Best practices in cementing for better outcomes

Objective: Obtain optimal cement adhesion and penetration for better implant-cement-bone interlock and decreased loosening.

Implant/glove cleanliness:
- Clean/dry implant surfaces increase cement adhesion strength.
  1. Use clean/dry gloves to prevent contamination.
  2. If necessary, quickly clean implant contamination with alcohol to reduce risk (<4 min).

Bone cleanliness:
- Pulsed lavage increases cement penetration and reduces radiolucent lines.
  1. Dry bone after lavage.
  2. Lavage cleans away blood, debris, bone marrow, and fat, which decreases cement penetration resistance.

Cement penetration:
- 3-5mm is the optimal cement mantle.
  1. Apply cement equally to tibial component and tibial bone by either spatula or finger packing.
    - 10-16 grams of cement roughly correlates to 3-5mm cement penetration.
    - Application via gun injection leads to 5+mm cement mantle.
  2. Control bone bleeding (tourniquet, TXA, etc).
    - Bone bleeding can displace cement or create cement voids preventing interlock especially when cement viscosity is low.
  3. Allow cement to reach dough stage.
    - Earlier than dough stage decreases penetration.
    - High viscosity cement doughs quickly and the viscosity remains constant during working.
  4. Apply constant pressure.
    - Impact time is short, therefore, cement is not lowing/penetrating bone.
    - Extend knee after prosthesis insertion and do not disturb.

Bone survival:
- Cement temperature and quantity affects bone survival.
  1. <44°C/111°F for 1 minute = no major changes in bone formation to implant.
  2. >5mm cement mantle leads to bone necrosis due to increased thermal damage.
References

10. Webb JCJ, Spencer RF. The role of polymethylmethacrylate bone cement in modern orthopaedic surgery. JBJS (Br) 2007; 89-B.

For detailed product information, including indications for use, contraindications, effects, precautions and warnings, please consult the product's Instructions for Use (IFU) prior to use.

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