Clinical pathway for postoperative pain management in children after scoliosis surgery

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Objectives:
1. Explain the utility of clinical pathways and the importance of pain control in children undergoing scoliosis surgery.
2. Integrate the use of multimodal analgesia to the pain management of children after scoliosis surgery.

Background
Every year over a hundred patients with scoliosis have corrective surgeries at Roosevelt Children’s Hospital. These surgeries are associated with high costs, morbidity and mortality. Adequate pain control is important as it has been demonstrated that it decreases the risk of perioperative complications.

Clinical pathways are used to create standardization in processes and guide evidence-based healthcare decisions aiming to improve quality of care. They have been used for many years and are used worldwide. Clinical pathways are defined as a multidisciplinary management plan developed to be applicable to a specific group of patients. Interventions are well defined and performed by different professionals. Outcomes depend on these specific interventions. They also facilitate the analysis of results for improvement and investigation.

A clinical pathway at Roosevelt Hospital was developed for children older than 5 years of age in the first three postoperative days after scoliosis corrective surgery. Its objectives are: to create a standard of care; to decrease variability in the practice; to decrease costs; to improve communication with patient and family; and to facilitate the organization of data for analysis and research.

Multimodal analgesia is considered the best alternative for pain management in this population. Thoracic epidural catheters have also been used for pain relief after scoliosis surgery but its use makes more difficult the assessment of neurological complications related with the procedure perse..

Multimodal analgesia using IV PCA opioid is the main component of the pathway. Coadjuvant medications are also used in a scheduled base. A multidisciplinary group is in charge of multiple interventions. Periodic assessment of pain, education of patients and family, prophylaxis of PONV, treatment of side effect are part of interventions of the pathway.

Preliminary data obtained from patients this year: 25 patients have been managed with this clinical pathway (11 boys and 14 girls). Overall satisfaction for parents and patients was 89%. The most frequent side effects were constipation (2 patients) and nausea (5 patients). No complications have been reported until now. Discharge times and analysis of costs are in progress.

Similar protocols are now probably standard of care in many institutions worldwide. However, since there is no data in the literature of results of similar clinical pathways in the pediatric population, our findings can not be compared.

In summary, clinical pathways are invaluable tools used worldwide. Until now this pathway at Roosevelt has shown to be effective in reducing postoperative pain, complications and potentially reducing costs. Continued studies and analysis are in progress to evaluate the overall impact of the pathway.

Table 1. Summary of clinical pathway.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Interventions</th>
<th>Follow Up</th>
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</thead>
<tbody>
<tr>
<td>Pre-anesthesia evaluation</td>
<td>Pain management; Oral opioid + coadjuvants; IV PCA</td>
<td>Pain scale assessment in PACU, post-operative day one and two</td>
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<tr>
<td>(screening)</td>
<td>Opioids: Morphine, Hydromorphone or Fentanyl PCA</td>
<td>Satisfaction survey</td>
</tr>
<tr>
<td>PACU</td>
<td>Coadjuvants: non opioid analgesics (Brimonidine),</td>
<td>(Day 1 and day 2)</td>
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<tr>
<td>Post-operative day one and two</td>
<td>Dipirone, Naproxen, (Busprofen, Ketorolac, Tylenol)</td>
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<tr>
<td></td>
<td>Prevention/treatment of PONV; Deacemetizaline; metoclopramide;</td>
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<tr>
<td></td>
<td>Treatment of complications</td>
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References: