

Improved Pulmonary Function Using a Continuous Infusion of a Local Anesthetic for Pain Management Following Thoracotomy*



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Case Series

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OBJECTIVE

Thoracotomy produces one of the most damaging surgical insults as a result of surgical chest wall trauma. Inadequate pain control may lead to post-operative pulmonary complications. Epidural pain management is the current standard of care following this procedure. However it is labor intensive, presents dosing challenges and may cause hypotension and spinal headaches. We sought to determine the effectiveness of a continuous incisional infusion of local anesthetics via elastomeric pump for the management of post-operative pain following thoracotomy.

METHODS

Retrospective comparative review of 57 patients undergoing thoracotomy between November 1999 and June 2002. Post-operative pain management with a continuous infusion elastomeric pump providing local anesthetic into the incisional area was compared to thoracic epidural and PCA either alone or in combination. Data sources were reviewed for mean narcotic consumption, pain measurement, lung volumes and complications.

RESULTS

Twenty-six patients received the Local anaesthetic infusion pump, 16 epidural, 6 PCA and 9 local anaesthetic infusion pump + epidural. Narcotic usage, pain scores and lung volumes are summarized in the table. Despite having higher ASA scores, compared to those receiving an epidural, the Local anaesthetic patients had a statistically significant increase in lung volumes by incentive spirometry, reduction in VAS pain scores and total amount of narcotics used. There were no complications or infections with the pump.

Demonstrable benefits include increased pulmonary function, reduction of narcotic usage and pain with no risk of infection or complication. Continuous infusion of 0.25% bupivacaine at 4 ml/hr via the elastomeric infusion pump is a safe and effective adjunct in post-operative pain management for thoracotomy and presents a viable and possible superior option to epidural in patients undergoing this procedure.

Demographic Characteristics, Opioid Usage, Pain Scores and Long Volumes

	Epidural (n=16)	LA pump (n=26)	PCA (n=6)	La pump + Epidural (n=9)
Age	56.5 ± 2.7†	55.7	54.3	49.8
ASA	420 ± 394	3.35	3.4	2.5†
Narcotic Use (mg MSO4)	1.97 ± 0.1	72 ± 91.4‡	112 ± 178	98 ± 43
VAS 3 day average (0-4)	506	1.52 ± 0.6‡	1.83 ± 0.4	2.17 ± 0.7
Lung Volume(IS cc)		996‡	na	889

‡p<0.05 LA pump vs. epidural † p<0.05 vs. LA pump Values are means ± SD