



## Pulse lavage enables greater interdigitation of bone cement and the spongy bone bed

The modern cementing technique includes cleaning of the cancellous bone bed using pulse lavage to remove rasping debris, bone and marrow and thus to improve the bone cement penetration and interdigitation of bone cement and bone tissue.

There are different systems available to clean the bone bed. Most common are reusable systems using compressed air or disposable systems with batteries. An irrigation solution, generally a saline solution but sometimes also an antiseptic or 3% peroxide solution, is applied using a tube. The solution is applied as a pulsating jet. The intensity is between 1000 and 3500 pulses per minute. Due to the high pressure and the focused jet, loose particles produced by reaming are cleaned from the bone tissue. The lavage solution is removed from the wound area using a suction device which can be connected to the pulse lavage device.

If the bone bed is cleaned in this way, a deeper PMMA penetration into the bone trabeculae occurs, resulting in a better interdigitation of bone cement and bone tissue. The flow rate of a pulse lavage system is 700–1300 ml per minute. According to studies, the best results are achieved when 4 litres are used during a surgery.

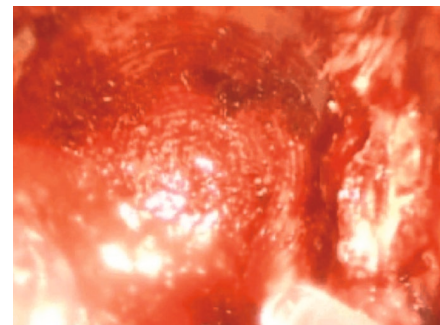
### The benefits

- The removal of rasping debris and fat from the bone bed reduces the risk of fat embolism.
- The improved penetration of bone cement into the bone bed increases the stability of the implant and can reduce the risk of aseptic loosening.
- Achieving the optimal bone cement penetration depth is essential for the knee, particularly for fixing the tibial components.

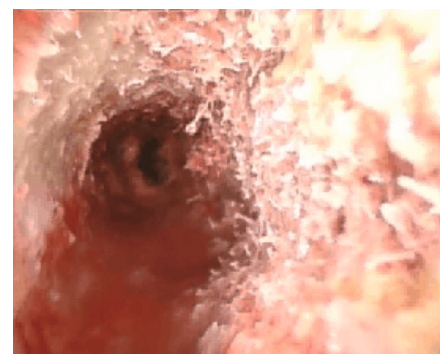
Care is required when using pulse lavage for septic procedures. There is a risk that bacteria are spread to uninvolved tissue as a result of the high irrigation pressure.



*Irrigation jet*



*Intramedullary canal with no cleaning of the bone bed*



*Bone bed after using pulse lavage: no fat, blood or debris visible*

### Why use a pulse lavage?

- Better cement interlocking with the cancellous bone
- Fewer thromboembolic complications
- Significantly lower risk of revision
- Lower postoperative infection rate in hemiarthroplasty

## Literature

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