

Administration Case Report: Surgical Fixation of Rib Fractures

This case report represents the individual experience of Dr Jeff Gadsden, and is intended to demonstrate his methodology for using EXPAREL in patients undergoing surgical fixation of rib fractures.

Pacira BioSciences, Inc. recognizes that there are alternative methodologies for administering local anesthetics, as well as individual patient considerations when selecting the dose for a specific procedure.

EXPAREL is a local anesthetic that produces postsurgical analgesia in patients aged 6 years and older. It is administered via single-dose infiltration. When infiltrated into the surgical site, it produces local analgesia. It may also be infiltrated in the fascial plane to produce regional analgesia as a regional field block. Regional anesthetic techniques to produce regional analgesia include, but are not limited to, transversus abdominis plane (TAP) block, pectoralis (PEC) and serratus anterior plane (SAP) blocks, erector spinae plane (ESP) block, and quadratus lumborum (QL) block. EXPAREL may also be administered as an interscalene brachial plexus nerve block in adults to produce postsurgical regional analgesia in total shoulder arthroplasty (TSA) and rotator cuff repair (RCR) procedures.

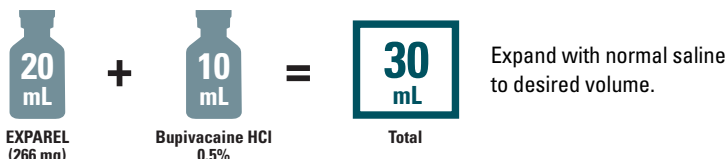
CASE INFORMATION

Physician Name	Jeff Gadsden, MD, FRCPC, FANZCA
Affiliation	Associate Professor of Anesthesiology, Duke University School of Medicine, Durham, NC
Surgical Case Performed	Surgical fixation of rib fractures (rib plating)
Inpatient or Outpatient Procedure	Inpatient

PATIENT CHARACTERISTICS

Gender	Male
Age	33 years
Patient History and Characteristics	Patient presented with right-sided rib fractures (ribs 3-7), a grade 1 liver laceration, a small, right-sided pulmonary effusion, and significant abrasions to his right upper and lower limbs and trunk. The anesthesiology team planned for a general anesthetic in addition to an ESP block for postoperative pain
Patient Vitals	Blood pressure: 143/85; heart rate: 97; respiratory rate: 26; oxygen saturation: 95% on 3 L of nasopharyngeal oxygen

PROCEDURAL DETAILS

Nature/Location of Injury	Lateral fractures of ribs 3-7 on the right side
Preoperative Analgesics Used	20 mL (266 mg) EXPAREL admixed with 10 mL of 0.5% bupivacaine HCl; acetaminophen 975 mg PO
Dose of EXPAREL and Total Volume Used	 <p>20 mL EXPAREL (266 mg) + 10 mL Bupivacaine HCl 0.5% = 30 mL Total</p> <p>Expand with normal saline to desired volume.</p>

PO=by mouth.

The recommended dose of EXPAREL for adults is based on the size of the surgical site, the volume required to cover the area, and individual patient factors that may impact the safety of an amide local anesthetic. The maximum dose of EXPAREL should not exceed 266 mg. The recommended dose of EXPAREL for patients aged 6 to <17 years old is 4 mg/kg, up to a maximum of 266 mg. The maximum dose of EXPAREL for interscalene brachial plexus nerve block in adults should not exceed 133 mg.

EXPAREL can be administered unexpanded (20 mL) or expanded to increase volume up to a total of 300 mL (final concentration of 0.89 mg/mL [ie, 1:14 dilution by volume]) with normal (0.9%) saline or lactated Ringer's solution.

Bupivacaine HCl (which is approved for use in patients aged 12 and older) may be administered immediately before EXPAREL or admixed in the same syringe, as long as the ratio of the milligram dose of bupivacaine HCl to EXPAREL does not exceed 1:2. Admixing may impact the pharmacokinetic and/or physicochemical properties of EXPAREL, and this effect is concentration dependent. The toxic effects of these drugs are additive and their administration should be used with caution, including monitoring for neurological and cardiovascular effects related to local anesthetic systemic toxicity. Other than with bupivacaine, EXPAREL should not be admixed with other drugs prior to administration.

INFILTRATION NOTES

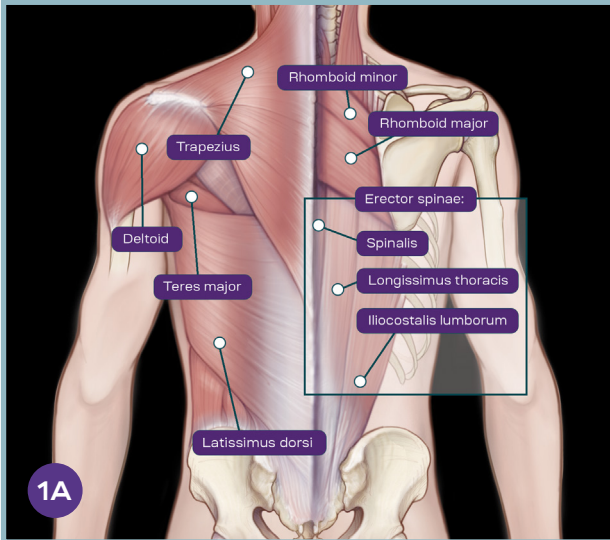


FIGURE 1A. Erector spinae muscle group



FIGURE 1B. Transducer and needle entry position for the ESP block at T5

- ESP blocks were performed in the preoperative holding area. For this unilateral procedure, Dr Gadsden prepared one 30-mL syringe of injectate containing 20 mL (266 mg) of EXPAREL® (bupivacaine liposome injectable suspension) and 10 mL (50 mg) 0.5% bupivacaine HCl
- The patient was most comfortable positioned sitting, and fentanyl 100 mcg IV was administered for procedural analgesia/sedation
- A linear ultrasound probe was placed in a parasagittal orientation and the transverse process of T5 identified deep to the erector spinae muscle group

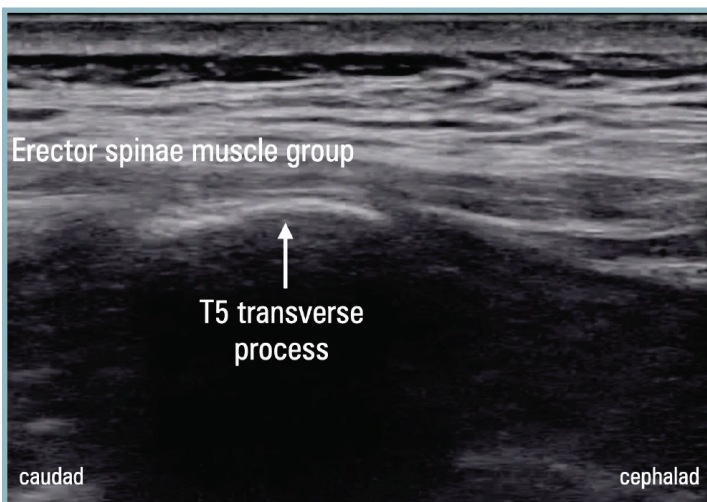


FIGURE 2. Sonoanatomy prior to needle insertion

- A 21-gauge, 100-mm needle was advanced from the cephalad aspect of the probe until contact was made with the transverse process

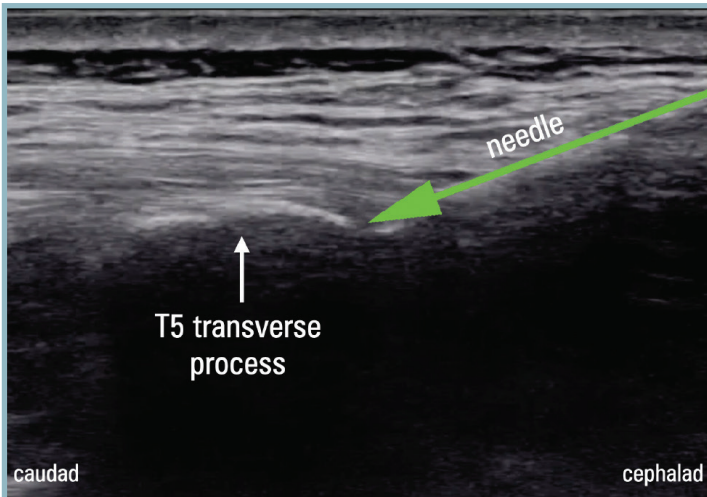


FIGURE 3. Needle contacting T5 transverse process

- Small boluses (1 mL) of saline were injected to confirm needle position underneath the deep fascia of the muscle, and the needle redirected to ensure the tip was not intramuscular
- Once satisfied with needle position, 30 mL of the expanded EXPAREL® (bupivacaine liposome injectable suspension) mixture was slowly administered

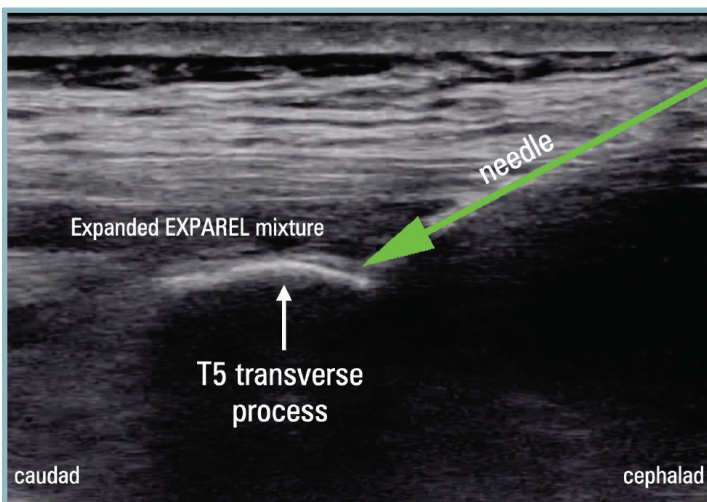


FIGURE 4. Pool of expanded EXPAREL mixture lifting the erector spinae muscle group off the transverse process

- The correct injection plane was confirmed by observing cranio-caudad spread and a “lifting” of the muscle off the transverse process

TIPS

- The ESP block can be performed with the patient seated or in the lateral or prone position
- The ESP block should be performed at the mid-level of the fractured ribs. In this example, depositing the local anesthetic at T5 provides coverage both cephalad and caudad to cover ribs 3 through 7. The correct (T5) level can be easily determined by scanning 5 to 10 cm off the midline in order to visualize the ribs. Moving the probe caudad, the last rib encountered will be the 12th rib. The probe is then moved cephalad until the 5th rib is observed, then moved medially until the T5 transverse process comes into view
- Dr Gadsden always uses normal saline to hydrolocate the needle tip and ensure that the expanded EXPAREL mixture will be deposited deep into the erector spinae muscle group, not intramuscularly

IMPORTANT SAFETY INFORMATION

Important Safety Information

EXPAREL is contraindicated in obstetrical paracervical block anesthesia.

Adverse reactions reported in adults with an incidence greater than or equal to 10% following EXPAREL administration via infiltration were nausea, constipation, and vomiting; adverse reactions reported in adults with an incidence greater than or equal to 10% following EXPAREL administration via interscalene brachial plexus nerve block were nausea, pyrexia, and constipation.

Adverse reactions with an incidence greater than or equal to 10% following EXPAREL administration via infiltration in pediatric patients six to less than 17 years of age were nausea, vomiting, constipation, hypotension, anemia, muscle twitching, vision blurred, pruritus, and tachycardia.

If EXPAREL and other non-bupivacaine local anesthetics, including lidocaine, are administered at the same site, there may be an immediate release of bupivacaine from EXPAREL. Therefore, EXPAREL may be administered to the same site 20 minutes after injecting lidocaine.

EXPAREL is not recommended to be used in the following patient populations: patients <6 years old for infiltration, patients younger than 18 years old for interscalene brachial plexus nerve block, and/or pregnant patients.

Because amide-type local anesthetics, such as bupivacaine, are metabolized by the liver, EXPAREL should be used cautiously in patients with hepatic disease.

Warnings and Precautions Specific to EXPAREL

Avoid additional use of local anesthetics within 96 hours following administration of EXPAREL.

EXPAREL is not recommended for the following types or routes of administration: epidural, intrathecal, regional nerve blocks **other than interscalene brachial plexus nerve block**, or intravascular or intra-articular use.

The potential sensory and/or motor loss with EXPAREL is temporary and varies in degree and duration depending on the site of injection and dosage administered and may last for up to 5 days, as seen in clinical trials.

Warnings and Precautions for Bupivacaine-Containing Products

Central Nervous System (CNS) Reactions: There have been reports of adverse neurologic reactions with the use of local anesthetics. These include persistent anesthesia and paresthesia. CNS reactions are characterized by excitation and/or depression.

Cardiovascular System Reactions: Toxic blood concentrations depress cardiac conductivity and excitability, which may lead to dysrhythmias, sometimes leading to death.

Allergic Reactions: Allergic-type reactions (eg, anaphylaxis and angioedema) are rare and may occur as a result of hypersensitivity to the local anesthetic or to other formulation ingredients.

Chondrolysis: There have been reports of chondrolysis (mostly in the shoulder joint) following intra-articular infusion of local anesthetics, which is an unapproved use.

Methemoglobinemia: Cases of methemoglobinemia have been reported with local anesthetic use.

Disclosure: Dr Gadsden is a paid consultant for Pacira BioSciences, Inc.

Full Prescribing Information is available at www.EXPAREL.com.