

# Title: ACCELERATED RECOVERY PROTOCOL FOLLOWING POSTERIOR SPINAL FUSION FOR ADOLESCENT IDIOPATHIC SCOLIOSIS LEADING TO EARLY HOSPITAL DISCHARGE: A QUALITY IMPROVEMENT PROJECT.

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## **Aims:**

To determine if a standardized Accelerated Recovery Protocol (ARP) consisting of multimodal analgesia, early mobility exercises, and early patient feeding in Adolescent Idiopathic Scoliosis (AIS) patients undergoing Posterior Spinal Fusion (PSF) will lead to better pain control, lesser opioid usage, and related side effects, and early hospital discharge.

## **Methods:**

All subjects with AIS who underwent posterior spinal fusion surgery by a single attending surgeon were included in the project. Phase 1 is a retrospective cohort study from January 2015 to December 2016. We divided the cohort into two: Baseline Group (B) patients prescribed with Patient Controlled Analgesia (PCA) morphine and Phase 1 Group (P1) patients prescribed with PCA morphine plus ketamine 1:1 concentration. Our physiotherapists provided once-a-day exercise sessions on weekdays and nil visits on weekends and holidays. Surgeons started a soft diet on Post-Operative Day (POD) 3.

Phase 2 (Group P2) is a prospective interventional audit that followed ARP from June 2017 to July 2020. Pain treatment included PCA Morphine plus Ketamine 1:1 concentration. All groups received the same pain adjuvants. However, Clonidine was only prescribed for P2 patients. Our physiotherapists increased visits to twice a day during weekdays and once on weekends and holidays—soft diet initiated on POD 1. We conducted a Post Implementation (PI) audit from August 2020 to January 2021.

## **Results**

The number of subjects per group was; 15 in B, 16 in P1, 25 in P2, and 11 in PI. The frequency of subjects who reported pain scores of more than 6 in groups P1, P2, and PI was significantly less when compared to group B on POD1 ( $p=0.004$ ), POD2 ( $p=0.022$ ), and POD3 ( $P=0.000$ ). Morphine usage was significantly lower in P1, P2, and PI than B (POD1:  $p=0.041$ , POD2:  $p=0.000$ , POD3:  $p=0.002$ ). The PI subjects were discharged home 38.4% earlier than B. Fewer patients in groups P1, P2, and PI reported nausea and vomiting ( $p=0.000$ ) and sedation score less than 0 ( $p=0.005$ ). Nil reported readmission due to uncontrolled pain.

## **Conclusions:**

The standardized ARP implementation leads to lower pain scores, reduced opioid usage and related side effects, and early hospital discharge. ARP was adapted as part of KKH AIS recovery protocol. We are currently extending our PI audit until August 2021.