



Peri-Operative IV Acetaminophen in Lumbar Spinal Surgery - Initial Results

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Introduction

Appropriate post-operative pain control leads to decreased time to mobility, shorter length of stay, and minimized risk of nosocomial sequelae.

Post-surgical pain in spine surgery patients has been traditionally managed using morphine in spite of an undesirable side effect profile that often complicates hospital course, placing demands on healthcare resources.

IV acetaminophen has the allure of familiarity, albeit in a novel route of administration more useful in the peri-operative setting. A rise in popularity and subsequent increased unit price has prompted questions about its efficacy and side effect profile compared with less expensive morphine.

Methods

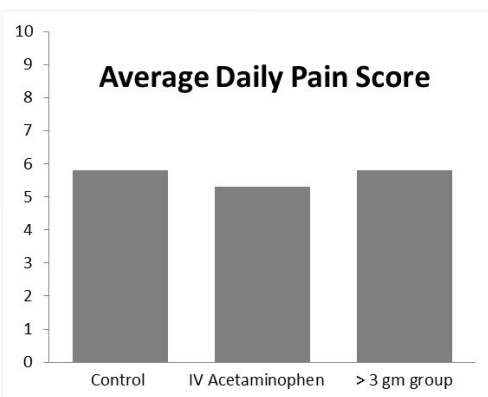
This single center, retrospective analysis included patients undergoing spinal surgery in two distinct groups: those who received peri-operative IV acetaminophen and those who did not receive the intervention.

The major endpoint evaluated during the 24-hour post-operative period was Total IV morphine equivalents (mg). The groups were also analyzed according to Length of stay (days), Time to mobility (hours), Average daily pain score (0 to 10, with 10 being the worst pain ever felt) and development of ORAE (nausea/vomiting, constipation, respiratory depression, oversedation requiring reversal as well as development of ileus).

	Control (%)	IV Acetaminophen (%)	> 3 gm IV Acetaminophen (%)
Number of Patients	50	49	16
Average Age	56	62	60
Gender (%)			
Male	22 (44)	20 (41)	5 (30)
Female	28 (56)	29 (59)	11 (70)
Surgery Type (%)			
Single Level Fusion	25 (50)	22 (45)	11 (69)
Two Level Fusion	18 (36)	25 (51)	5 (31)
More Than Two Level Fusion	7 (14)	2 (4)	0
Average Surgery Length(Hours)	6	5.15	5.11

Additional data analysis included a subset of the IV acetaminophen group who had received at least 3 doses of IV acetaminophen within the first 24 hours after surgery. This group was analyzed according to the variables as mentioned above.

Figure 2 - Pain Score



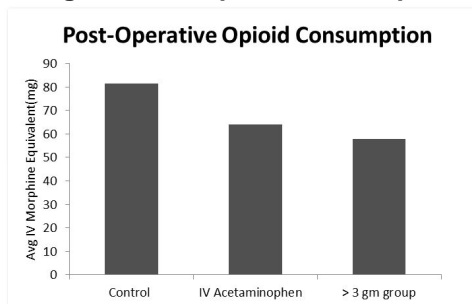
The overall results of this study first and foremost demonstrated equivocal pain relief among both groups (5.3 vs 5.8).

Figure 4 - Opioid Related Adverse Events

	Control n (%)	IV Acetaminophen n (%)	>3 gm n (%)
Hospital Course			
Length of Stay (days)	4.8	4.4	3.78
Time to mobility (hours)	18	16.6	15.65
Incidence of Opioid Related Side Effects (24h post-op)			
Respiratory depression	1	1	0
Oversedation requiring reversal	1	0	0
Nausea/vomiting (anti-emetic given or emesis reported)	21 (42)	21 (43)	4 (25)
Constipation Reported	19 (38)	16 (33)	5 (31)
Laxatives Given	41 (82)	39 (80)	13 (81)
Incidence of Opioid Related Side Effects (To Discharge)			
Post operative ileus/obstruction	0	0	0

IV acetaminophen had little impact on the rate of OAE development except for the 3-dose subgroup, which showed significant reduction in both ORAE and improved hospital course.

Figure 3 - IV Opioid Consumption



Lumbar fusion patients receiving IV acetaminophen showed reduced Total IV Morphine Equivalents in 24 hours (63.9mg vs 81.4mg). This translates to a 22% absolute reduction in opioid consumption and 29% reduction in the 3g group.

Conclusions

IV acetaminophen is effective and non-inferior to morphine in reducing post-operative pain.

A single perioperative dose of IV acetaminophen shows significant decrease in opioid consumption during the first 24 hours. The reduction is further pronounced in patients receiving at least 3 doses within those 24 hours.

Use of IV acetaminophen may facilitate a more reliable neurological exam resulting in quicker detection of post-surgical deficits.

Risk reduction of ORAE was seen in patients receiving 3 gm IV acetaminophen.

Hospital course was improved by decreased time to mobility and shorter length of stay. IV acetaminophen may therefore reduce incidence of broader post-operative complications such as DVT, nosocomial infection, etc. The economic value of mitigating cost associated with delayed discharge and treatment of complications cannot be understated.

The results of this initial pilot study seem to indicate perioperative IV acetaminophen is a reasonable and cost-effective choice for reducing post-operative pain and reducing the incidence of morphine-related complications and associated costs.