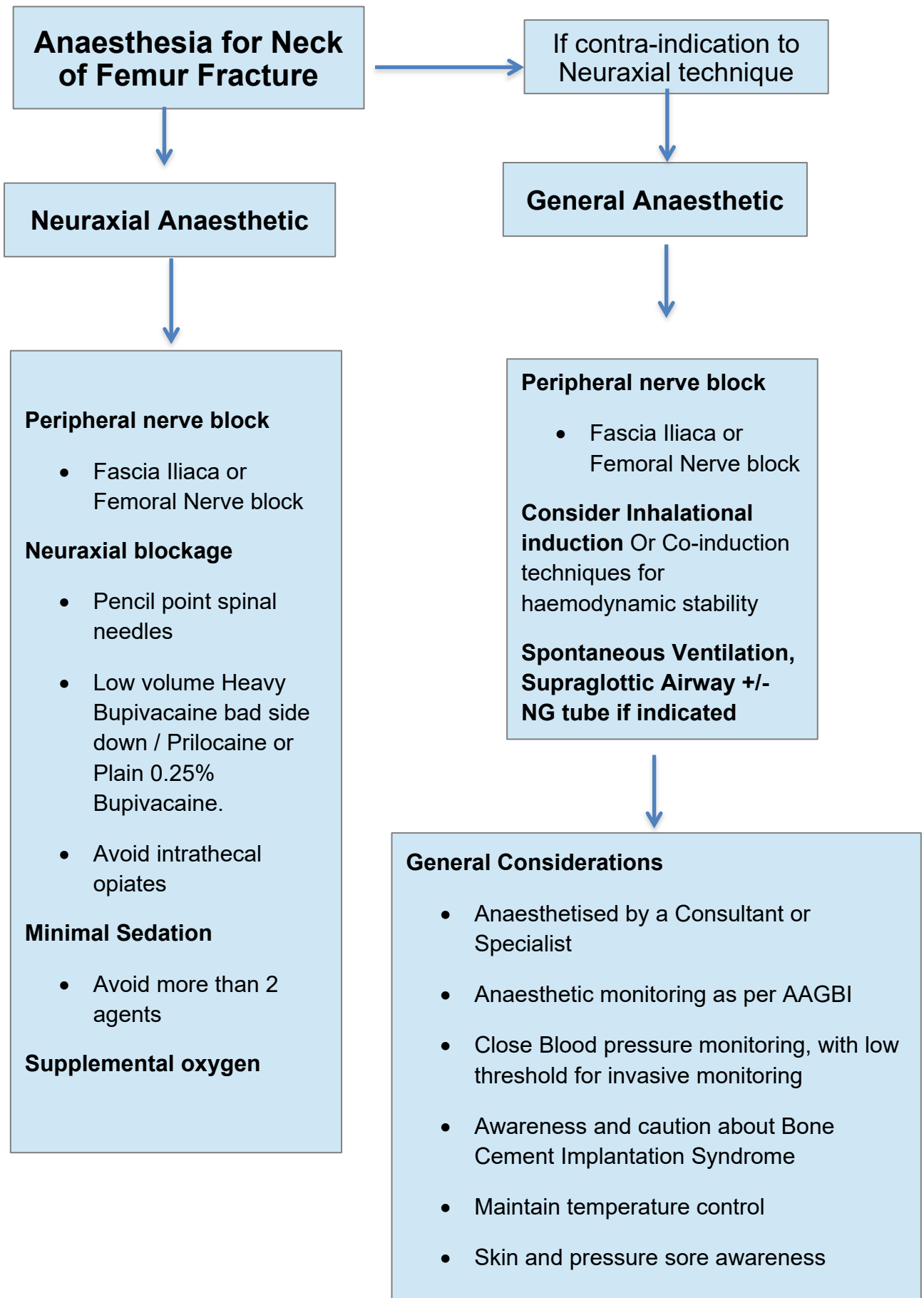
6. Post-Operative Recovery Care

- Aim for Hb levels between 90 and 100.
(Low threshold for Hemocue for all Fracture NOFs in recovery).
- Consider extended recovery or ICU for appropriate cohort of patients.
- Consider discharge from recovery only after stable haemodynamics and systolic BP above 100.

7. References

1. National Institute for Health and Care Excellence (2011 updated 2023) *Hip fracture: management. Clinical guideline [CG124]*. Available at: <https://www.nice.org.uk/guidance/cg124/chapter/Recommendations#anaesthesia> (Accessed 14.03.23)
2. AAGBI Management of Proximal Femoral Fractures 2011 - https://www.aagbi.org/sites/default/files/femoral%20fractures%202012_0.pdf (Accessed 11/9/18) (Withdrawn, available for reference only 14.03.23)
3. Guay J, Parker MJ, Gajendragadkar R and Kopp S (2016) *Anaesthesia for hip fracture surgery in adults*. Cochrane Database of Systematic Reviews. Available at: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000521.pub3/full> (Accessed 14.03.23)
4. White S.M., Moppett I.K., Griffiths R. Outcome by mode of anaesthesia for hip fracture surgery. An observational audit of 65,535 patients in a national dataset. *Anaesthesia*. 2014;69(3):224–230. doi: 10.1111/anae.12542.
5. Kearns RJ, Moss L, Kinsella J. A comparison of clinical practice guidelines for proximal femoral fracture. *Anaesthesia*. 2013 Feb;68(2):159-66. doi: 10.1111/anae.12076. Epub 2012 Nov 5. Review.
6. Wood R.J., White S.M. Anaesthesia for 1131 patients undergoing proximal femoral fracture repair: A retrospective, observational study of effects on blood pressure, fluid administration and perioperative anaemia. *Anaesthesia*. 2011;66(11):1017–1022. doi: 10.1111/j.1365-2044.2011.06854.x.
7. White SM et al., International Fragility Fracture Network Delphi consensus statement on the principles of anaesthesia for patients with hip fracture. *Anaesthesia*. 2018 Jul;73(7):863-874. doi: 10.1111/anae.14225. Epub 2018 Mar 6
8. Griffiths, R., Babu, S., Dixon, P., Freeman, N., Hurford, D., Kelleher, E., Moppett, I., Ray, D., Sahota, O., Shields, M. and White, S. (2021), Guideline for the management of hip fractures 2020. *Anaesthesia*, 76: 225-237. <https://doi.org/10.1111/anae.15291>

Appendix 1 – Summary of Guideline



Appendix 2 - Recommendations from ASAP (Anaesthetic Sprint Audit of Practice) 2014

These are based on the guidelines from *The Management of Proximal Femoral Fracture*, AAGBI, 2011

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| Standard 1 | Patients should be anaesthetised by a consultant or specialist with similar clinical experience. |
| Standard 2 | Spinal/epidural anaesthesia should be considered for all patients |
| Standard 3 | Spinal anaesthetics should be administered using heavy bupivacaine (< 10mg) or Prilocaine 2% 3.5 to 4 mls or Plain Bupivacaine 0.25% 3.5 to 4 mls. |
| Standard 4 | Co-administration of intrathecal opioids should be restricted to fentanyl |
| Standard 5 | If sedation is required this should be midazolam or propofol |
| Standard 6 | Supplemental oxygen should always be provided |
| Standard 7 | Inhalational agents should be considered for the induction of general anaesthesia |
| Standard 8 | Spontaneous ventilation should be used in preference to mechanical ventilation |
| Standard 9 | Consider intraoperative nerve blocks for all patients undergoing surgery |
| Standard 10 | Neuraxial and general anaesthesia should not be combined |
| Standard 11 | Hypotension should be avoided |
| Standard 12 | Patients should be routinely assessed for the occurrence of Bone Cement Implantation Syndrome |

Full version control record

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Guidelines Lead(s):	Dr Asif Ahmad, Consultant Anaesthetist Dr Tim Pepall, Consultant Anaesthetist Dr Mark Reaveley, Consultant Anaesthetist
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Version Control Sheet

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0.1	March 2023	Dr A Ahmad, Dr T Pepall, Dr M Reaveley	Draft	Adapted from FPH Anaesthetic Management of Neck of Femur Fractures v1 (2018)
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