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Biopsy punch meets tube system – A new technique for biopsy and treatment of difficult accessible bone tumors

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Introduction: Biopsy taking in patients with bone tumors of uncertain dignity is a crucial step within the diagnostic cascade. Open biopsy is still considered the gold standard. However, in certain anatomical locations such as the femoral neck, intramedullary bone tumors are sometimes difficult to access. Therefore, the surgeon runs the risk of sampling errors or contamination of the surrounding soft tissue during biopsy or curettage of benign tumors. We present a new technique for the biopsy and treatment of difficult accessible bone tumors.
Methods: For the new technique a regular biopsy punch as well as a tube system are needed. The latter is usually used for the retro-/antegrade knee access in intramedullary nailing in order to avoid contamination of the knee with reaming material. The tube system is positioned over a guide wire and a special centering tool for opening the medullary cavity directly towards the bony lesion. For the following, the tube system serves as an entry portal and working channel to prevent contamination of the surrounding tissue with biopsy material. Once in the right position, rigid reamers of different sizes (for breaking the sclerotic boarders) and a regular biopsy punch can be inserted via special reduction sleeves. The bony lesion is now biopsied using the biopsy punch and/or a sharp curette. After biopsy, the medullary canal is reclosed with the previously removed punching cylinder of healthy bone in order to prevent bleeding into surrounding soft tissue structures. After the benign character of a lesion is confirmed by histopathology, the same system can be used for curettage and filling with bone graft without contamination of the surrounding tissue.
Conclusion: The use of a tube sytem as well as a biopsy punch is a helpful tool for biopsy and treatment of difficult accessible bone tumors. The described technique may help to prevent sampling errors and contamination of surrounding structures with tumor material or post-biopsy bleeding.