Antibiotic Cement Spacers

3rd Biennial Arthroplasty Disaster International Conference

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Spacer as a therapeutic option

- Patient co-morbidities
- Site
- Organism
- Persistent positive cultures, frozen section
- Soft tissues

Antibiotic Release

- The hip and knee cement spacers showed similar curve of release over the first postoperative hours (early peak followed by slow release)
- mean gentamicin concentration in the drainage fluid was higher in patients with hip spacers compared to patients with knee spacers
- Gentamicin levels in the blood samples were negligible over the entire time interval and well below the renal toxicity reference

Balato G, Ascione T, Rosa D, Pagliano P, Solarino G, Moretti B, Mariconda MJ. Biol Regul Homeost Agents. Release of gentamycin from cement spacers in two-stage procedures for hip and knee prosthetic infection: An in vivo pharmacokinetic study with clinical follow-up. 2015 Oct-Dec;29(4 Suppl):63-72.

Spacers as definitive management

Qiu XS, Aheng X, Shi HF, Zhu YC, GUO X, Mao HJ, Xu GY, Chen YX. Antibiotic-impregnated cement spacer as definitive management for osteomyelitis. BMC Musculoskelet Disord. 2015 Sep 14;16:254. doi: 10.1186/s12891-015-0704-1.

Mahure SA, Mollon B, Yu S, Kwon YW, Zuckerman JD. Orthopaedics. Definitive Treatment of Infected Shoulder Arthroplasty With a Cement Spacer. 2016 Sep 1;39(5):e924-30. doi: 10.3928/01477447-20160623-07. Epub 2016 Jul 1.

Haddad S, Corona PS, Reverté MM, Amat C, Flores X. Antibiotic-impregnated cement spacer as a definitive treatment of post-arthroscopy shoulder destructive osteomyelitis: case report and review of literature. Strategies Trauma Limb Reconstr. 2013 Nov;8(3):199-205. doi: 10.1007/s11751-013-0176-5. Epub 2013 Sep 12

Hip

- spacer fracture
- dislocation
- femoral fracture with enclosed spacer
- spacer fracture with dislocation
- protusio
- complications 27 of 138 (19.6%)

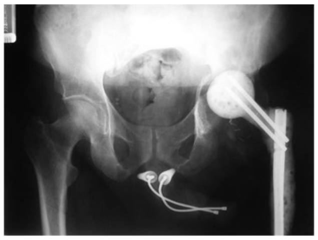
Faschingbauer M, Reichel H, Bieger R, Kappe T. **Mechanical complications with one hundred and thirty eight (antibiotic-laden) cement spacers in the treatment of periprosthetic infection after total hip arthroplasty.** Int Orthop. 2015 May;39(5):989-94. doi: 10.1007/s00264-014-2636-z. Epub 2015 Jan 13.

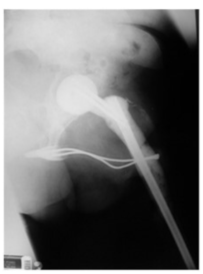
Hip

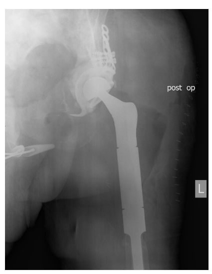
- 22 consecutive patients
- mean age 59.7 years
- Staph 73%
- Spacer complications 23%
- Mean duration 88 days
- Mortality 18%
- 16 patients (72%) replanted

Anagnostakos K, Duchow L, Koch K. Two-stage protocol and spacer implantation in the treatment of destructive septic arthritis of the hip joint. Arch Orthop Trauma Surg. 2016 Jul;136(7):899-906. doi: 10.1007/s00402-016-2455-3. Epub 2016 Apr 21.

Hip spacer

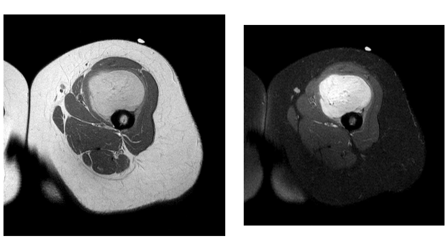


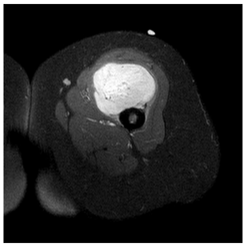


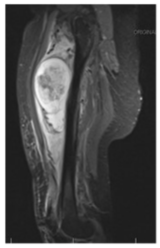


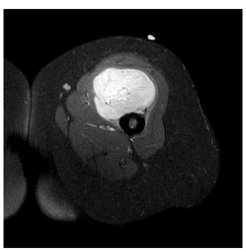
Proximal femoral spacer

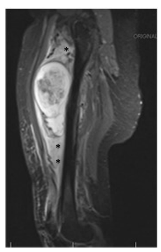
- 54 year-old woman with myxofibrosarcoma of left thigh
- Treated with preoperative chemo & radiotherapy followed by wide local excision and insertion of cement spacer with 2 Steinman pins, Feb 26, 2014
- Near complete resection of anterior compartment with negative osseous and soft tissue margins on path

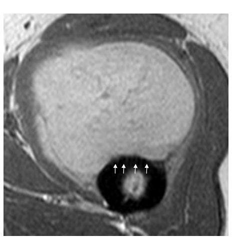


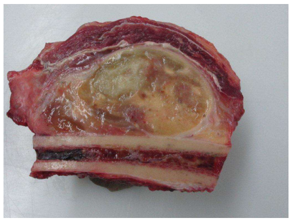


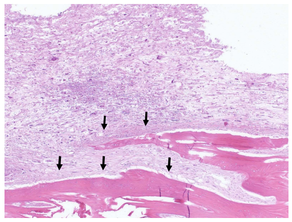




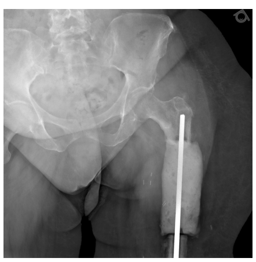








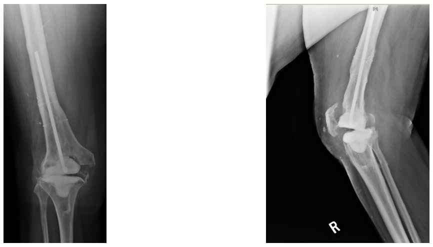
Post Op



Knee

- spacer dislocation
- fracture
- tilting or translation
- knee subluxation
- Patellar tendon injuries

Struelens B, Claes S, Bellemans J. **Spacer-related problems in two-stage revision knee arthroplasty.** Acta Orthop Belg. 2013 Aug;79(4):422-426.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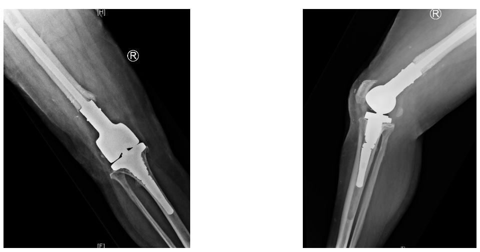
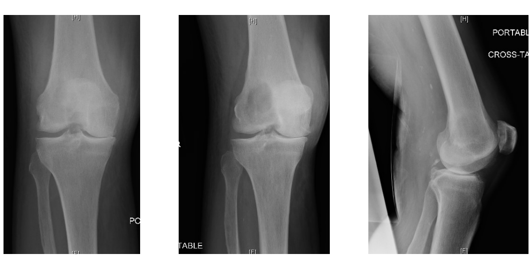
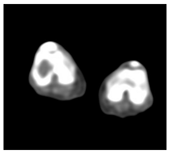
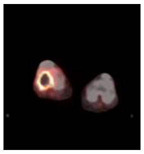
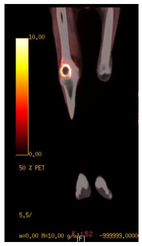
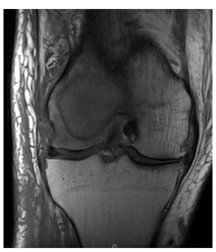


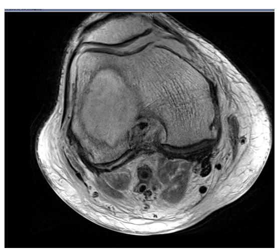

PORTABL
CROSS-TA
TABLE

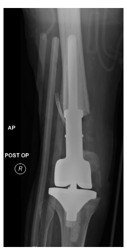








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11/2015

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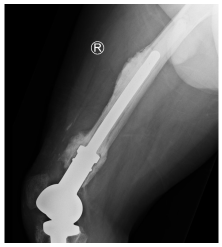

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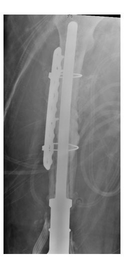


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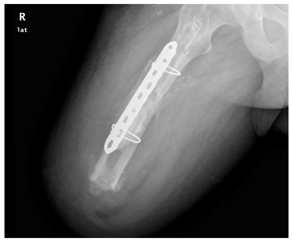
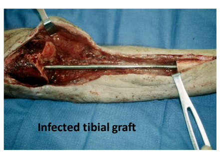
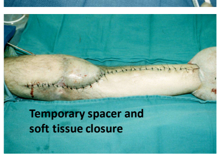


Allograft Infections





Shoulder

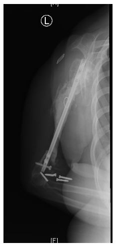
- Potential complications:
- Inferior subluxation
- Instability superior and anterior subluxation
- Implant fracture
- Periprosthetic fracture

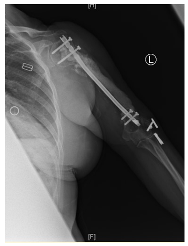
Mahure SA, Mollon B, Yu S, Kwon YW, Zuckerman JD. Definitive Treatment of Infected Shoulder Arthroplasty With a **Cement Spacer**. Orthopedics. 2016 Sep 1;39(5):e924-30. doi: 10.3928/01477447-20160623-07. Epub 2016 Jul 1

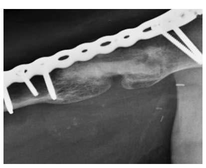
Proximal humerus

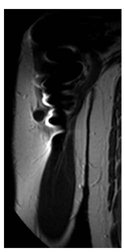
- 14 consecutive patients with primary malignant or isolated metastasis of proximal humerus with surgical resection and reconstruction by nail cement spacer
- 8 females and 6 males
- mean age of 28.92 years (range 16-51 years)
- mean follow-up of 30.14 months (range 12-52 months).
- diagnoses: osteosarcoma (8), chondrosarcoma (4) and metastasis (thyroid and breast carcinom in 1 patient each.
- Complications: radial nerve neuropraxia (1), inferior subluxation (1) and distant metastasis (3). Two patients died of disease and one developed local recurrence leading to forequarter amputation.
- 11 patients with functional extremities

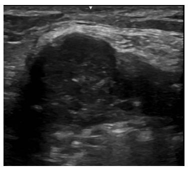
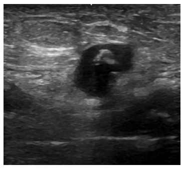
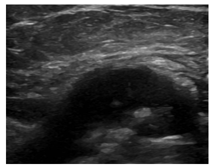


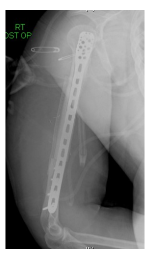










Cement spacers

- Infection
- Tumor resection
- Traumatic bone loss
- Permanent but suboptimal option for some
- Alternatives
  - Biocompatibility
  - Strength combined with cement
  - Cost