



Knee Arthroplasty: Patients benefit from meticulous bone bed preparation and standardized cement application

While modern cementing technique has been established in total hip replacement, the technique in total knee replacement is still being discussed. When planning a TKA, the following factors should be considered:

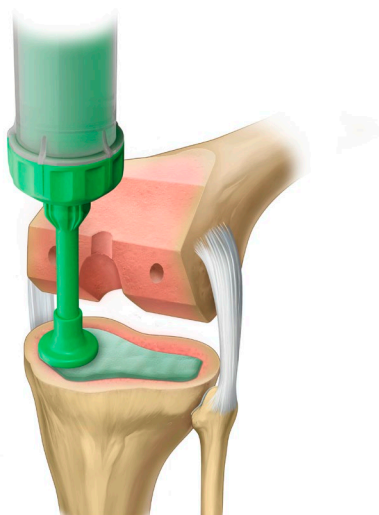
- In areas of dense sclerotic bone of the tibia, **drilling** supplementary holes improves the porosity of cancellous bone and appears to improve the integration of the bone cement into the bone.
- All cement-receiving bone surfaces should be cleaned thoroughly with a **pulse lavage** system to remove fat residues, bone debris, marrow, and blood. This provides the basis for a stable interface between the cement and the bone due to deeper penetration of the cement into the cancellous bone bed and reduces the occurrence of radiolucent lines. The **bone bed must be dried** before applying the bone cement.
- **Mixing of bone cement under vacuum** is highly recommended.
- To minimise the risk of blood or fat being introduced to the cement mixture, a **change of gloves** is recommended before beginning the application.

Cement application to bone and prosthesis in TKA

- Applying bone cement **both, to the prosthesis as well as to the bone** is regarded favorable for the cement penetration depth and the thickness of the cement mantle.
- To save time, bone cement may be applied on the prosthesis while it is still in its sticky phase. For the bone, however, it is crucial that the bone cement is tackfree!
- The use of a **knee pressuriser** on the tibial plateau can increase the interdigitation of bone cement.
- The **cement-cement bond** (cement on the implant and cement applied on the bone) can be **optimised** by placing the prosthesis quickly with no delay.

Tibia full cementing

Bone cement should be applied to both the tray and stem of the tibial component. Applying cement only to the underside of the tray (so-called “surface cementing”) reduces the push-out force required to separate the tray from the cement mantle and has been found to increase the rate of early aseptic failure.



Femur impactor positioning

Application of the cement with a gun and pressurising tip enables increased interdigitation of the cement and limits the risk of fat, lipid or blood contamination. The implant components should be inserted into the bone and put into position with an appropriate impactor.



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