L2 Paravertebral Blocks for Postoperative Alveolar Bone Graft Pain
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INTRODUCTION
Cleft alveolus repair by iliac crest bone allograft is a common pediatric procedure. Postoperative alveolar pain is easily managed, however iliac crest donor site pain can be significant. Many patients at our institution are offered second lumbar level paravertebral nerve block catheters (L2PVB) for post-operative pain management. Our primary objective was to evaluate the effectiveness of the L2PVB through average morphine consumption. Secondary end points included time to post anesthesia care unit (PACU) discharge, complications, and time to hospital discharge.

METHODS
After IRB approval, 30 patients undergoing unilateral iliac crest alveolar bone graft (ABG) with L2PVB between 2009 and 2015 were identified. Block placement, complications, opioid consumption, time to PACU discharge, and time to hospital discharge were all recorded.

All L2PVBs were placed under general anesthesia in the lateral decubitus position, donor side up, either at the start or conclusion of surgery. The second lumbar vertebral level was identified by palpation. L2PVB catheters were placed steriley with or without ultrasound guidance. An initial bolus of less than 3 mg/kg of 0.2% or 0.5% Ropivacaine was injected. 0.2% Ropivacaine was infused through the catheter at no more than 0.5 mg/kg/hr.

RESULTS
The average patient age was 9.8 years old. 80% of patients received acetaminophen post operatively. No L2PVB complications were noted. Average morphine equivalents/kg are outlined in Table 1. With the exception of 4 patients discharged with disposable elastomeric infusion devices (ON-Q with Select-a-flow; Halyard Health, Inc., Alpharetta, GA, USA), L2PVBs were removed on average within 24 hours. No quadriceps weakness was noted. L2PVB patients were discharged from the PACU and hospital an average of 79.36 minutes and 25.1 hours respectively.

DISCUSSION
Iliac crest sensation arises from the ilioinguinal and iliohypogastric nerves. While multiple blocks can provide analgesia to these nerves, we utilize an L2PVB secondary to its duration of action, location outside of the surgical field, and potential reduced risk of quadriceps weakness. Dashow et al found patients receiving surgical wound infiltration (SWI) for iliac crest ABG required a morphine equivalent of 0.2 mg/kg. Although more data is required, we found a trend towards decreased morphine equivalent use with L2PVB without quadriceps weakness.

Table 1: Average Milligrams Morphine per Kilogram

<table>
<thead>
<tr>
<th></th>
<th>PACU</th>
<th>POD 0</th>
<th>POD 1</th>
<th>Total</th>
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<tbody>
<tr>
<td>L2PVB</td>
<td>0.039</td>
<td>0.028</td>
<td>0.045</td>
<td>0.12</td>
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Graph 1: Morphine Equivalence Comparison of L2 Paravertebral Block (L2PVB) Versus Surgical Wound Infiltration (SWI)*

*Data as compared to Dashow, JE et al

Graphical representation:

- L2PVB
- SWI*