

Spine Surgery and Home Again: The Nurse's Role in the Patient Journey

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Abstract

Enhanced recovery after surgery (ERAS) programs – also referred to as fast-track programs - are multidisciplinary, evidence-based perioperative pathways, designed to achieve early recovery for patients undergoing major surgery (Ali et al., 2018). ERAS utilises strategies to optimise the patient's condition for surgery and recovery. In particular, the aim is to achieve an earlier discharge from hospital for the patient and a more rapid resumption of normal activities after surgery, without an increase in complications or readmissions (Dietz et al., 2019). An essential element of ERAS programs is multidisciplinary collaboration between surgical, anaesthetic, nursing and allied health teams. While elements of ERAS may vary between surgical units and hospitals, there are many common features in the preoperative, intraoperative and postoperative phases.

Minimally invasive spine surgery techniques and instrumentation have evolved rapidly over the past decade, and there is now a worldwide interest in ERAS programs for spine surgeries, including lumbar and cervical decompression and fusion procedures (Li et al., 2021). Nurses have a pivotal role in the successful implementation and sustainability of ERAS protocols because of their specialised knowledge and skill, and their constant presence throughout the patient care pathway (Wainwright et al., 2022). This publication presents learnings from the implementation of an ERAS program for minimally invasive spine surgery at Westmead Hospital, NSW.

Key Words

Enhanced recovery after surgery, minimally invasive, spine surgery, outpatient, neurosurgery

Introduction

Enhanced recovery after surgery (ERAS) programs – also referred to as fast-track programs - have gained popularity amongst surgeons, healthcare providers and hospital administrators due to the proven benefits to patients and the healthcare system (Ali et al., 2018). They are multidisciplinary, evidence-based perioperative pathways which have been designed to achieve early recovery for patients undergoing major surgery by decreasing the surgical stress response and reducing hospital length of stay (Dietz et al.,

2019). The ERAS approach, first described by Dr Henrik Kehlet from Copenhagen in the 1990s, has now become a worldwide healthcare movement (Ljungqvist et al., 2017).

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DOI: 10.21307/ajon-2023-014

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The ERAS® Study Group began meeting in 2001 and the ERAS® Society was formed in 2010 in Sweden, with the mission of developing perioperative care and improving recovery through research, education, audit and implementation of evidence-based practice (ERAS® Society, 2023). ERAS programs encompass preoperative, perioperative and postoperative elements (Watson, 2017). Since 2010, consensus guidelines have been developed across a wide range of surgical specialties such as colorectal surgery, thoracic, cardiac, gynaecology and orthopaedic surgery (ERAS® Society, 2023).

There is an increasing body of research evidence supporting the safety and efficacy of ERAS programs. A recent systematic review found that, on average, ERAS pathways reduce length of stay by 2.3 days and case costs by \$639USD, without adverse impact on mortality, adverse events or readmissions (Zhang et al., 2020). However, while research studies in high-income countries have shown that effective implementation of an ERAS program, alongside a program compliance of 70% or greater, resulted in significant improvement in the quality of perioperative care and patient outcomes, to date there is limited application for low and middle-income countries (Oodit & McQueen, 2020). ERAS uptake in Australia is a classic example of a gap between evidence and practice. Despite over 20 years of research evidence, it still hasn't been adopted consistently into routine practice (Duff, 2020). A recent systematic review reported three common barriers to implementation: resistance to change from frontline clinicians, not enough resources allocated to implementation, and external factors, like patient complexity or hospital location (Stone et al., 2018).

The primary goals of ERAS are to reduce anaesthesia, reduce intraoperative blood loss and structural disruption to muscle and soft tissue, a reduction in post-operative pain for better mobility, and a faster recovery time, which mirror the goals of minimally invasive spine surgery (Dietz et al., 2019). These strategies improve the patient's overall experience with an earlier return to daily activities, including work (Ljungqvist et al., 2017). By reducing the patient's length of hospital stay, the risks of hospital-acquired complications are also reduced while improving patient flow within the specialty and increasing cost-efficiency (Goacher et al., 2022). With recent advancements in techniques and instrumentation, there has been a rapid expansion in the number of ERAS protocols for minimally invasive spine surgery that have become available to spine surgeons (Abou-Zeid, 2014; Li et al., 2021; Smith et al., 2019).

Impetus for change at Westmead Hospital

At Westmead Hospital, a tertiary referral hospital in western Sydney, our Neurosurgery Unit was experiencing continued increasing requirements for acute care beds within the specialty, which was having a detrimental impact on elective surgery waiting lists. Concurrently, a new neurosurgeon joined the department after recent advanced surgical training at an ERAS spine centre in the United States, and he gathered an interdisciplinary team together to consider implementation of an ERAS program for minimally invasive spine surgery. ERAS programs are based on close interdisciplinary and multi-disciplinary collaboration between surgeons, anaesthetists, nurses and allied health professionals (Wainwright et al., 2022).

The working party developed a clinical pathway and protocol for cervical and lumbar microdiscectomies and decompression spinal surgeries. Our inclusion criteria were patients aged 18-70 years, single level surgery, no prolonged opioid use greater than 12 months, no previous spine infection, another adult available to stay with patient overnight, and lives within 100 kilometres of Westmead Hospital. Exclusion criteria were co-morbidities, footdrop and emergency procedures. The inclusion and exclusion criteria are similar to those published in ERAS guidelines and research into fast-track programs for lumbar spine surgery (Ali et al., 2018; Debono et al., 2021; Hagan et al., 2022).

Nursing Role prior to implementation of ERAS program

Nurses play a vital role in the successful implementation and sustainability of ERAS programs, as they are the professionals who spend the most time with patients and are able to facilitate the patient's progress along the care pathway (Wainwright et al., 2022). At Westmead Hospital, senior neurosurgery nurses and nurses working in outpatient clinics, perioperative services and Day Surgery Unit work collaboratively to progress the patient for an optimal outcome. The Neurosurgery Case Manager and Neurosciences Clinical Nurse Consultant provided leadership with patient and nursing education prior to implementation of the ERAS program for minimally invasive spine surgery. An information booklet was developed for patients, which incorporated consumer feedback. Nurses working in ERAS roles have a valuable role to play in providing patient and carer education in the pre-operative setting and providing care coordination and smooth transition throughout the hospital stay (Brady et al., 2015; Watson, 2017). Research by Roth

et al. (2021) identified that ERAS program non-compliance was highest during the post-operative period. It is therefore very important that nurses caring for ERAS patients post-operatively are engaged as key stakeholders as part of a sustainable ERAS program (Wainwright et al., 2022). Prior to implementation of the ERAS program at Westmead Hospital, the Neurosurgery Case Manager provided in-service education to Pre-Admission Clinic and Day Surgery Unit nursing staff, and education resource folders including relevant contact information were provided to both units.

Patient Journey

A thorough understanding of the patient journey is essential to success of an ERAS program (Stone et al., 2018). Firstly, the patient has a consultation with the neurosurgeon in their private rooms or public outpatient spine clinic. Admission documents and the signed consent form are then submitted to the hospital if they are suitable for an ERAS day-only procedure, with paperwork clearly labelled as such. A Pre-Admission Clinic Assessment is booked, with review by anaesthetist, neurosurgery registrar and junior medical officer, Neurosurgery Case Manager, and physiotherapist.

The ERAS procedures are scheduled as the first case of the day on the neurosurgeon's operating list, usually a Wednesday. After the procedure is completed, the patient transfers to the Post-Acute Care Unit (Recovery), ideally by midday (Magee et al., 2016). They are then transferred back to the Day Surgery Unit, and when the discharge criteria are met, they are discharged home with analgesia. The patient receives a nurse check-up phone call at 24hrs post-operatively, then attends an outpatient Neurosurgery Registrar Clinic ap-

pointment on the following Monday (5 days post-operative). The patient books their own follow-up appointment with the neurosurgeon at 6 weeks post-operative.

Nursing Role in Pre-Admission Clinic

In the Pre-Admission Clinic, the patient is reviewed by Neurosurgery Registrar and Junior Medical Officer, Neurosurgery Case Manager, anaesthetist and physiotherapist to check eligibility and provide peri-operative instructions. Assessment encompasses detailed medical history such as history of injury and symptoms, physical examination – including assessment of muscle strength, reflexes, sensation and movement, and review of imaging and functional studies such as CT scan, MRI scan, x-rays and myelogram. The Neurosurgery Case Manager provides targeted education for all ERAS patients, including provision of written material (see Figure 1). This is a key nursing role contributing to the success of ERAS programs (Watson, 2017). Outpatient clinic nurses facilitate efficient and timely review for ERAS patients in the clinic, which includes general health assessment. The Neurosurgery Case Manager, in collaboration with the neurosurgery team, can identify early barriers to effective day-only discharge (Magee et al., 2016; Wainwright et al., 2022).

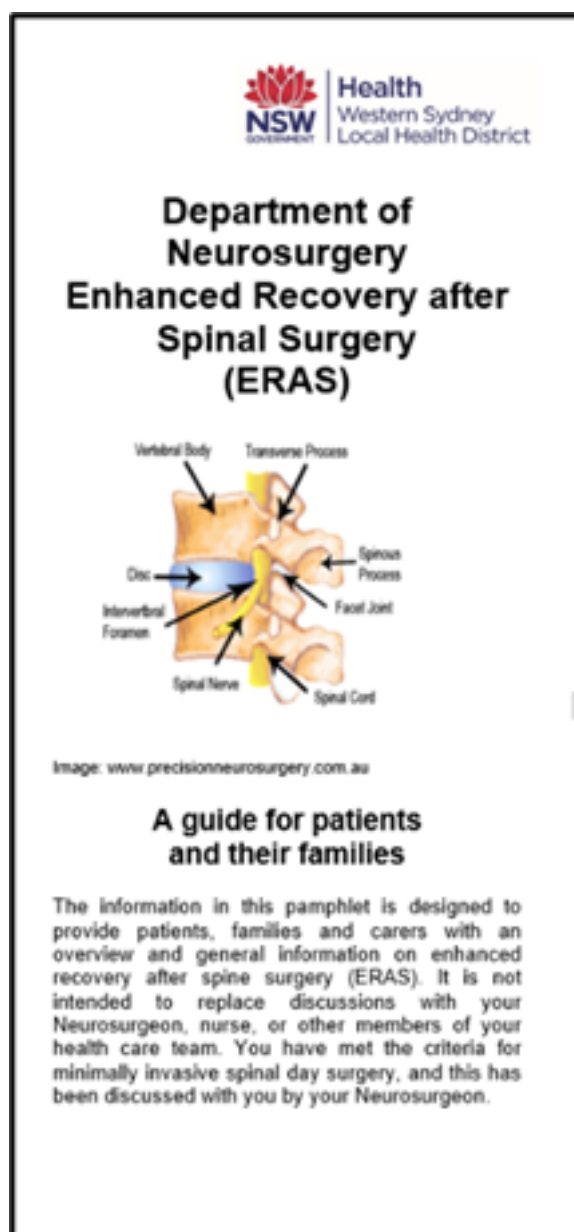


Figure 1: Information booklet provided to patient and carer in Pre-Admission Clinic



Nursing role in Day Surgery Unit

Nurses in the Day Surgery Unit provide front-line care to ERAS patients in the immediate pre- and post-operative period. They implement standardised care pathways to facilitate discharge of ERAS patients on the day of surgery (Brady et al., 2015). After the procedure, the patient is transferred to the Post Acute Care (Recovery) Unit where their observations are monitored, analgesia provided as needed, and dressings observed. IV fluids are continued. The patient is discharged back to Day Surgery Unit when suitable. The Day Surgery Unit nurses then continue with monitoring of observations, trial of oral fluids and light diet, mobilising the patient for the first time post-operatively, providing analgesia as required, and ensuring that the patient voids urine post-operatively. The Neurosurgery Case Manager facilitates junior medical officer review and generation of discharge summary, post-operative care instructions including first post-operative appointment at Neurosurgery Registrar Clinic, and external scripts for analgesia. Minimising use of opiate medication is a key element of ERAS programs (Ali et al., 2018). The patient is discharged with external script for celecoxib 200mg BD 5 days, and oxycodone 5mg every 4 hours as required (maximum 10 tablets).

Nursing role in post-operative follow-up

Specialist nurses provide ongoing support for ERAS patients to ensure compliance with post-operative care instructions and address any early concerns to reduce the risk of unplanned hospital readmission (Watson, 2017). The Neurosurgery Case Manager contacts the patient by phone 24 hours after discharge, to assess post-operative recovery including analgesia requirements and wound

care. The Neurosciences Clinical Nurse Consultant provides expert wound assessment at the Neurosurgery Registrar Clinic appointment approximately 5 days post-operatively. The patient is then reviewed at 6 weeks post-operatively in the neurosurgeon's private rooms (the appointment is booked by the patient).

Nursing role in clinical audit and ongoing evaluation of ERAS program

At Westmead Hospital, the Neurosurgery Case Manager, Neurosciences Clinical Nurse Consultant and other colleagues maintain clinical audit data regarding ERAS patients, from Pre-Admission Clinic to 6-week follow-up. Over an 18-month period from March 2021 to September 2022, 31 patients had minimally-invasive spine surgical procedures with the ERAS program, with a median age of 46 years (range 25 – 79 years). 26 patients underwent lumbar surgery and 5 patients had cervical surgery. A total of 5 patients were removed from the care pathway for the following reasons: - Patient 1 was put on the operating list as the last patient and therefore deemed unsuitable to be a day-surgery patient - Patient 2 & 5 were from a culturally and linguistically diverse (CALD) background and failed to arrange transport home with a relative/carer - Patient 3 was deemed appropriate for day surgery by the anaesthetist in Pre-Admission Clinic, however not by the anaesthetist on operating day due to cardiac safety, - Patient 4 was deemed unsuitable for discharge from Day Surgery Unit due to post-operative pain requiring Acute Pain Service review and management. There has been one post-operative complication of a patient who was previously on aspirin who developed an epidural haematoma which resolved with con-

servative measures. Although ERAS nurses collect outcomes data as part of their role, they are under-represented as authors in ERAS research publications (Wainwright et al., 2022). This is an exciting area for future growth.

Discussion

At Westmead Hospital, the senior neurosciences nursing staff have been instrumental in the design, implementation and ongoing evaluation of an ERAS program for minimally invasive spine surgery. Over the past 18 months, the protocol and inclusion and exclusion criteria have continued to evolve as our experience grows. Our ERAS program has now been expanded to include other neurosurgeons, and has promoted a renewed focus on evidence-based surgical care and the value of monitoring patient outcomes in our department.

Conclusion

ERAS programs for minimally invasive spine surgery overcome a number of systems barriers to timely elective surgery for patients requiring lumbar and cervical microdiscectomies and decompression surgeries. Implementation of a successful and sustainable ERAS program requires ongoing involvement of key stakeholders such as nursing staff.

Acknowledgements: Dr Yingda Li, Neurosurgeon, Westmead Hospital; Ms Diane Lear, Neurosciences Clinical Nurse Consultant, Westmead Hospital

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