Sp70- 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?

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Recommendation: Osteoporosis highly influences surgical fixation outcomes in pyogenic spinal infections, necessitating careful preoperative planning. While cement-augmented pedicle screws (CAPS) have demonstrated efficacy in tubercular spondylodiscitis, their role in pyogenic spondylodiscitis remains unexplored to the lack of studies, long term follow-up and potential risks. CAPS may be thoroughly considered based on individual patient factors, infection status, and alternative fixation strategies. Further research is essential to determine the safety and efficacy of CAPS in pyogenic spinal infections.

Strength of recommendation: Low

Delegate Vote:

Rationale:

Pyogenic spinal infections (PSI) are an increasingly common issue amongst patients presenting with either back pain or neurologic complaints. Conservative treatment with bed rest and long-term (6-12 weeks antibiotics is certainly the standard of care, but in the presence of spinal instability, epidural abscess, intolerable back pain and inadequate respond to conservative treatment; surgery is mandatory to achieve pain reduction, increased mobility and improvement infection control[1]. 50 and 70 years of age, representing approximately 3–5 % of all cases of spinal osteomyelitis[2,] resulting often to a difficulty of surgical treatment due to comorbidities as osteoporosis[3]. Many adverse outcomes have previously been associated with osteoporosis, even catastrophic failure [4-5]. Gubpta et al. [6] founded a higher risk of revision surgery in patients with osteoporosis; and, Bejerke et al[7] 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 screws[8].
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.
In two studies, Gao et al[9]. and Yang et al[10] have investigated the utility of augmented pedicle screws in tuberculosis spine infection, founded a valid and effective treatment for elderly patients with spinal tuberculosis and concomitant osteoporosis.
To our knowledge, no reports have explored whether augmented PMMA pedicle screws are safe and effective for elderly patients with pyogenic spinal infections and osteoporosis. Otherwise, some studies have investigated utility od PMMA for anterior column reconstruction. Deml et al.[11] have investigated the safety and effective of PMMA in intervertebral space for treating 73 patients affected by pyogenic spondylodiscitis. On other hand Bance et al.[12] investigate the utility of Antibiotic-impregnated PMMA for anterior column reconstruction in pyogenic spondylodiscitis; they found an efficacy and safety of using PMMA to restore anterior column. So, only small studies are demonstrated positive results in using PMMA and antibiotic -PMMA in the instrumented spinal fusion for pyogenic spondylodiscitis [13-14]

Soei Asuka studied the use of cement-augmented pedicle screws and a titanium mesh cage in two cases of pyogenic spondylitis in elderly patients with osteoporosis, demonstrating favorable surgical outcomes.[15]

Despite studies that have investigated the role of PMMA for anterior reconstruction in Pyogenic spondylodiscitis, no studies have investigated potential risks of using PMMA in pyogenic vertebral column infections,on the other hands using CAPS in pyogenic spondylodiscitis can be related to early or long term complications as high risk infection or difficulty in eradicating the infection itself, or PMMA leakage.

Further works are needed to investigate safely and utility of PMMA augmented screws in the setting of pyogenic spinal infections.

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