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A simple method of thin titanium screw and cement reconstruction of cortical windows after curettage of low grade cartilaginous tumors

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Introduction: Curettage and cementation is a widely preferred method of treatment of low grade (HUVOS Grade I) chondrosarcomas. Meticulous excision of tumour content requires sufficient visualization of the tumour mass in the bone. Unfortunately if the amount of cortical window is larger than the diameter of bone or longer than 2 cm's, avoidance of risk of pathological fracture necessitates the use of plate and screws for augmentation. Bulky metallic devices also cause a problem of MRI follow up due to image distortion. A simple method using window cortex with thin titanium screw embedded in the cement mass might be a solution for this problem.

Method: 7 patient, 3 male 4 female with a mean age of 48 (34-62) were treated with curettage, burr and cementation, between 2011-2014 with a mean follow up of 15 months. All patients had low grade chondrosarcoma. Anatomical locations were: 4 femoral shaft, 2 humerus shaft and 1 metaphysis of humerus. Length of intramedullary tumour extension was mean 6,2 cm (4-8cm), dimension of the cortical window was mean 4x1 cm (2-8cm). The cortex over the window was curetted, burred and screw installed prior to the application of bone cement. After curettage and burr, the cavity was filled with bone cement. Prior to curing, the cortex of the window pressed on the cement, anchoring the screw into the cement mass.

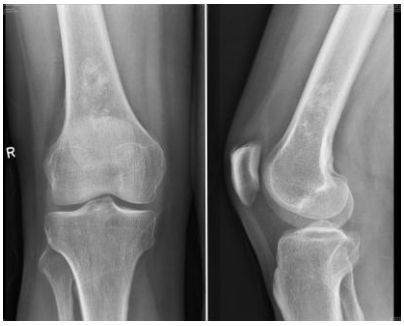

Figure 1.

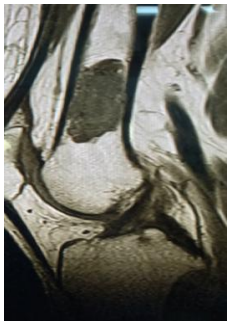

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Femur patients were kept in a brace for 1 month with partial weight bearing with crutches. Humerus cases used upper arm sling for 3 weeks.

Results: All patients were followed by 3 monthly direct X-rays and 6 monthly MRI. No patients have developed any local recurrence yet. The image distortion due to thin titanium screw was very minimal and cement bone interface was clearly visible on MRI. All cortices united in 3 months time and no pathological fracture was observed in the follow up period.

Conclusion: Reconstruction of curettage cavity window with original cortex removed during curettage and

application of a thin titanium screw embedded in the cement mass is a simple and reliable method of reconstruction without any disturbances of MRI follow up without any risk of fracture.