



Imbibe®

Bone marrow aspiration needle

Operative technique



Imbibe

Bone marrow aspiration needle

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Smart design

Product features

- Bullet-tip stylet design for navigation
- Trocar cutting stylet to penetrate cortical bone
- Color coded stylets to quickly and easily identify sharp-tip vs. bullet-tip design
- Fenestrated hole design and placement
- Ergonomic handle for surgeon control and comfort
- Snap lock design promotes a secure connection between stylet and handle hammering platform
- Five needle sizes / styles available
- Versatility, useful for multiple anatomic locations



Color coded stylets to quickly and easily identify sharp vs. bullet-tip design

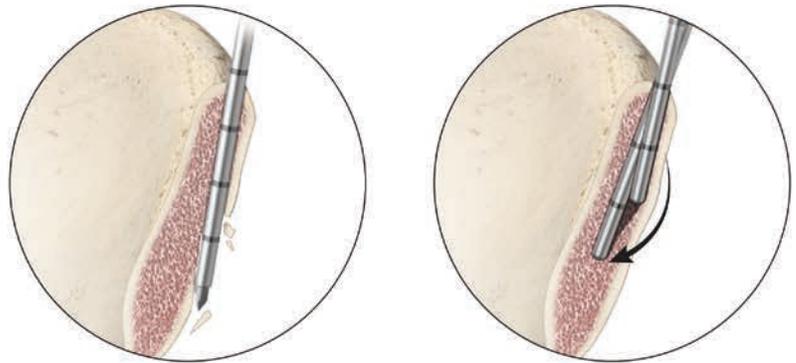


Fenestrations for simultaneous aspiration from multiple sites

Operative technique

Bullet-tip design

Sharp-tip needles may perforate cortical bone boundaries making BMA harvest more difficult. The bullet-tip BMA needle is available to navigate within the cortical bone boundaries. The rounded, bullet-tip is designed to deflect back into cancellous bone marrow spaces.



Posterior iliac crest approach

Palpate the posterior superior iliac spine (PSIS) and the prominence of the posterior iliac crest. The entry point for the bone marrow aspirate (BMA) needle into the posterior iliac crest must be no more than 8cm cranial to the PSIS (Fig. 3).

With a #11 or #15 scalpel, make a stab incision at the desired location over the iliac crest and place the sharp-tip (black) BMA needle (Fig. 2) through the stab incision down to bone. Use the needle tip to “palpate” the iliac crest and, once the center of the crest is located, seat the needle tip into the cortical bone with one or two brisk taps with a small, lightweight mallet (Fig. 3). Using a mallet to advance the needle through bone is the preferred technique as it affords the surgeon greater control of the needle.

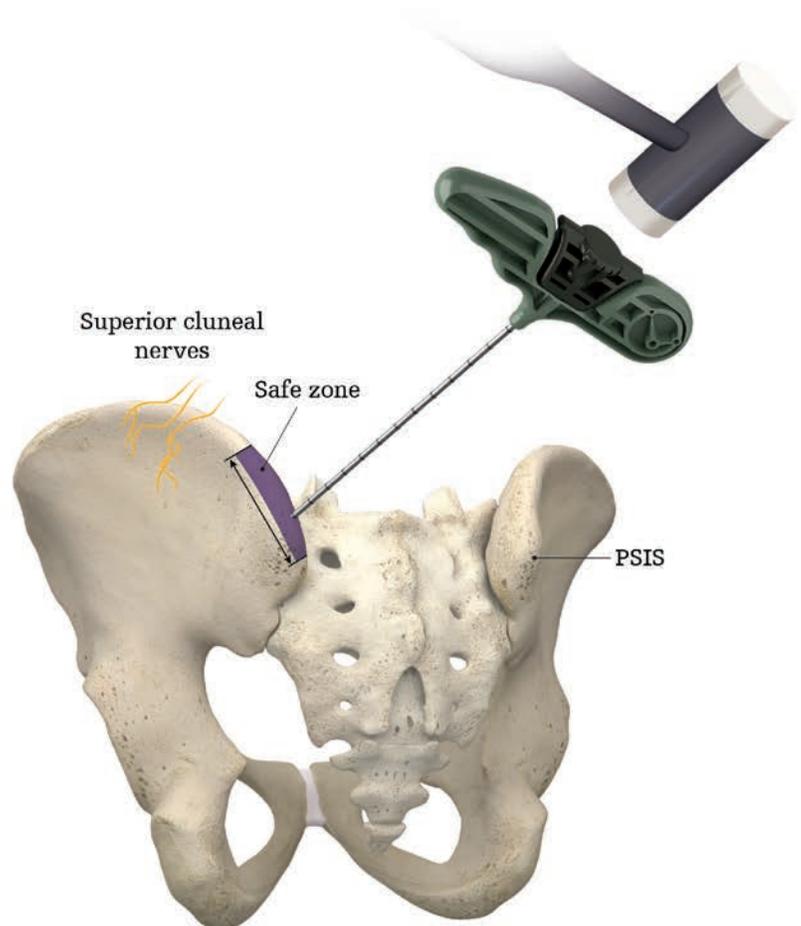


Fig. 3

Operative technique

Posterior iliac crest approach continued...

Advancing the needle by hand may require excessive downward force and should be avoided. Should the needle suddenly lose contact with bone, this may result in damage to tissue surrounding the aspiration site (i.e., the sacrum or gluteal muscle).

Any of the Imbibe needles may be used with this procedure. Initially angle the BMA needle roughly 40 degrees lateral from the parasagittal plane and 35 to 40 degrees caudad (Fig. 3a, 3b). Advance the needle approximately 0.5 to 2.0cm through the cortical bone by tapping with the small mallet (Fig. 5).

Exchange the sharp-tip trocar (black) with the bullet-tip stylet (green).

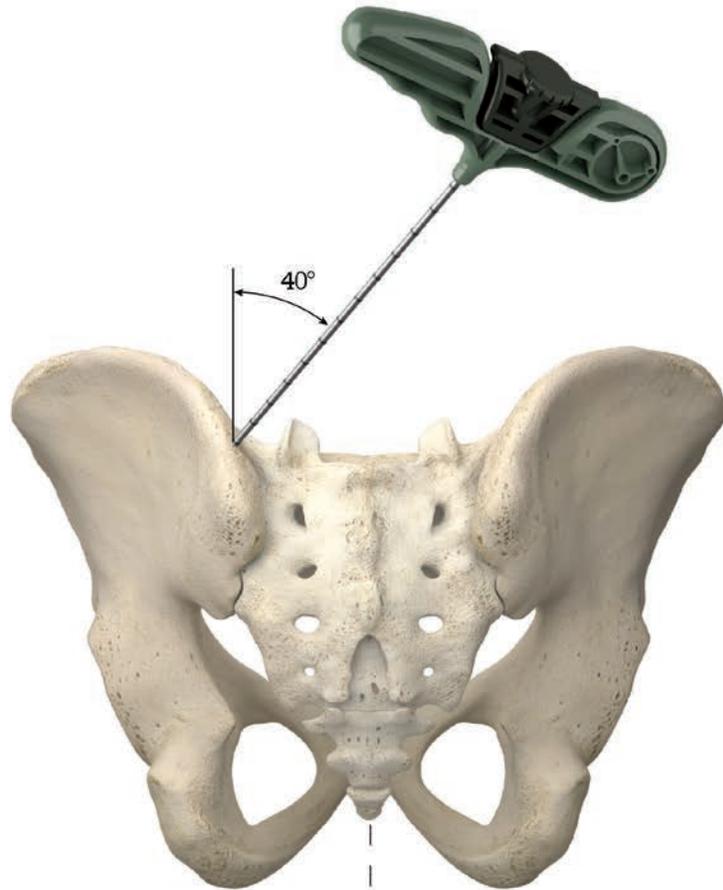
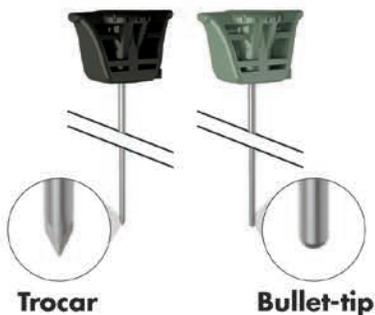


Fig. 3a

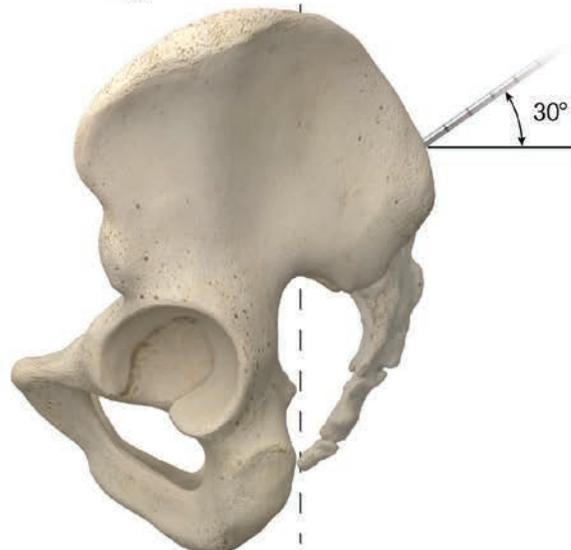


Fig. 3b

Operative technique

Posterior iliac crest approach continued...

The bullet-tip stylet is designed to navigate between cortical bone boundaries as the rounded tip is designed to deflect the needle back into cancellous bone and to minimize risk of cortical perforation (Fig. 5).

Advance the needle to a depth of 2.0 to 2.5cm so that the bone aspiration holes are within cancellous bone (Fig. 4).

Remove the stylet and aspirate 2 to 4cc of marrow using a 20cc syringe (a 20cc syringe provides greater vacuum for marrow aspiration). Detach the syringe from the needle and replace the bullet-tip stylet.

Advance the needle an additional 2.0 to 2.5cm along the same trajectory and again aspirate 2 to 4cc of marrow. Additional marrow may be obtained using a "fan" technique. Withdraw the needle enough so that it can be redirected 25 degrees cephalad or caudad, then advance the needle to a minimum depth of 2.0 to 2.5cm before aspirating again (Fig. 6).

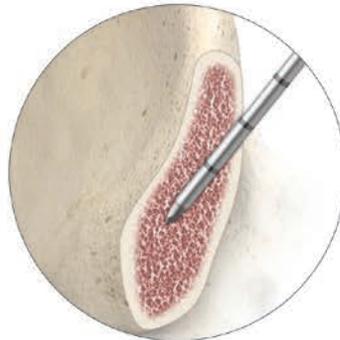


Fig. 4

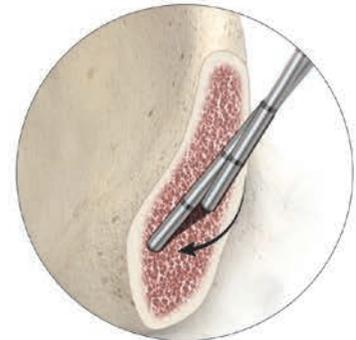


Fig. 5

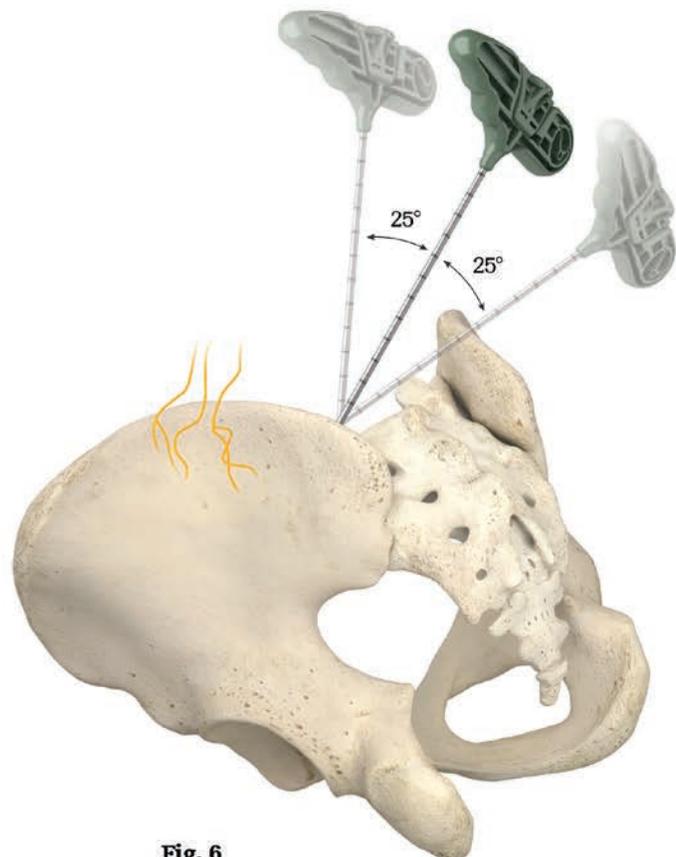


Fig. 6

Operative technique

Anterior iliac crest approach

Palpate and mark the anterior superior iliac spine (ASIS). To minimize the amount of tissue traversed by the BMA needle, retract any overhanging skin and subcutaneous fat of the abdominal wall with the back of one hand and grasp the iliac crest between the thumb and fingers.

With a #11 or #15 scalpel, make a stab incision over the iliac crest at a point located 5.0 to 6.0cm posterolateral to the ASIS. The widest distance between the inner and outer tables of the anterior iliac crest is located in this region and best suited for bone marrow aspiration. Needle placement in this area may help avoid any potential injury to local nerves and blood vessels (i.e. the lateral femoral cutaneous nerve) which may traverse the iliac crest just proximal to the ASIS in some individuals (Fig. 7).

Any of the Imbibe needles may be used with this procedure. Place the sharp-tip BMA needle through the stab incision. Use the needle tip to “palpate” the iliac crest and, once the center of the crest is located, seat the needle tip into the cortical bone with one or two brisk taps with a small, lightweight mallet (Fig. 8). Angle the BMA needle approximately 35 to 40 degrees medial from the parasagittal plane in line with the iliac wing as gauged by palpation (Fig. 8). Using a mallet to advance the needle through bone is the preferred technique as it affords the surgeon greater control of the needle. Advancing the needle by hand may require excessive downward force and should the needle suddenly lose contact with

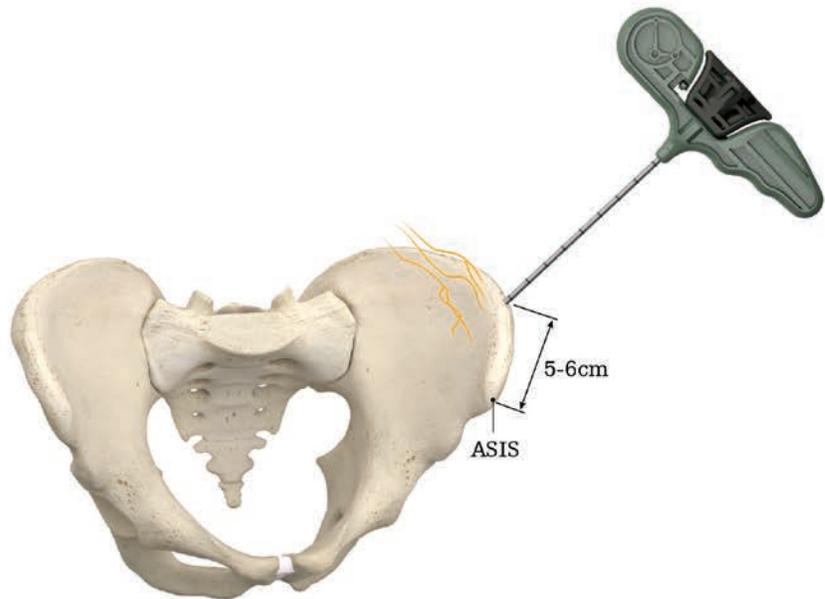


Fig. 7

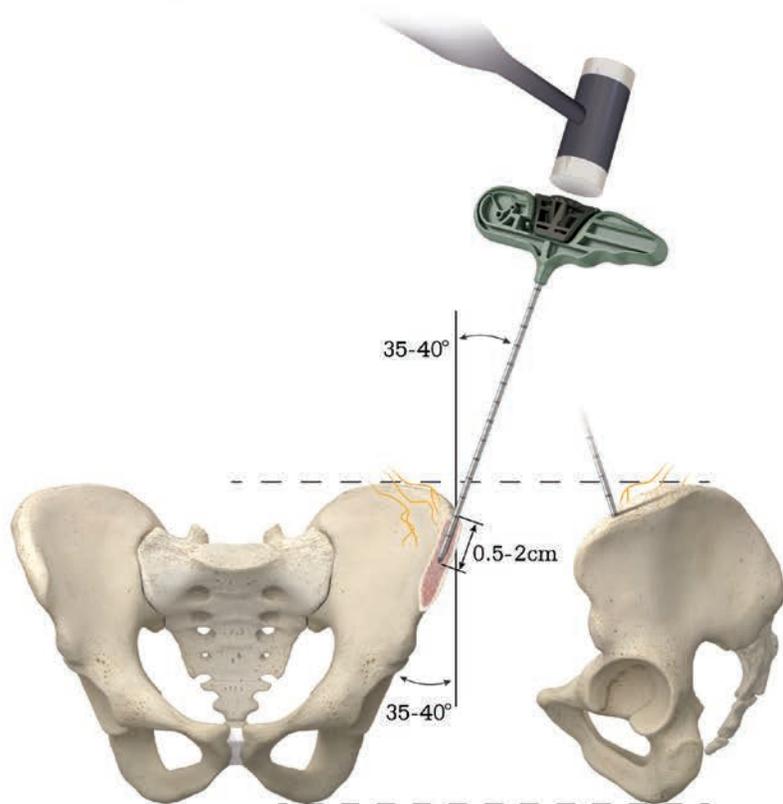


Fig. 8

Operative technique

Anterior iliac crest approach continued...

bone, this may result in damage to the tissue surrounding the aspiration site (i.e perforation of the abdominal cavity and potential visceral injury). Advance the needle approximately 0.5 to 2.0cm through the cortical bone by tapping with the small mallet.

Exchange the sharp-tip trocar (black) with the bullet-tip stylet (green). The bullet-tip stylet is designed to navigate between cortical bone boundaries as the rounded tip is designed to deflect the needle back into cancellous bone and to minimize risk of cortical perforation (Fig. 10).

Advance the needle to a depth of 2.0 to 2.5cm so that the aspiration holes are within cancellous bone (Fig. 10). Remove the stylet and aspirate 2 to 4 cc of marrow using a 10cc or 20cc syringe from the needle and replace the bullet-tip stylet.

Advance the needle an additional 2.0 to 2.5cm along the same trajectory and again aspirate 2 to 4cc of marrow. In general, it is not recommended to insert the needle more than 4.0 to 5.0cm (Fig. 9). Additional marrow may be obtained using a "fan" technique. Withdraw the needle enough so that it can be redirected 25 degrees cephalad or caudad, then advance the needle to a minimum depth of 2.0 to 2.5cm before aspirating again (Fig. 11).

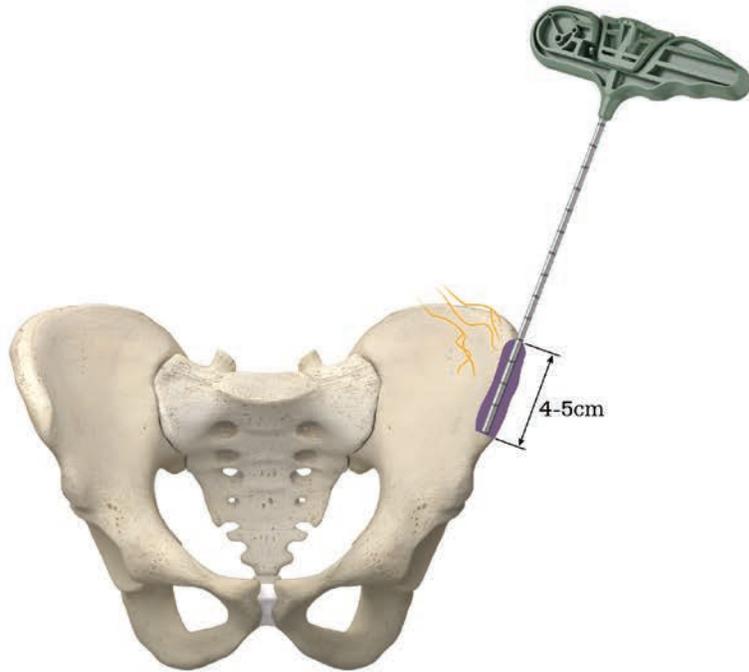


Fig. 9

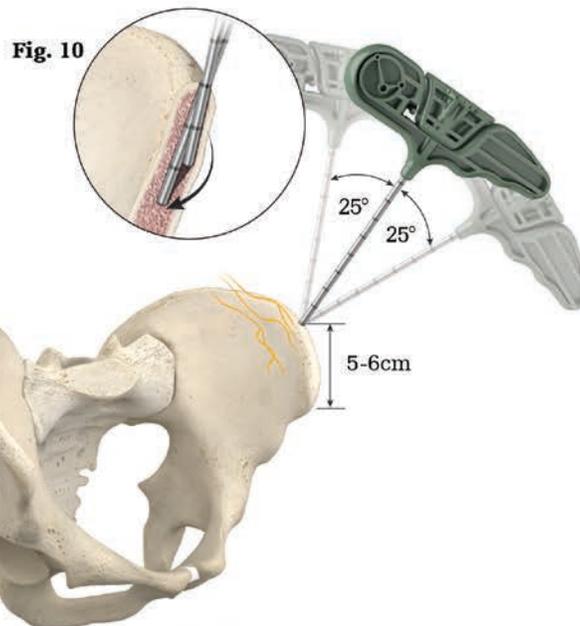


Fig. 11

Operative technique

Lateral calcaneal approach

Place an index finger on the insertion of the Calcaneal tendon and the thumb of the same hand on the origin of the plantar fascia, creating a semicircle. The circle is completed by an imaginary line over the lateral calcaneus between the tip of the index finger and the tip of the thumb. A mark can be placed on the lateral aspect of the heel at the midpoint of this imaginary line, which is the location for insertion of the needle (Fig. 12). One should have a thorough understanding of the local anatomy of the aspiration site (i.e. lateral hind foot). Care should be taken to avoid contact with, and damage to, local tissues, nerves and blood vessels, such as the sural nerve, lesser saphenous vein, and the perineal tendons.

The following procedure for bone marrow aspiration should be done prior to inflation of the tourniquet. If the procedure is started prior to aspirating bone marrow, the tourniquet usually needs to be taken down in order to obtain the bone marrow aspirate (BMA).



Fig. 12

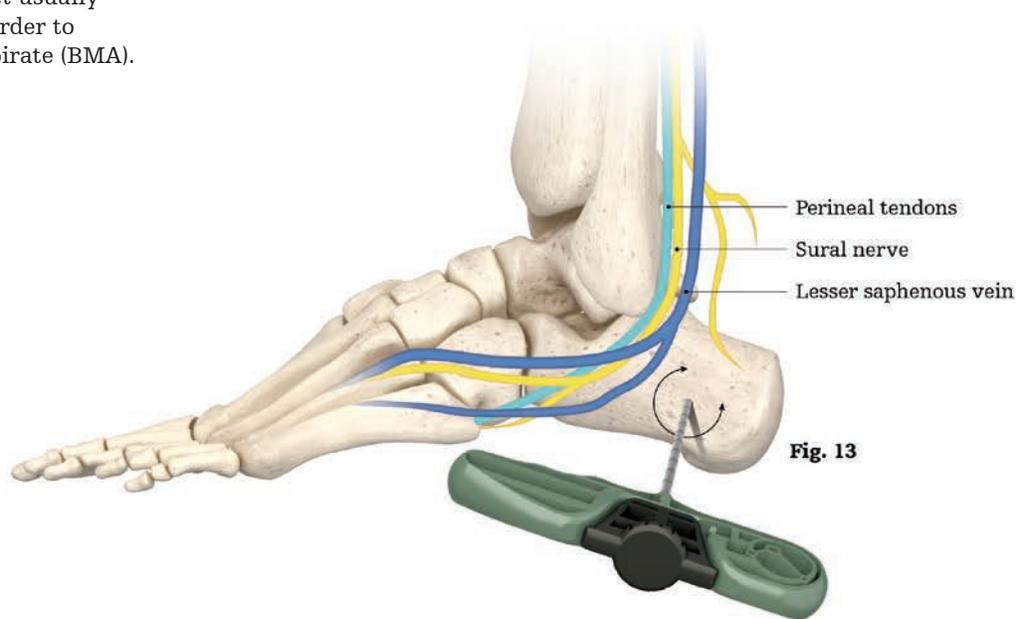


Fig. 13

Operative technique

Lateral calcaneal approach continued...

Do not osteomize the calcaneus prior to the aspiration of bone marrow, as this will make it extremely difficult to aspirate the marrow.

An 11-gauge (or 8-gauge) bone marrow aspiration needle containing a sharp-tip trocar is inserted through a small incision that is made in the skin on the lateral aspect of the calcaneus. C-arm guidance may be helpful in placement of this needle. The needle should be perpendicular to the lateral wall of the calcaneus and advanced into the bone approximately 2.0 to 2.5cm. A twisting motion can be used to insert the needle into the bone (Fig. 13). Avoid toggling of the needle as this can fracture cortical wall of the bone (i.e. the lateral wall of the calcaneus). When advancing the needle, the trocar is extremely sharp and in an individual with less dense bone, this trocar may pass through

and perforate the opposite cortical wall and potentially contaminate the case. Take care to gently advance the needle. The sharp-tip trocar (black) may be replaced with the bullet-tip stylet (green) once the cortical bone is pierced in order to minimize the risk of cortical bone perforation. Once the needle is seated, the trocar is removed. A syringe is attached to the aspiration portal to aspirate BMA from this location. If a greater volume of BMA is required, the needle can be advanced deeper. Additional BMA can be acquired through the use of a "fan" technique by first unthreading the syringe from the luer connection of the needle and then reinserting the

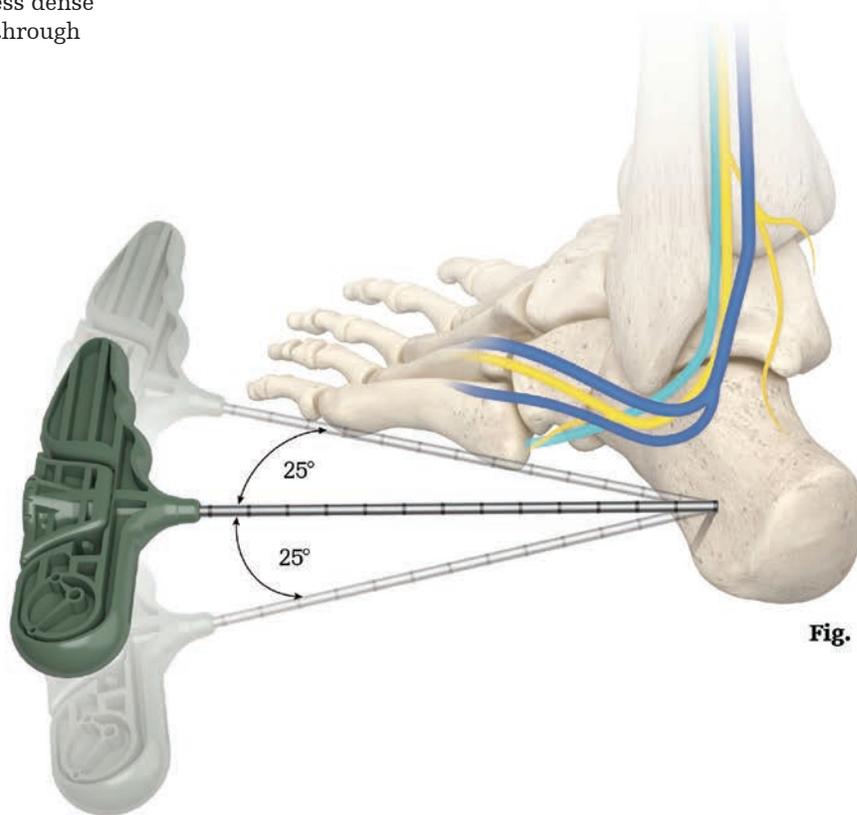


Fig. 14

Operative technique

trocar and withdrawing the needle just enough to redirect it 25 degrees in either direction from the original aspiration site (Fig. 14, 15).

Once adequate BMA has been obtained, the syringe is removed and a bullet-tip stylet (green) is inserted and the needle and stylet are withdrawn. A single suture or staple can be utilized to re-approximate the skin.



Order information

Bone Marrow Aspiration Needles:		
Ref #	Description	Dimensions
2090-9027	Needle	11 gauge x 4 inch
2090-9028	Needle	11 gauge x 6 inch
2090-9029	Needle	8 gauge x 6 inch
2090-9030	Needle (fenestrated)	8 gauge x 6 inch

Imbibe syringes	
Ref #	Description
2105-0010	10cc Syringe
2105-0020	20cc Syringe
2105-0030	30cc Syringe

Essential product information

Imbibe syringe - See package insert for warnings, precautions, adverse events, and other essential product information.

Device description: The syringe consists of a calibrated hollow barrel and a movable plunger. At the distal end of the syringe there is a male connector (nozzle) for fitting the female connector (hub) of a single lumen aspiration needle. A luer-lock nozzle makes a stable connection between the syringe and needle. A threaded screw cap (containing the luer-lock nozzle) at the distal end of the syringe can be removed to allow the user to fill the syringe with his or her choice of bone void filler. Alternatively, the plunger can be removed to add bone void filler from the proximal end of the syringe. After filling the syringe with bone void filler, the user attaches a needle by way of the luer-lock, and percutaneously aspirates blood or marrow into the barrel of the syringe. Once the desired volume of blood or marrow has been collected, the threaded screw cap is removed and the contents of the syringe are delivered to the surgical site.

Trauma & Extremities

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