

OnQ™ Ropivacaine Infusion for Rib Fractures

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Background:

The incidence of rib fractures in trauma patients is reported to be 4-10%, with approximately one-half of patients with rib fractures presenting with at least two broken ribs (1,2). 10-15% of blunt chest trauma injuries will result in a flail chest (3,4). Although often used as a marker for injury severity or other injuries, rib fractures carry their own morbidity and mortality. Up to 60% of patients will require mechanical ventilation. Rates of pneumonia, ARDS, empyema, and ICU stay increase linearly with each additional rib fracture (5). In hospital mortality rates of 10-12% are reported for patients with rib fractures and increases in correlation to the increasing number of rib fractures (5-7).

Rib fractures cause a significant amount of pain and can lead to poor respiratory effort and complications. Thoracic epidural and paravertebral infusions have been shown to decrease pain scores, decrease respiratory rate, increase peak expiratory flow rate, and decrease opiate usage (8). Despite their effectiveness, epidural and paravertebral infusions use is limited by availability of trained providers or contraindications of the procedure (spine fractures, coagulopathy, need for DVT prophylaxis) (9). Reported use of epidural catheters varies by institution but remains low (5).

Recommendations:

OnQ Ropivacaine infusion is INDICATED in the following patients:

- >3 ribs fractured on one side (in ribs 3-9)
 - Persistent pain score ≥ 6 .
 - Poor respiratory effort that is pain limited.
 - Inability to wean ventilator (elevated RSBI/poor tidal volumes in spontaneous mode)
 - Patient undergoing any thoracic procedure i.e. VATS, Thoracotomy (should be placed in OR).
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Management/Placement:

- Obtain informed consent for procedure.
 - Place patient in lateral decubitus and prep/drape widely.
 - Palpate rib 3 finger breaths from midline below lowest fracture.
 - Anesthetize with 1% lidocaine and make small (3-5mm) incision over point.
 - Using trocar with sheath in place tunnel along chest wall cranially.
 - Place primed catheter through peel away sheath, secure with dermabond and steri-strips, and cover with tegaderm.
 - Max rate 14mL/hr (Divide to 6ml/hr and 8mL/hr (on more symptomatic/affected side) if bilateral pumps needed)
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