

# **The Safety and Efficacy of Intrathecal Morphine in Early Onset Scoliosis Surgery - A 25 Year Single Center Experience**

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# Disclosures

**C Poe-Kochert**

**None**

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**Medtronic, OrthoPediatrics**

**JP Son-Hing**

**OrthoPediatrics**

**GH Thompson**

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OrthoPediatrics, SpineForm,  
Medtronic**

**P Tripi**

**None**



**“Pre-incision Intrathecal  
Morphine (IM) provides safe  
and effective analgesia in the  
immediate post-op period  
with idiopathic scoliosis”**

**This has not been studied with  
Early Onset Scoliosis (EOS)**



# Purpose

**This study represents our 25 year experience with IM with EOS and growing rod surgery**



# Methods

## Pediatric Orthopaedic Spinal Deformity Database (1993-2018)

All EOS patients who had growing rod surgery (TGR, MCGR, VEPTR)

- Received (IM)
- Did not receive IM (non IM)



# Methods

**Demographics**

**PICU admission**

**Complications**

- **Respiratory depression**
- **Pruritus**
- **Nausea / vomiting**

**Start time for opioids after surgery**

**Pain scores**



# Results

n = 97 patients      171 procedures

IM - 26 patients (43 procedures)

Non IM - 71 patients (128 procedures)

Insertion

Final Fusion

IM dose - 15  $\mu$ /kg up to max of 1.0 mg



# Results

## IM not used for:

- Short procedures (<3 hrs)
- Lengthening procedures
- Respiratory concerns
- Paraplegia
- Unsuccessful access to intrathecal space
- Anesthesiologist decision





# Insertion

IM (n=26)

Non IM (n=71)

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<b>TGR</b>	<b>13</b>	<b>57</b>
<b>TGR with apical fusion</b>	<b>7</b>	<b>6</b>
<b>MCGR</b>	<b>6</b>	<b>5</b>
<b>VEPTR</b>	<b>1</b>	<b>2</b>

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## Diagnosis

<b>Neuromuscular</b>	<b>5</b>	<b>34</b>
<b>Syndromic</b>	<b>7</b>	<b>16</b>
<b>Idiopathic</b>	<b>10</b>	<b>12</b>
<b>Congenital</b>	<b>4</b>	<b>9</b>



# Final Fusion

	IM (n=17)	Non IM (n=57)
<b>Post Final Fusion</b>	<b>12</b>	<b>49</b>
<b>ASF / PSF</b>	<b>5</b>	<b>8</b>
<b>Diagnosis</b>		
<b>Neuromuscular</b>	<b>1</b>	<b>28</b>
<b>Syndromic</b>	<b>2</b>	<b>13</b>
<b>Idiopathic</b>	<b>11</b>	<b>8</b>
<b>Congenital</b>	<b>3</b>	<b>8</b>



# Results

	Insertion			Final Fusion		
	IM	Non IM		IM	Non IM	
Age	8	7	No sig	12.6	12	No sig
Length of Stay	5	4.6	No sig	4.4	6.3	No sig
Length of Surgery	5 hrs	3.5 hrs	p=0.004	5.9 hrs	5.8 hrs	No sig
Ist Dose of Opium after surgery	11.8 hrs	1.8 hrs	p=0.001	10.9 hrs	2.5 hrs	p=0.001
Pain Scores in PACU	0.2	2.3	p=0.001	0.4	2.1	p=0.002



# Complications

	Insertion			Final Fusion		
	IM n=26	Non IM n=71		IM n=17	Non IM n=57	
Respiratory Depression	2 (8%) No PICU	2 (3%)	p=0.009	1 (6%)	4 (7%)	ns
Pruritus	3 (12%)	2 (3%)	p=0.042	1 (6%)	2 (4%)	ns
Nausea / Vomiting	7 (27%)	16 (23%)	ns	3(19%)	7(17%)	ns
PICU Admission	3 (12%) None r/t IM	21 (29.6)	p=0.034	1 (6%)	22(39%)	p=0.005



# Conclusion

Pre-incision IM is a safe and effective adjunct of pain management for EOS patients undergoing growing rod insertion and final fusion.

Complications were minimal.





***THANK YOU***

