

# Administration Case Report: Open Abdominal Hernia

This case report represents the individual experience of Dr Bruce Ramshaw, and is intended to demonstrate his methodology for using EXPAREL in patients undergoing open abdominal hernia surgery.

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 in adults as an interscalene brachial plexus nerve block, a sciatic nerve block in the popliteal fossa, and an adductor canal block to produce postsurgical regional analgesia.

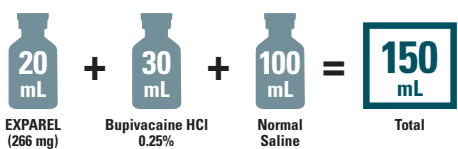
## CASE INFORMATION

<b>Physician Name</b>	Bruce Ramshaw, MD, FACS
<b>Affiliation</b>	University of Tennessee Graduate School of Medicine, Knoxville
<b>Surgical Case Performed</b>	Open abdominal mesh removal, open abdominal wall reconstruction with TAR, and placement of new mesh
<b>Inpatient or Outpatient Procedure</b>	Inpatient

## PATIENT CHARACTERISTICS

<b>Gender</b>	Female
<b>Age</b>	60 years
<b>Patient History and Characteristics</b>	Patient presented with chronic pain* and significant eventration following an open abdominal wall reconstruction, which was previously done using an open external oblique component separation technique with a biologic mesh onlay
<b>Pathology</b>	N/A

## PROCEDURAL DETAILS

<b>Incision Size</b>	25-cm inverted T incision with resection of skin and soft tissue
<b>Preoperative Analgesics Used</b>	PO oxycodone/acetaminophen 5/325 mg QD-TID prn
<b>Intraoperative Analgesics Used</b>	General anesthesia
<b>Dose of EXPAREL and Total Volume Used</b>	 <p>20 mL EXPAREL (266 mg) + 30 mL Bupivacaine HCl 0.25% + 100 mL Normal Saline = 150 mL Total</p>

PO=by mouth; prn=as needed; QD=once daily; TAR=transversus abdominis release; TID=three times daily.

\*EXPAREL is not approved to treat chronic pain.

The recommended dose of EXPAREL for infiltration in 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 recommended dose of EXPAREL in adults for interscalene brachial plexus nerve block, sciatic nerve block in the popliteal fossa, and adductor canal is 133 mg. The recommended dose of EXPAREL in adults for adductor canal block is 133 mg (10 mL) admixed with 50 mg (10 mL) of 0.5% bupivacaine HCl, for a total volume of 20 mL.

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.

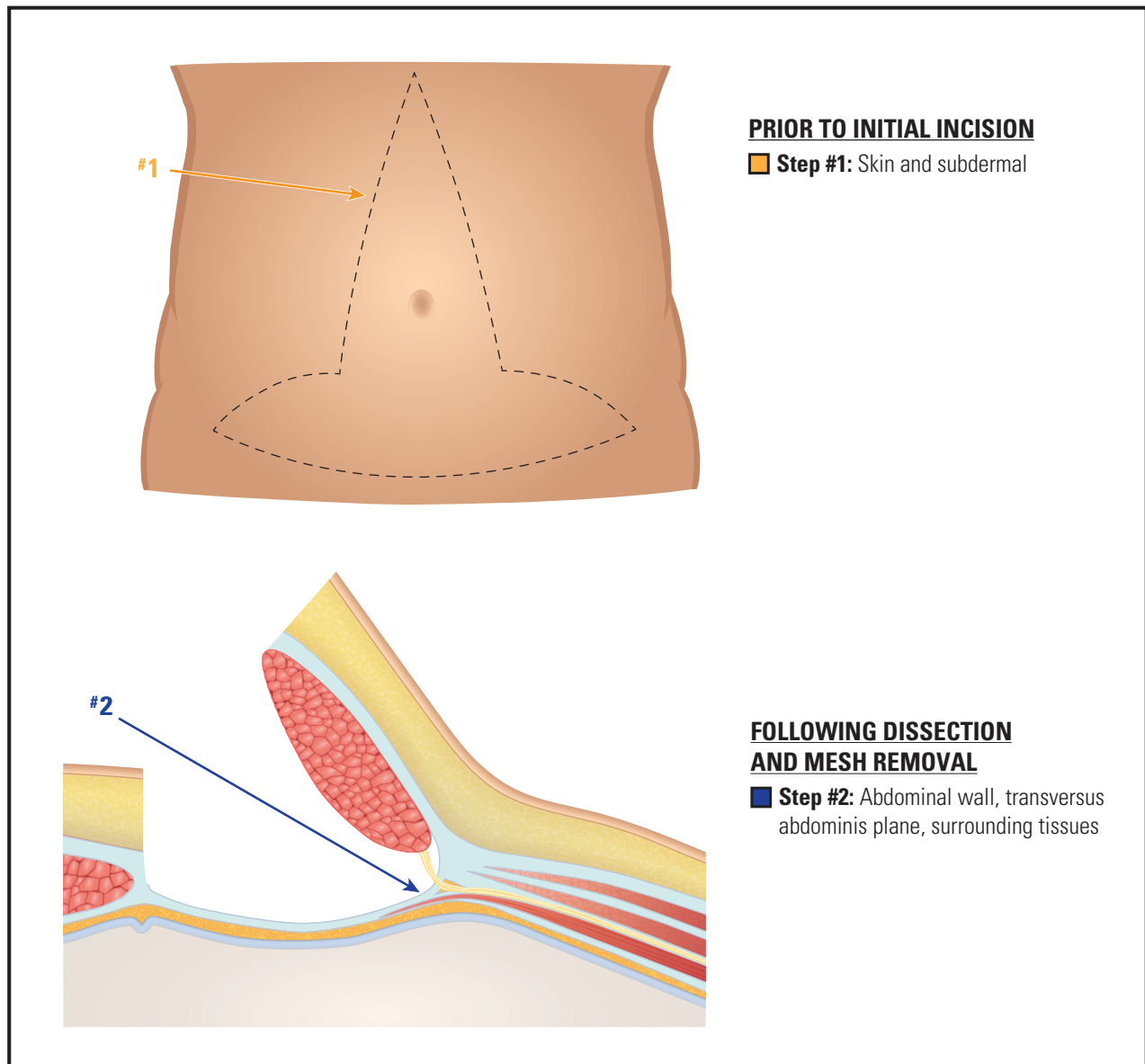
**Please see Important Safety Information on the last page and refer to accompanying full Prescribing Information, which is also available at [www.EXPARELpro.com](http://www.EXPARELpro.com).**

**INFILTRATION NOTES****ASSESSED THE SIZE OF THE SURGICAL SITE AND DEPTH OF TISSUE, THEN PREPARED INJECTION MATERIALS ACCORDINGLY**

In this procedure, Dr Ramshaw determined that a total volume of approximately 150 mL would be needed to cover the entire abdominal wall bilaterally. He expanded 20 mL of EXPAREL<sup>®</sup> (bupivacaine liposome injectable suspension) with 30 mL of 0.25% bupivacaine and 100 mL of normal saline. The addition of 0.25% bupivacaine was to provide early, short-term local analgesia that overlapped with the long-term local analgesia provided by EXPAREL.



To ensure complete analgesic coverage of the surgical site, Dr Ramshaw assumes that 0.5 to 1 mL will be infiltrated per layer (peritoneal, musculofascial, and subdermal planes) for every 1 to 1.5 cm of surgical incision.

**DIVIDED INJECTATE INTO SYRINGES WITH NEEDLE GAUGES APPROPRIATE FOR INFILTRATION (20- TO 25-GAUGE) AND INFILTRATED INTO THE SURGICAL SITE**

## INFILTRATION NOTES (cont)

For this procedure, Dr Ramshaw mixed EXPAREL<sup>®</sup> (bupivacaine liposome injectable suspension), 0.25% bupivacaine, and normal saline in a mixing bowl. He then filled two 10-mL syringes with 21-gauge needles and refilled these syringes as needed during the procedure.

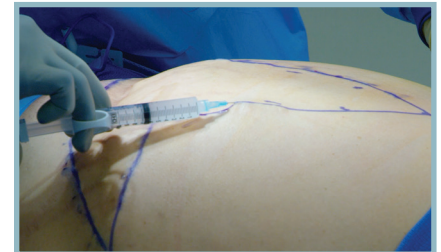
Dr Ramshaw planned to infiltrate as follows:

### ■ **Step #1: Skin and subdermal infiltration**

Prior to the initial incision, Dr Ramshaw infiltrated approximately 50 mL of expanded EXPAREL laterally along the planned incision.



In certain cases, the skin and subdermal infiltration can be done just prior to closure (ie, when additional skin and soft tissue excision is anticipated).



**FIGURE 1.** Skin and subdermal

### ■ **Step #2: Abdominal wall infiltration**

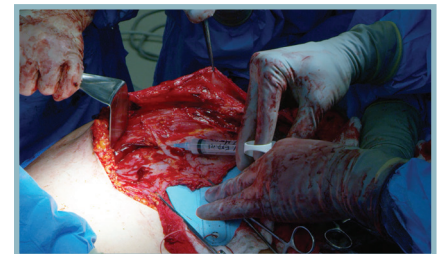
Dr Ramshaw dissected laterally in the retrorectus space, anterior to the posterior rectus fascia. This allowed him to visualize the neurovascular bundles traversing from the transversus abdominis posteriorly through the rectus muscle anteriorly.

He then infiltrated approximately 50 mL of expanded EXPAREL medial to the neurovascular bundles on both the left and the right sides of the abdominal wall (total volume of approximately 100 mL) to provide an anesthetic block and hydrodissection in the plane between the transversus abdominis and the peritoneum.

After completing bilateral infiltration and anesthetic block, Dr Ramshaw performed a transversus abdominis release by transecting the transversus abdominis vertically, just medial to the neurovascular bundles, for mesh placement.



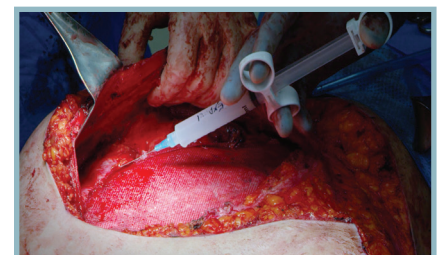
The infiltration hydrodissection allows for easier separation of the transversus abdominis from the peritoneum. This facilitates the transversus release and potentially decreases the likelihood of damaging the peritoneum during dissection.



**FIGURE 2.** Abdominal wall, transversus abdominis plane, surrounding tissues

Because the patient had a previous open anterior component separation bilaterally, a permanent synthetic mesh was sewn bilaterally to the lateral cut transversus abdominis fascia.

Following placement of the new surgical mesh, Dr Ramshaw infiltrated any remaining expanded EXPAREL into the surrounding musculofascial tissue.

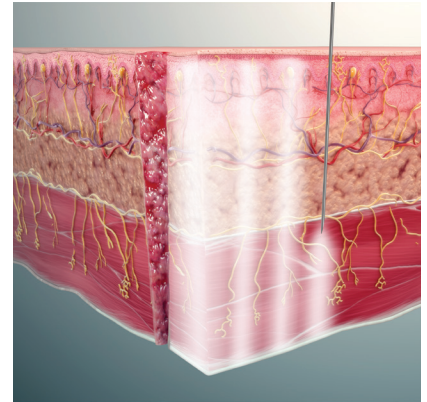


**FIGURE 3.** Musculofascial tissue

## INFILTRATION NOTES (cont)

### PROPER TECHNIQUE IS CRUCIAL FOR ANALGESIC COVERAGE

When infiltrating EXPAREL® (bupivacaine liposome injectable suspension), Dr Ramshaw makes sure to use an expansion volume that is appropriate for the size of the surgical site he is infiltrating. He then infiltrates using a 21- or 22-gauge, 1.5-inch needle. It is important to ensure all layers of the surgical incision are infiltrated in a controlled and meticulous manner, and that EXPAREL is injected within the tissue planes. To do this, Dr Ramshaw inserts the needle approximately 0.5 cm to 1 cm into the peritoneal, musculofascial, and subdermal tissue planes. Dr Ramshaw then uses a continuous motion fanning, or moving needle technique, where EXPAREL is slowly injected while withdrawing the needle in order to adequately infiltrate all layers of the skin. Dr Ramshaw aspirates prior to injection to reduce the risk of intravascular injection.



Watch Dr Ramshaw infiltrate with EXPAREL at [www.EXPARELpro.com](http://www.EXPARELpro.com)

### Indication

EXPAREL® (bupivacaine liposome injectable suspension) is indicated to produce postsurgical local analgesia via infiltration in patients aged 6 years and older and regional analgesia in adults via an interscalene brachial plexus nerve block, sciatic nerve block in the popliteal fossa, and an adductor canal block. Safety and efficacy have not been established in other nerve blocks.

### 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 nerve block were nausea, pyrexia, headache, 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.

Do not admix lidocaine or other non-bupivacaine local anesthetics with EXPAREL. EXPAREL may be administered at least 20 minutes or more following local administration of 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 nerve blocks, 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, sciatic nerve block in the popliteal fossa, and adductor canal 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 Ramshaw is a paid consultant for Pacira BioSciences, Inc.

**Full Prescribing Information is available at [www.EXPARELpro.com](http://www.EXPARELpro.com).  
For more information, please visit [www.EXPARELpro.com](http://www.EXPARELpro.com) or call 1-855-793-9727.**