Bone Marrow Aspiration System (BMAS).

Technique Guide
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**Warning**  
This description alone does not provide sufficient background for direct use of the instrument set. Instruction by a surgeon experienced in handling these instruments is highly recommended.

**Reprocessing, Care and Maintenance of Synthes Instruments**  
For general guidelines, function control and dismantling of multi-part instruments, please refer to: www.synthes.com/reprocessing
Bone Marrow Aspiration System (BMAS).

Features
- Five side holes draw marrow from a larger area
- A 3-sided stylet tip reduces the force required to penetrate dense cortical bone
- The sharp serrated tip and oversized handle allow improved control during needle insertion

Includes 20 ml syringe with Luer lock fitting and 11 gauge “J” style bone marrow aspiration needle. Available in 11 cm and 15 cm lengths. Sterile packaged.

Indications

The Bone Marrow Aspiration System is intended for aspirating bone marrow.

Important note
Sufficient experience in aspirating bone marrow is highly recommended when using this system. It is also very important to read the complete Directions For Use before use, where complete information, warnings and precautions can be found.
Locate site

Locate site for aspiration of bone marrow, depending on the approach to be used:

- For a **posterior approach** (1), palpate the patient to locate the superior aspect of the posterior iliac crest.
- For an **anterior approach** (2), palpate the patient to locate the anterior aspect of the superior iliac crest.
- For a **lateral approach** (3), place the patient in a right or left lateral decubitus position, depending on which is more convenient to the surgical site, and palpate to locate the superior aspect of the posterior iliac crest.
Prepare surgical site

Prepare the surgical site and anesthetize the area using sterile technique.

Make incision

Make a small stab incision for needle insertion.

Prepare needle

After removing the plastic guard from the aspiration needle, remove and reinsert the stylet one time to ensure that it can be easily separated from the cannula of the needle once it is inserted into the bone. To remove the stylet, rotate it 90° counterclockwise and pull it straight out. Replace the stylet in the cannula and lock it back in place by rotating it 90° clockwise so that it aligns with the lower portion of the needle handle.

Grasp needle

Grasp the bone marrow aspiration needle with the proximal end firmly seated in palm.
6
Introduce needle

Introduce the needle through the prepared incision site with the trajectory determined by the approach used:

- For a posterior approach (1), introduce the needle through the prepared incision site with the initial trajectory of the needle approximately 40° lateral from the sagittal plane and 35°–40° inferior from the transverse plane. A general rule is to aim at the tip of the greater trochanter.

- For an anterior approach (2), introduce the needle through the prepared incision site with the initial trajectory of the needle medially in line with the pelvic wing, as gauged by palpation of the inner and outer tables. The trajectory should be aimed slightly posteriorly at the iliac tubercle, to enter the medullary canal just beneath it.

- For a lateral approach (3), hold the needle horizontally and introduce it through the prepared incision site into the center of the posterior iliac prominence, with the initial trajectory 15° caudal.

- For a vertebral body approach (4), introduce the needle through the holes that have been prepared for the insertion of pedicle screws.
7  
**Advance needle**

Advance the needle using gentle but firm pressure. Rotate the needle in alternating clockwise-counterclockwise motion or gently tap the needle handle with a mallet. Decreased resistance may be encountered upon penetration of the cortex and entrance into the marrow cavity.

8  
**Remove stylet**

Remove the stylet by rotating the upper section of the handle counterclockwise and slowly pulling straight out.

9  
**Screw syringe into hub**

Using sterile technique, screw the distal end of the included syringe into the proximal hub of the bone marrow aspiration needle. Ensure a firm fit, but do not over-tighten.

10  
**Withdraw syringe plunger**

Withdraw the syringe plunger to draw 2–4 ml of bone marrow into the syringe chamber. Only 2–4 ml of marrow should be aspirated per site, to minimize diluting the marrow with peripheral blood.

If marrow does not aspirate easily, reposition the needle slightly. If marrow still does not aspirate, remove the syringe from the needle, remove the needle from the incision, reinsert the stylet, and repeat Steps 5 to 10 with a slight change in needle trajectory.
11

Aspirate additional marrow

If more than 2–4 ml of marrow is required, remove the syringe from the needle, reinsert the stylet, and either penetrate deeper within the same site or use the fan technique to pull marrow from a new site using the same incision.

- If pulling additional marrow from deeper within the same site (1), advance the needle 1 cm along the same trajectory (the markings on the needle are 1 cm apart and may be used as a guide). The needle may also be rotated 90° to expose side holes to bone from which marrow has not yet been drawn.

- If using the fan technique (2), slightly withdraw the needle and reinsert it as described in Step 7 at a new trajectory along the same plane as the original insertion.

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Remove stylet

Remove the stylet as described in Step 8, reattach the collection syringe as described in Step 9, and withdraw the syringe plunger to pull an additional 2–4 ml of marrow into the syringe chamber.

Repeat Steps 11 and 12 until the required quantity of marrow has been obtained.

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Disengage syringe

Disengage the syringe containing the aspirated bone marrow and dispose of the needle in accordance with applicable laws and regulations.
## Bone Marrow Aspiration System (BMAS)

<table>
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<tr>
<th>Art. No.</th>
<th>Diameter</th>
<th>Length</th>
<th>Side holes</th>
<th>Syringe</th>
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<td>11 ga</td>
<td>11 cm</td>
<td>yes</td>
<td>20 ml</td>
</tr>
<tr>
<td>710.151S</td>
<td>11 ga</td>
<td>15 cm</td>
<td>yes</td>
<td>20 ml</td>
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<tr>
<td>710.150S</td>
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<td>no</td>
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