INTRODUCTION: This report presents two patients who received treatment with bisphosphonates (BPs) and who subsequently developed BP related osteonecrosis of the jaws (BRONJ). The treatment of advanced cases with BRONJ is an area of investigation. The possibility of microvascular reconstruction in severe cases of BRONJ needs further investigation.

MATERIAL AND METHODS: Two patients with advanced BRONJ of the left mandible underwent radical resection and immediate bony reconstruction with a microvascular osteocutaneous fibula or iliac crest flap. Both patients had been treated initially without success using more conservative procedures. The progressive course of the disease and refractory pain indicated the need to perform radical resection and immediate reconstruction of the mandible.

RESULTS: Both patients underwent successful resection of the affected bone with immediate reconstruction by microvascular flap transfer. After reconstruction of the mandible and cover of the defects, both patients recovered well with good mandibular function.

CONCLUSIONS: Radical resection followed by microvascular composite flap reconstruction is reliable in the management of patients with advanced BRONJ and can be considered as the fourth therapeutic stage.