

Arthrex ACP[®] Double-Syringe System

Surgical Technique



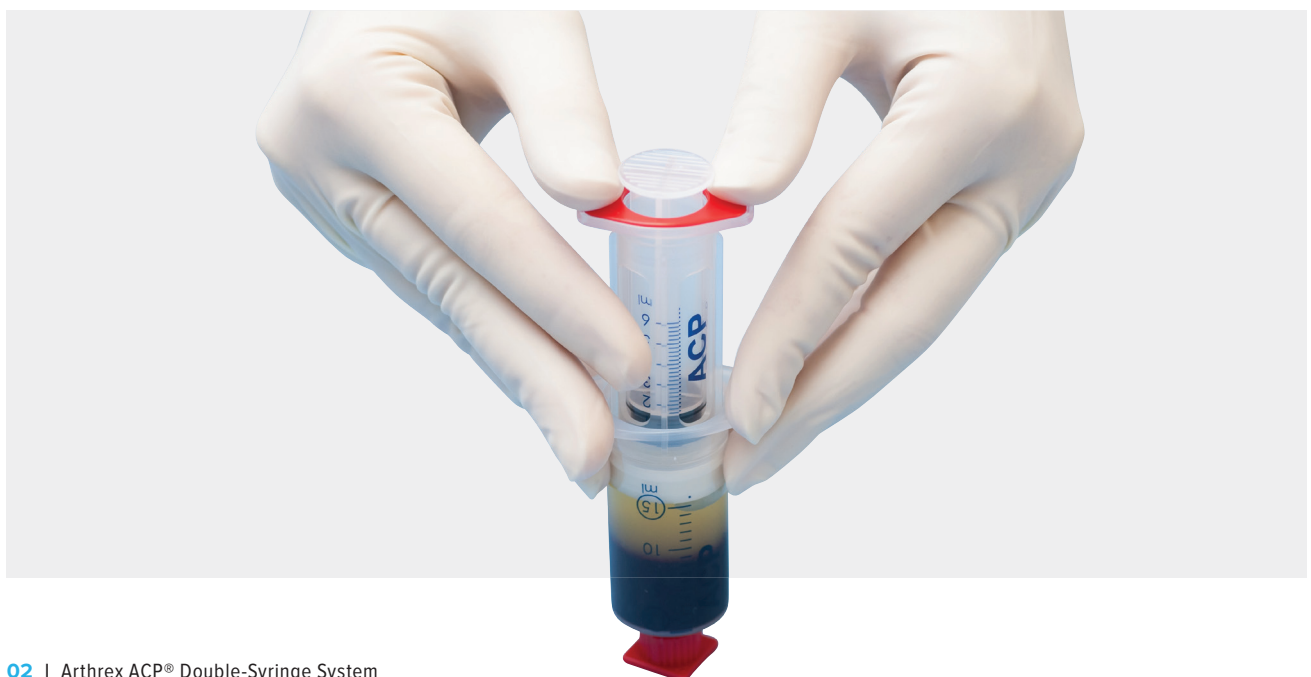
Arthrex ACP® Double-Syringe System

Features and Benefits

- Allows for rapid and efficient concentration of platelets and growth factors from autologous blood for use in hydrating bone grafts at the treatment site
- Unique double-syringe design allows for convenient and safe handling, as the whole preparation process takes place in a closed system
- Compared to other conventional platelet-rich plasma (PRP) devices, the Arthrex autologous conditioned plasma (ACP) system is more affordable, easier to use, and has a quicker procedure time¹
- White blood cells, specifically neutrophils, are NOT concentrated within the Arthrex ACP system. These cells can have a detrimental effect on the healing process due to release of degradative proteins and reactive oxygen species.^{2,3}



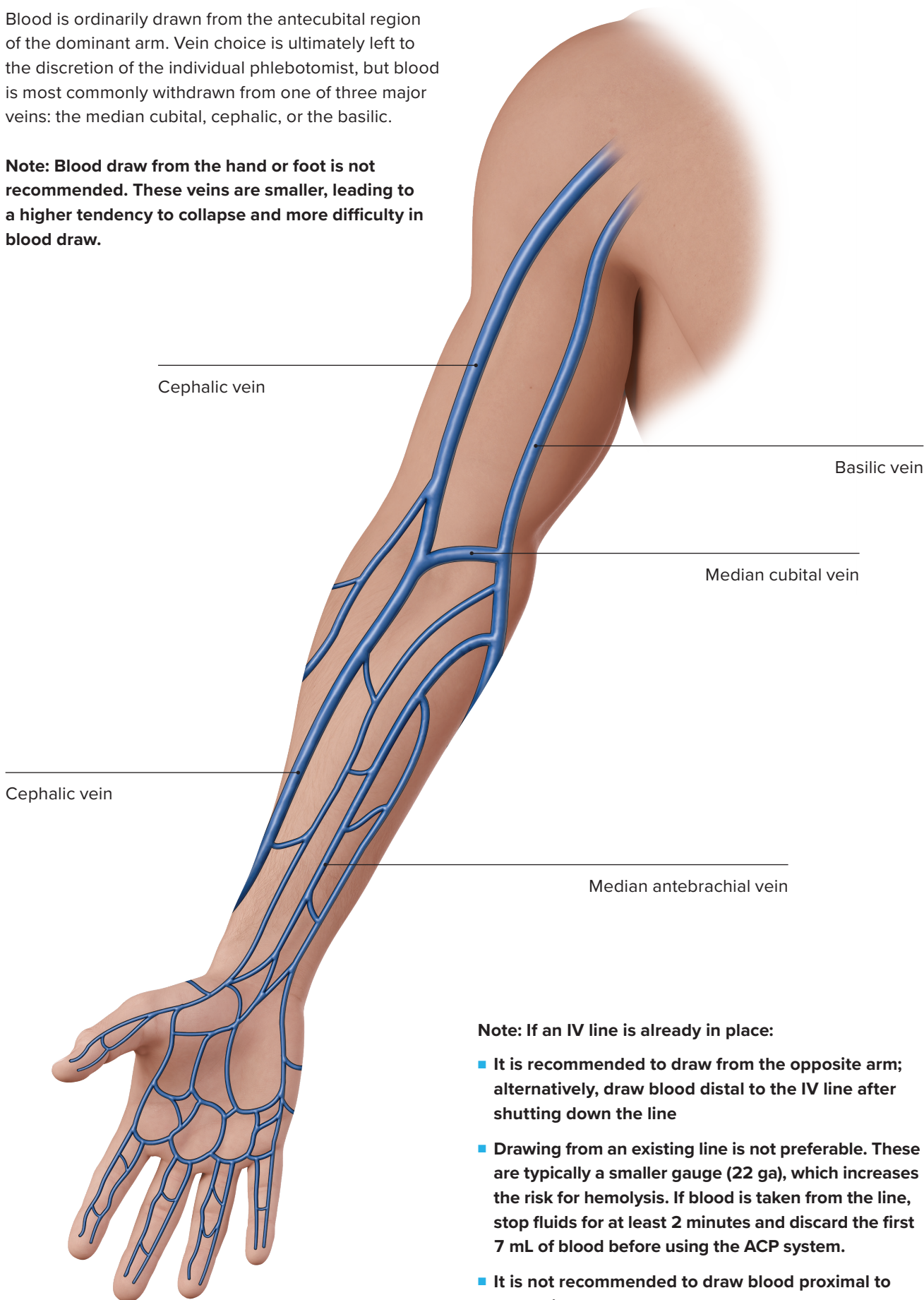
Product Description	Item Number
Arthrex ACP double syringe system w/ cap	ABS-10010S
Series I ACP blood draw kit	ABS-10011
Series I ACP blood draw kit w/ ACD-A	ABS-10011T
Series II ACP blood draw kit	ABS-10012
Horizon 24 centrifuge, full kit	00389-129-000K
Centrifuge bucket	03-1-0007-0123HK
Bucket spacer	03-1-0001-0098K
Counterbalance	ABS-10027
ACP cart	ABS-10100



Identify Draw Site

Blood is ordinarily drawn from the antecubital region of the dominant arm. Vein choice is ultimately left to the discretion of the individual phlebotomist, but blood is most commonly withdrawn from one of three major veins: the median cubital, cephalic, or the basilic.

Note: Blood draw from the hand or foot is not recommended. These veins are smaller, leading to a higher tendency to collapse and more difficulty in blood draw.



Note: If an IV line is already in place:

- It is recommended to draw from the opposite arm; alternatively, draw blood distal to the IV line after shutting down the line
- Drawing from an existing line is not preferable. These are typically a smaller gauge (22 ga), which increases the risk for hemolysis. If blood is taken from the line, stop fluids for at least 2 minutes and discard the first 7 mL of blood before using the ACP system.
- It is not recommended to draw blood proximal to the IV line

Gather Supplies

After identifying the blood draw site, gather the appropriate supplies. The Arthrex ACP® Series I and Series II kits contain the necessary components for phlebotomy.

Arthrex ACP Series I Kit Components (ABS-10011)

Product Description	Quantity
Double syringe	1
Double-syringe luer cap	1
Tourniquet, disposable, latex-free	1
Alcohol pad	1
Angel wing infusion set, 19 ga	1
Gauze sponge, 2 in × 2 in	1
Bandage, latex-free	1
Patient label	2



Arthrex ACP Series I Kit Components (ABS-10011T)

Product Description	Quantity
Double syringe	1
Double-syringe luer cap	1
ACD-A, 30 mL	1
Tourniquet, disposable, latex-free	1
Alcohol pad	1
Angel wing infusion set, 19 ga	1
Gauze sponge, 2 in × 2 in	1
Bandage, latex-free	1



Arthrex ACP Series II Kit Components (ABS-10012)

Product Description	Quantity
Double syringe	2
Double-syringe luer cap	2
Tourniquet, disposable, latex-free	1
Alcohol pad	1
Angel wing infusion set, 19 ga	1
Gauze sponge, 2 in × 2 in	1
Bandage, latex-free	1
Patient label	4
Hypodermic needle, 20 ga, 1.5 in	2
3-way stopcock	1
Side-pinch clamp	1
40 mL cup	2
Female-to-female luer connector	1



Anticoagulant Citrate Dextrose (ACD-A)

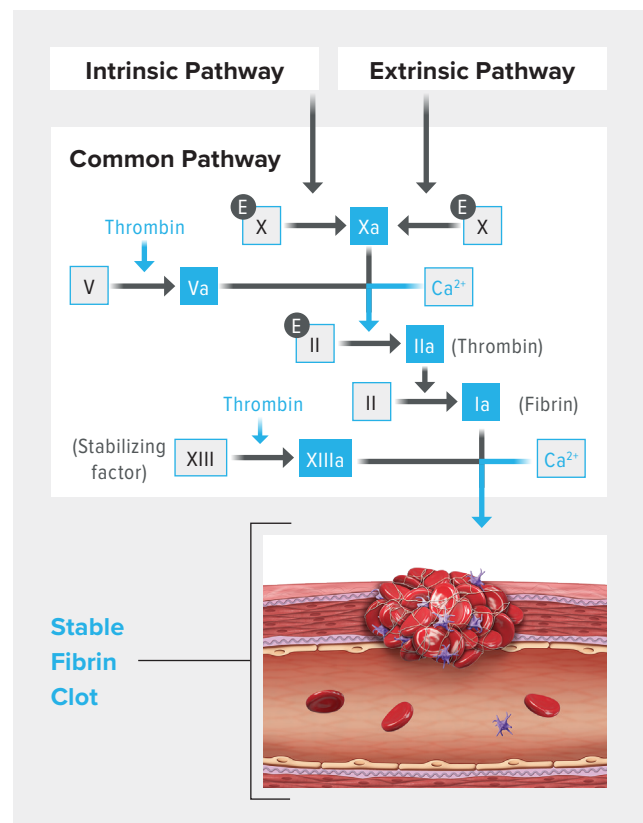
Anticoagulant Citrate Dextrose Solution A (ACD-A), USP, is a citrate-based anticoagulant intended to prevent the coagulation of blood by making calcium unavailable to the coagulation system.

ACD-A is not required if ACP will be used within 30 minutes of blood withdrawal.

Use 1.5 cc ACD-A for each ACP syringe used.

ACD-A is intended for use as an anticoagulant in extracorporeal blood processing.

Note: ACD-A is not for direct intravenous infusion.



Needle Selection

The 3 most common blood draw systems used in phlebotomy are the straight needle, vacutainer, and butterfly systems.

■ Straight Needle

Straight needles are not recommended for use with the Arthrex ACP® system as the large barrel prevents movement of the phlebotomist.

■ Butterfly System

Preferred for use with the Arthrex ACP system, butterfly needles use a winged design connected to flexible tubing. This allows the phlebotomist to move the ACP syringe without disrupting the blood draw process.

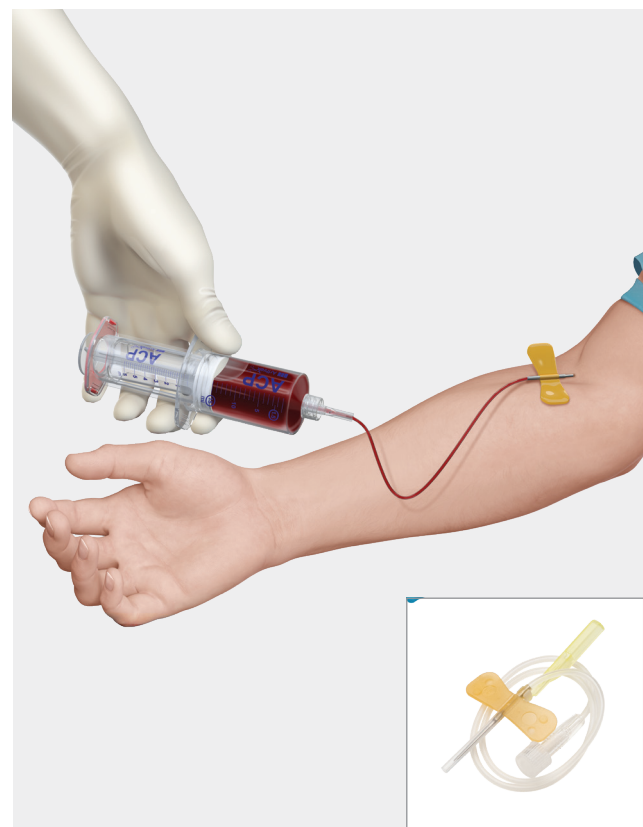
■ Vacutainer System

This system uses a straight needle with a hub that receives vacuum pressurized glass tubes. Vacutainer tubes are not compatible with the Arthrex ACP system.

Note: Glass can lead to the premature activation of platelets.

■ Needle Gauge

Larger-bore needles create less turbulence of the blood while it is drawn, reducing the likelihood of clotting and hemolysis. Butterfly needles in sizes 18-20 ga are recommended for use with the Arthrex ACP system.



Hemolysis

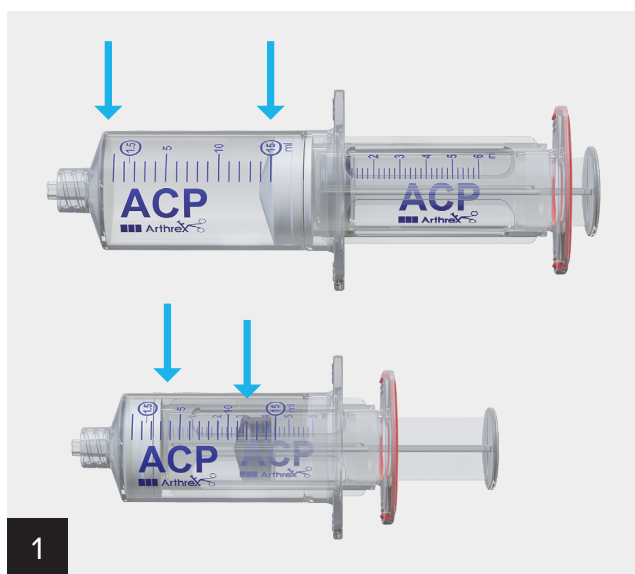
Hemolysis is the rupture of red blood cells. When this occurs, hemoglobin and other cytoplasmic contents are released into the surrounding medium, dyeing the solution red. Hemolysis increases the speed at which blood will clot. No amount of centrifugation will remove hemolysis; if it occurs, it is recommended that blood be redrawn.

Common reasons for hemolysis are:

- Incorrect needle gauge
- Alcohol remaining at the draw site
- Leakage of air around the needle
- Missing the vein several times
- Pulling forcibly on the plunger
- Difficulties with phlebotomy



Blood Draw and Centrifugation



Prior to withdrawing ACD-A, prime the outer and inner syringes by pulling each plunger completely back and forward.

If ACD-A is needed, use a straight needle to withdraw 1.5 mL ACD-A into the syringe.

Notes:

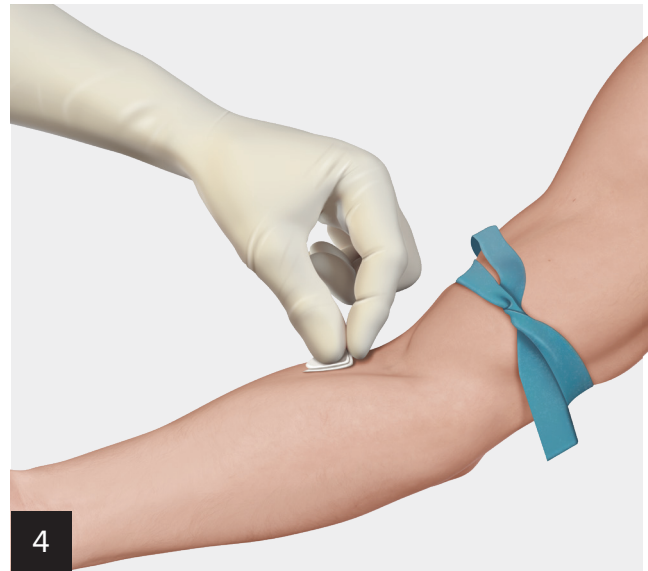
- **ACD-A is not required if ACP will be used within 30 minutes of blood withdrawal**
- **Ensure the inner syringe is secured fully by tightening clockwise; failure to tighten may result in leakage**



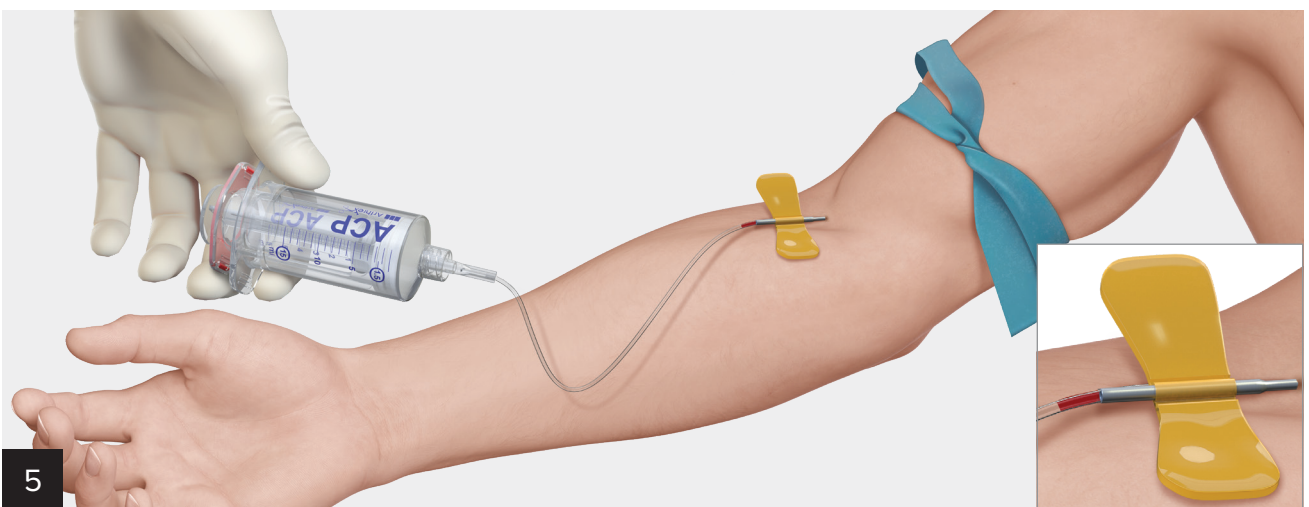
Attach provided 19.5 ga butterfly needle to the syringe and set the syringe aside for later use.



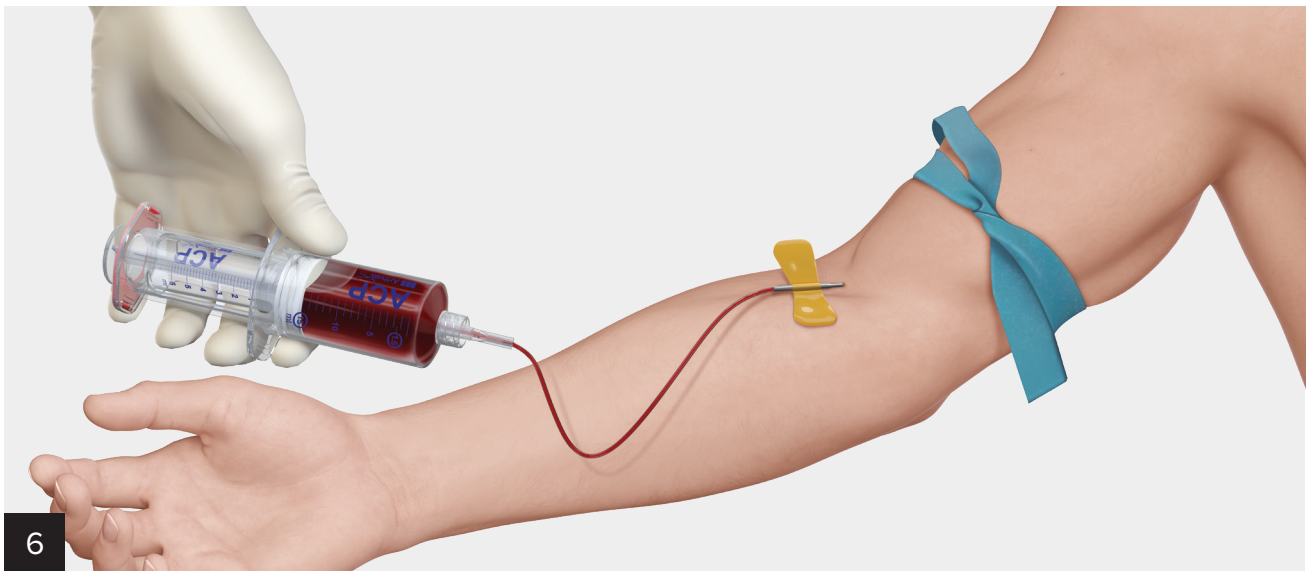
Prepare patient for blood draw by applying tourniquet approximately 3 to 4 in above the selected draw site.



Prepare the venipuncture site by sanitizing the area for 30 seconds using the provided alcohol pad. Allow to air dry.



Holding the wings of the 19.5 ga butterfly needle, puncture the vein at a 15° to 30° angle. If properly inserted, blood should flash in the tubing.



Slowly withdraw by pulling back on the red wings of the Arthrex ACP® syringe. Fill the syringe to a maximum of 15 cc venous blood at a rate of 1 cc every 2 seconds.

Notes:

- Drawing blood too quickly can lead to vein collapse and increases the risk for cell lysis
- Holding the syringe near the plunger can create resistance during blood draw



After blood draw is complete, manually pinch the butterfly needle against the luer tip of the ACP syringe. Seal the syringe with the red cap.

At this time a second syringe can be connected to the butterfly needle tubing or the needle can be removed.



8

Gently invert the syringe to mix blood and ACD-A. Place the syringe into one bucket and an appropriate-size counterbalance in the opposite bucket.



9

Run the centrifuge at 1500 rpm for 5 minutes.

PRP Transfer



Remove the syringe from the centrifuge, taking care to keep it in an upright position to avoid mixing the plasma and red blood cells.



In order to transfer 4 to 7 mL of Arthrex ACP® PRP from the larger outer syringe into the small inner syringe, slowly push down on the syringe's red wings.

Note: Do not tip or agitate the syringe during this step.



Unscrew the small inner syringe.

The ACP is ready for use at the point of care or can be transferred into a sterile cup on the sterile field, then into a 10 mL syringe for use to hydrate the bone graft.

Note: ACP should be used within 30 minutes after blood draw if ACD-A was not used. ACP should be used within 4 hours after the blood draw when ACD-A is used.

References

1. Arthrex, Inc. Data on file (APT2470). Naples, FL; 2014.
2. Scott A, Khan KM, Roberts CR, Cook JL, Duronio V. What do we mean by the term “inflammation”? A contemporary basic science update for sports medicine. *Br J Sports Med.* 2004;38(3):372-380. doi:10.1136/bjism.2004.011312
3. Jiang N, Tan NS, Ho B, Ding JL. Respiratory protein-generated reactive oxygen species as an antimicrobial strategy. *Nat Immunol.* 2007;8(10):1114-1122. doi:10.1038/ni1501



This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience, and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level or outcomes.

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