

Administration Case Report: Total Knee Arthroplasty

This case report represents the individual experience of Dr Jeff Gadsden, and is intended to demonstrate his methodology for using EXPAREL in patients undergoing total knee arthroplasty.

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 via an interscalene brachial plexus nerve block, sciatic nerve block in the popliteal fossa, and an adductor canal block.

CASE INFORMATION

Physician Name(s)	Jeff Gadsden, MD
Affiliation	Duke University Hospital, Durham, NC
Surgical Case Performed	Total knee arthroplasty
Inpatient or Outpatient Procedure	Outpatient

PATIENT CHARACTERISTICS

Gender	Male
Age	71 years
Patient History and Characteristics	This patient with a long history of osteoarthritis that failed conservative management presented for left total knee arthroplasty. The patient was an avid recreational tennis player and wished to get back to his active lifestyle as soon as possible. He had a past history of well-controlled hypertension and glaucoma. The anesthetic plan included a spinal anesthetic as well as an adductor canal block for postoperative pain using an admixture of EXPAREL and bupivacaine HCl.

PROCEDURAL DETAILS

Incision Type	Midline skin incision; medial parapatellar approach
Preoperative Medications Used	<ul style="list-style-type: none">• Acetaminophen 975 mg PO• Celecoxib 200 mg PO• Midazolam 2 mg IV for procedural sedation• Fentanyl 50 mcg IV for procedural sedation/analgesia• Spinal anesthetic with 80 mg lidocaine• iPACK block (15 mL 0.25% bupivacaine HCl)• Adductor canal block with 133 mg (10 mL) of EXPAREL admixed with 0.5% bupivacaine HCl 50 mg (10 mL)

IV=intravenous; PO=by mouth.

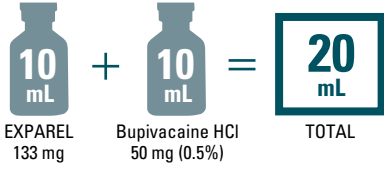
The recommended dose of EXPAREL for adults is based on the size of the surgical site, the volume required to cover the area, and individual patient factors that may impact the safety of an amide local anesthetic. The maximum dose of EXPAREL should not exceed 266 mg (20 mL). The recommended dose of EXPAREL for patients aged 6 to <17 years is 4 mg/kg, up to a maximum of 266 mg (20 mL). The recommended dose of EXPAREL in adults for interscalene brachial plexus nerve block and sciatic nerve block in the popliteal fossa is 133 mg (10 mL). The recommended dose of EXPAREL in adults for an adductor canal block is 133 mg (10 mL) admixed with 50 mg (10 mL) 0.5% bupivacaine HCl, for a total volume of 20 mL.

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PROCEDURAL DETAILS (CONT)

Intraoperative Medications Used	<ul style="list-style-type: none"> • Propofol 75 mcg/kg/min IV for sedation • Ketamine 40 mg IV • Dexamethasone 10 mg IV • Tranexamic acid 1000 mg IV
Postoperative Medications Used	<ul style="list-style-type: none"> • Meloxicam 15 mg PO daily • Acetaminophen 1000 mg PO QID • Oxycodone 5-10 mg PO q4-6h prn for breakthrough pain

EXPAREL ADMINISTRATION DETAILS

Dose of EXPAREL Used	133 mg (10 mL)
Did You Expand the Volume?	No
Did You Admix With Bupivacaine?	Yes, with 10 mL of 0.5% bupivacaine (50 mg)
Total Volume Used	 <p>10 mL EXPAREL 133 mg + 10 mL Bupivacaine HCl 50 mg (0.5%) = 20 mL TOTAL</p>
Needle Used	100-mm 21-gauge block needle

STEP 1

A linear ultrasound transducer was placed in a transverse orientation over the anteromedial thigh at the midpoint between the inguinal crease and the patella. The femoral artery was observed centered beneath the sartorius muscle. The saphenous nerve was visualized anterolateral to the femoral artery; the nerve to vastus medialis was not visualized.

STEP 2

A nerve stimulator was connected to a 21G 100-mm block needle and the current intensity set to 0.8-1.0 mA.

STEP 3

After skin preparation and using sterile technique, the needle was advanced in-plane from the lateral aspect aiming for the femoral artery in a trajectory that traveled just deep to the sartorius muscle. An assistant placed a hand on the medial vastus muscle just proximal to the knee in order to detect a motor response (“twitch”).



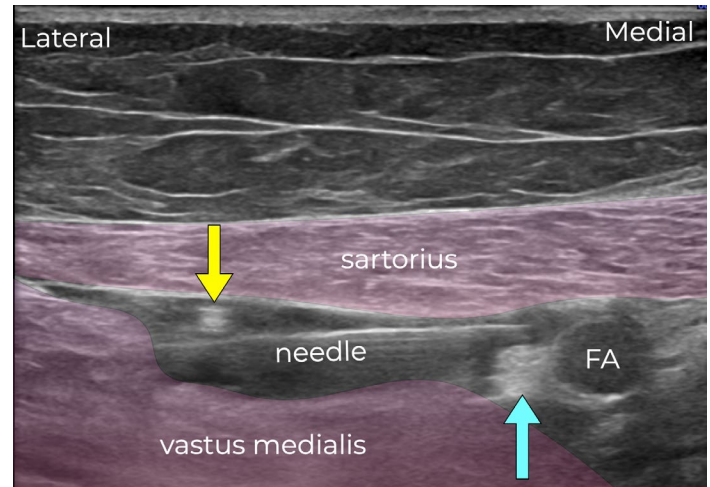
EXPAREL can be administered unexpanded (20 mL) or expanded to increase volume up to a total of 300 mL (maintain a minimum concentration of 0.89 mg/mL) with normal (0.9%) saline or lactated Ringer’s solution.

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ADMINISTRATION DETAILS (CONT)

STEP 4

The needle was directed in the subsartorial plane until a motor response of the medial vastus muscle was observed and felt. A small bolus (2 mL) of saline was then slowly injected to confirm the location of the nerve to vastus medialis, followed by 10 mL of the local anesthetic mixture.



STEP 5

The needle was then carefully redirected to the saphenous nerve, passing through the vastoadductor membrane, and another 2 mL of saline injected to confirm spread immediately adjacent to the saphenous nerve. The remaining 10 mL of local anesthetic mixture was then administered at this location.

ADDITIONAL NOTES

- A supplemental block of the interspace between the popliteal artery and capsule of the knee (iPACK block) was performed under ultrasound guidance in order to anesthetize the popliteal plexus for control of posterior knee pain. The local anesthetic used was 15 mL of 0.25% bupivacaine HCl.
- Performing the spinal block prior to the peripheral blocks makes the procedure more comfortable for the patient and does not interfere with the use of the nerve stimulator to elicit a motor response.

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 HCl, EXPAREL should not be admixed with other drugs prior to administration.

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INDICATION AND IMPORTANT SAFETY INFORMATION

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.

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

For more information, please visit www.EXPAREL.com or call 1-855-793-9727.