

Pelvic reconstruction using recycled frozen autograft treated with liquid nitrogen after resection of malignant pelvic bone tumor

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*Introduction:* Pelvic reconstructive surgery after the resection of a pelvic tumor is most challenging. The purpose of this study was to assess the functional outcome and complications of frozen autografts for pelvic reconstruction.

*Methods:* Twelve patients were enrolled in this study, with a mean age of 47 years. Eight patients had primary malignant bone tumors and four patients had isolated metastases. We excluded patients who underwent palliative surgeries. In 10 patients, pelvic reconstruction using a frozen autograft was performed, and in two patient, a frozen autograft–prosthesis composite (THA) was used. The surgical techniques were composed of an en bloc excision of the tumor, freezing in liquid nitrogen for 20 min, thawing at room temperature for 15 min, thawing in distilled water for 15 min, and internal fixation with either plate or composite use of the prosthetic replacement. Time of bone union, incidence of complications, and limb function (ISOLS/MSTS score) were evaluated.

*Results:* The mean follow-up period was 47 months. Bone union of the frozen autograft to the host bone was observed in all patient expect one case with a mean duration of 9 months. Complications observed were deep infection, osteoarthritis, intestinal perforation, breakage of implant and local recurrences arising in peripheral soft tissues. Limb function was rated as excellent in five patients, good in five, and poor in two.

*Conclusion:* Although some complications still remained, frozen autografts treated with liquid nitrogen achieved favorable limb function, and this would be a useful option for biological pelvic reconstruction.