

Free Papers B

[O22] MASQUELET TECHNIQUE: A SYSTEMATIC REVIEW THIRTY YEARS AFTER ITS INTRODUCTION

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Aim: The induced membrane technique (IMT) or Masquelet technique, is a two-step surgical procedure used to treat bony defects (traumatic or resulting from tumoral resections) and pseudoarthroses, even caused by infections. The relatively small case series reported, sometimes with variants to the original technique, make it difficult to assess the real value of the technique. Aim of this study was then to undertake a systematic review of the literature with a particular focus on bone union, infection eradication and complication rates.

Method: A systematic review was carried out following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Individual Patient Data (PRISMA-IPD) guidelines. PubMed and other medical databases were searched using “Masquelet technique” and “induced membrane technique” keywords. English, French or Italian written articles were included if dealing with IMT employed to long bones in adults and reporting at least 5 cases with a 12 months minimum follow-up. Clinical and bone defect features, aetiology, surgical data, complications, reinterventions, union and infection eradication rates were recorded into a database. Fischer’s exact test and unpaired t-test were used for the statistical analysis on the individual patients data.

Results: Ten papers met the inclusion criteria (312 patients), but only 5 reported individual patients data (65 cases). IMT was used for acute bone loss (53%), septic (47%) and aseptic (7%) pseudoarthroses and tumour resections (2%). Bone defect length ranged from 0.6 to 26 cm. Overall, union rate was achieved in 88% of the cases and infection cured in 93%. Complication rate was 53%. Surgical variants included the use of antibiotic-loaded spacers (59.9%), internal fixation during the first step (62.1%), use of Reamer-Irrigator-Aspirator technique (40.1%) instead of iliac crest (63.1%) grafting, bone substitutes (18.3%) and growth factors addition (41%). No statistical differences were found comparing patient-related factors or surgical variants in achieving the two outcomes.

Conclusions: IMT is effective to achieve bone union and infection eradication, but is associated with a high rate of complications and reinterventions. This should be taken into consideration by the surgeons and be a part of the informed consent. This systematic review was limited by the few studies meeting the inclusion criteria and their high variability in data reporting, making a meta-analysis impossible to undertake. Further studies are needed to demonstrate the role the patients’ clinical features and IMT variants with respect to bone union and infection eradication.