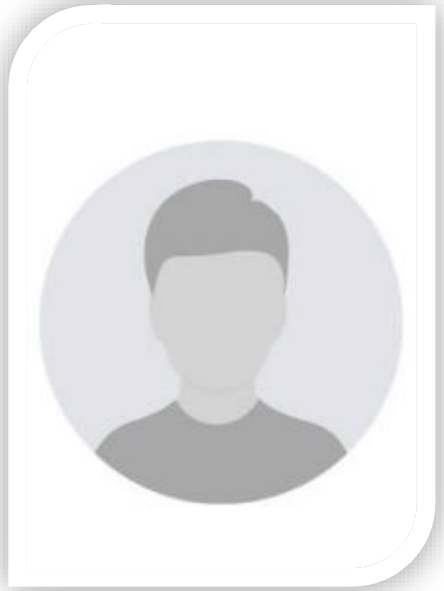
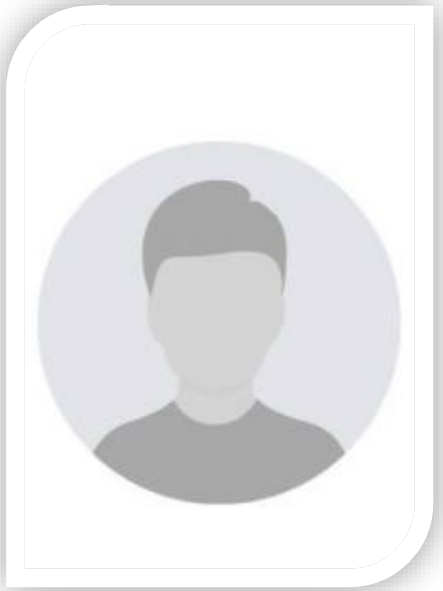
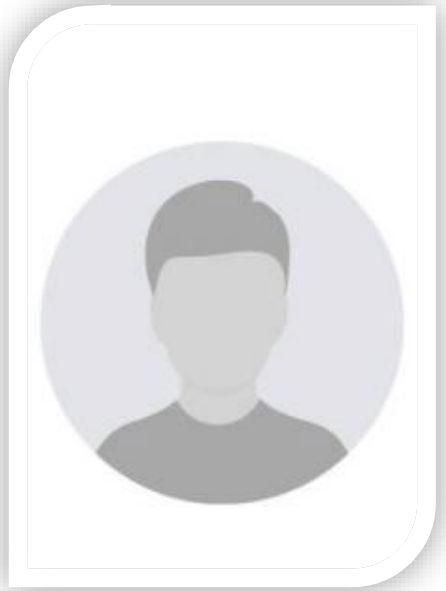
Does osteoporosis influence the outcomes after surgical fixation and can cement augmented screws be used in the presence of Pyogenic spinal infections for better implant purchase?



Sebastian Bigdon



Muzahem Taha



Tadatsugu Morimoto

Stefano Conti

Hirata

Why is this topic Important

- Many adverse outcomes have previously been associated with osteoporosis, even catastrophic failure.
- Gubpta et al. founded a higher risk of revision surgery in patients with osteoporosis; and, Bejerke et al founded a direct correlation between osteoporosis and implant related complications.
- Augmented PMMA pedicle screws fixation is a valid strategy to enhance pedicle screws pullout strength; in fact, pullout cement pedicle screw strength is increased 1.5-2 times regarding non-cemented pedicle screws8.
- Despite Many studies are available in the literature regarding augmented pedicle screws in degenerative, deformity and some in oncology setting; very few studies have investigated the safety and utility of cemented pedicle screws in the setting of spinal infections with limitation of small sample size and no long-term follow up.

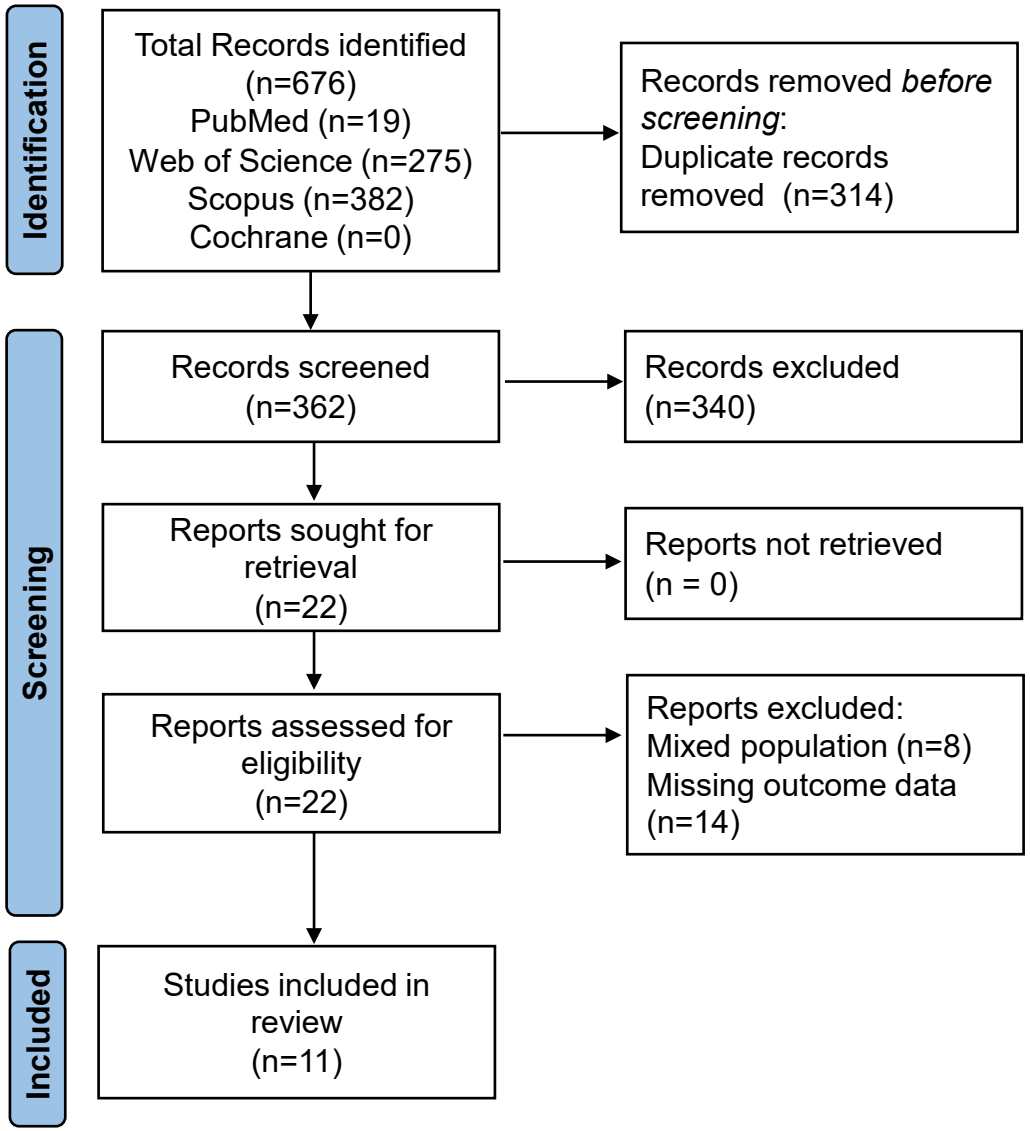
Literature Review/ Process

PubMed

Clarivate Web of Science™

Cochrane Library

Scopus



Findings from Literature

- Gao et al. & Yang et al. Both studies examined the efficacy of augmented pedicle screws in treating spinal tuberculosis in elderly patients with concurrent osteoporosis. Their findings support this approach as a valid and effective treatment method.
- Deml et al. Investigated the safety and effectiveness of PMMA placement in the intervertebral space for pyogenic spondylodiscitis in 73 patients, demonstrating positive outcomes.
- Bance et al. Explored the use of antibiotic-impregnated PMMA for anterior column reconstruction in pyogenic spondylodiscitis. Their study confirmed its efficacy and safety in restoring spinal stability.
- Soei Asuka Studied cement-augmented pedicle screws combined with a titanium mesh cage in two elderly patients with pyogenic spondylitis and osteoporosis, showing favorable surgical results.

Findings from Literature

- **Key Limitations**
- Despite studies supporting PMMA use for anterior reconstruction in pyogenic spondylodiscitis, no research has assessed its potential risks in spinal infections.
- Cement-augmented pedicle screws may lead to complications such as persistent infections, difficulty eradicating pathogens, and PMMA leakage.

Question:

Does osteoporosis influence the outcomes after surgical fixation and can cement augmented screws be used in the presence of Pyogenic spinal infections for better implant purchase?

Response:

- Osteoporosis highly influences surgical fixation outcomes in pyogenic spinal infections, necessitating careful preoperative planning.

Response:

- **The current literature does not show sufficient evidence to support the use of cement-augmented pedicle screws in pyogenic spondylodiscitis**

❖ Vote:

Agree – 100%, Disagree – 0%, Abstain – 0%
(Unanimous Consensus)