CASE REPORT

Bone Biopsy using Micromate™

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Patient description

65-year-old female with invasive lobular carcinoma of the breast with skeletal carcinomatosis.

After years of progression-free survival, a PET-CT scan detected several novel, abnormal metabolic bone lesions. A bone biopsy of the iliac crest was selected for accessibility.

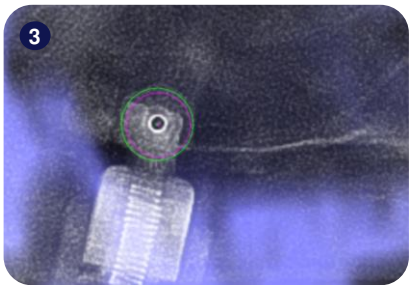
Key Takeaways

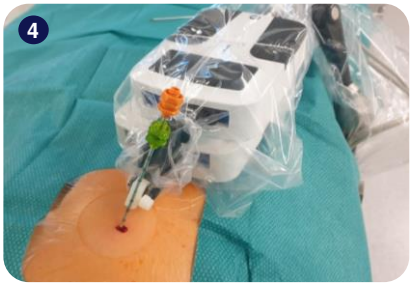
Micromate™ supports multiple needle insertions within its range of motion without the need to manually reposition the holding arm.

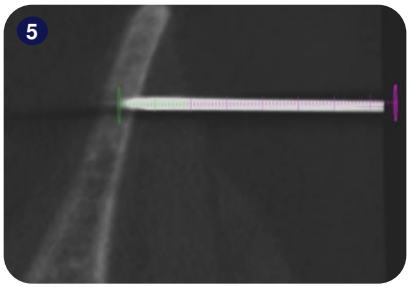
Adequate patient positioning using iFIX allowed an accurate and safe robotic execution of the surgical trajectory.

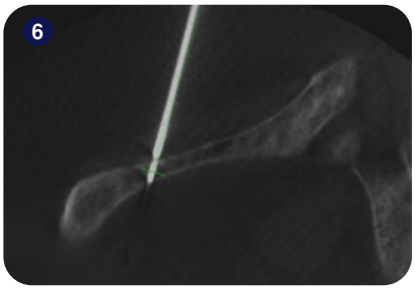
Image fusion and planning were performed using a Philips Allura Xper FD20 angiography device and Xper Guide planning software. Two needles with different trajectories were planned for a biopsy of the same lesion. The target point location was defined halfway through the left iliac crest. The patient was positioned prone using iFIX for comfortable arm and head positioning, and the left side of the pelvis was lifted prior to the sterile field creation.

Micromate™ was gross-positioned near the entry point of the first surgical plan and aligned to the trajectory within 60 seconds under fluoroscopic live imaging. After alignment, a 13G needle was manually inserted until a stable bone purchase was achieved and a control scan was acquired. The biopsy needle was drilled through the bone for tissue harvesting using Teleflex Arrow OnControl system, also under live imaging. The fine alignment procedure was repeated for the second trajectory without the need for adjusting gross position. Micromate™ reached the desired target accurately in both cases and ensured stable guidance while taking the biopsy. For the first trajectory, a 0.07mm accuracy on the Entry Point view and 0.77 degrees angular accuracy along the trajectory in Progress View were achieved. For the second tissue harvesting, Entry Point view accuracy was not reported, and a 1.02 degrees angular accuracy was achieved.









1) Patient positioning using iFIX 2) Micromate™'s fine alignment is performed under live imaging while holding the OnControl System Access Needle 3) Entry Point view after alignment to the first trajectory 4-5) Setup overview after bone purchase obtained with the first needle 6) Control scan after tissue harvesting when aligned to the second surgical plan