**Assessment of Methadone Use and Safety to Decrease Post-Op Opioid Use in the Cardiac Surgery Enhanced Recovery after Surgery (ERAS) Protocol**

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**Background:** Post-operative pain can lead to a great deal of complications. Research assessing the safety and efficacy of methadone in the intraoperative setting has shown promising results in reducing post-operative pain. Methadone is a long acting, fully synthetic opioid agonist, and delta agonist. Due to methadone’s long half-life, it has become a drug of interest in preventative analgesia in surgeries that have longer recovery times and are associated with increased opioid needs. Methadone is a component of the Cardiac Surgery ERAS Protocol

**Objective:** Evaluate outcomes and safety with the use of methadone to decrease opioid use post cardiac surgery in the ERAS Protocol compared to non-ERAS Protocol patients

**Methods:** This was a single center, retrospective chart review that evaluated patients who were admitted for ERAS and non-ERAS cardiac surgery from September 1, 2019 to September 1, 2021. Patients were included if they were ≥18 years old and admitted for elective cardiac surgery. Patients were excluded if they underwent urgent/emergent surgery. The primary endpoint was total dose of intra-operative and post-operative opioid pain medications for the first 24 hours. Secondary endpoints included amount of opioids prescribed at discharge, incidence of QTc prolongation > 500 msec and post-operative complications attributed to methadone use. Descriptive statistics were used.

**Preliminary Results:** Overall, there were 94 patients included in the ERAS group and 94 patients in the non-ERAS group. For the primary endpoint, the total dose of intra-operative opioid pain medication was 73.4 morphine milliequivalents (MME) in the ERAS group as compared to 251.8 MME in the non-ERAS group. When comparing these two groups, there was a 70.9% reduction in the ERAS group from the non-ERAS group in intra-operative MMEs. The post-operative opioid pain medication for the first 24 hours for the ERAS group was 35.2 MME versus 49.4 MME in the non-ERAS group. When comparing the MME’s for the post-operative opioid pain medication for the first 24 hours in the ERAS group and the non-ERAS group, there was a 28.8% reduction in MME in the ERAS. For the secondary endpoints, at discharge, the ERAS group had 231.2 MME prescribed compared to 293.8 MME in the non-ERAS group. When comparing these two groups there was a 21.3% reduction in the MMEs at discharge when comparing the ERAS group to the non-ERAS group. There were four documented episodes of over sedation in the ERAS group and none in the non-ERAS group. Aspartate transaminase (AST)/alanine transaminase (ALT) were found to be three times the upper normal limit post-surgery in two patients in the ERAS group and none in the non-ERAS group. QTc was prolonged to >500msec in 27 patients in the ERAS group compared to 17 in the non-ERAS group.

**Conclusion:** Implementation of methadone use within the ERAS protocol was associated with a decrease in intra-operative opioid use, 24-hour post-operative opioid use and the amount of opioids prescribed in MME at discharge. Increased events of over sedation, increased liver enzymes and QTc prolongation events >500msec were also observed with the ERAS group compared to the non-ERAS group.