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Editorial

Benign Bone Tumors, An Overview

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Benign bone tumors often weaken bone and make patients vulnerable to pathological fractures [1]. Benign lytic bone lesions such as Simple Bone Cyst (SBC), Non-Ossifying Fibroma (NOF) and Fibrous Dysplasia (FD), etc. commonly affect the young people. These lesions, which are usually asymptomatic, are stabilized or usually disappear after skeletal maturaty. Therefore, Surgical option is generally now not required until the size of the lesion is prone to pathological fractures, in which case curettage and grafting are the widespread treatment [2].

Benign bone tumors include many types of tumors. These tumors vary in incidence, medical symptoms, and require multiple treatment options. The incidence of benign bone tumors is debated, as their symptoms are often asymptomatic and difficult to detect [3]. There are many different types: osteosarcoma, osteoblastoma, giant cell tumor (GCT), aneurysmal bone cyst (ABC), FD and enchondroma. These tumors can be categorized into numerous types relying on their cell type, which include bone-forming, cartilage-forming, connective tissue, and vascular [4].

How to treat painless benign bone tumors is still controversial [1]. Current treatment of benign bone cysts consists of observation, injection of bone marrow or demineralized bone matrix, curettage blended with bone or synthetic grafting, decompression with intramedullary nailing or cannulated screw, or a mixture of these methods [5]. The aim of surgical option is to stop the tumor from recurring and restore bone strength. Larger lesions should be filled with a graft to reduce pathological fractures. Therefore, filling of bone defects after tumor curettage is presently the most common method [6].

Filling of bone defects after curettage of benign bone tumors is achieved using: Autografts, bone grafts substitutes, allografts, bone cement or nothing as needed [7].

Bone grafts can be supplemented via autologous bone or bone allografts. Autologous bone grafts have the properties of osteogenesis and osteoinduction. Autologous grafting has a surprising success rate, low risk of disease infection, and histocompatibility. However, the wide variety of autologous bone grafts, in particular in children, is limited [8,9].

Allografts are no longer associated with an increased risk of infection, as do autologous grafting, with some boundaries for their use, particularly in children, for the filling of bone defects [10]. Calcium phosphate ceramics can be used to fill bone defects [11]. These substances act as bone-forming fillers that can be fully restored in the form of new bone regeneration and restoration of anatomical strength and structural properties [12].

Polymethyl methacrylate (PMMA) bone cement is a replacement for all types of highly-priced allografts, and has been widely compared to allografts over the previous decade [13]. Cement has been previously studied and can yield better results, making it an optimal step for surgeons treating these lesions, especially those associated with major defects. However, its association with pathological fractures has not been studied to a great extent, although a pathological fracture following a benign tumor is not a contraindication to treatment by curettage and cementation. Bone cement affords immediate stabilization and sufficient filler for large tumor joints. The exothermic property additionally reduces recurrence

due to killing tumor cells [14]. Another technique for adding PMMA to autologous or allogeneic transplants has shown promising outcomes in terms of mechanical stability over the last few years [15]. Filling the cavities created after removal of the pathological tissue does not need to be continuous, and healing can take place in an average time frame [16].

Epidemiology, types and management modalities will be discussed in more details in upcoming issues.

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