

## Added Value of 3D Ultrasound Image Guided Hepatic Interventions by X Matrix Technology

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**Abstract :** Background: Image-guided hepatic interventions are integral to the management of infective and neoplastic liver lesions. Over the past decades, 2D ultrasound was used for guidance of hepatic interventions; with the recent advances in ultrasound technology, 3D ultrasound was used to guide hepatic interventions. The aim of this study was to illustrate the added value of 3D image guided hepatic interventions by x matrix technology. Patients and Methods: This prospective study was performed on 100 patients who were divided into two groups; group A included 50 patients who were managed by 2D ultrasonography probe guidance, and group B included 50 patients who were managed by 3D X matrix ultrasonography probe guidance. Thermal ablation was done for 70 patients, 40 RFA (20 by the 2D probe and 20 by the 3D x matrix probe), and 30 MWA (15 by the 2D probe and 15 by the 3D x matrix probe). Chemical ablation (PEI) was done on 20 patients (10 by the 2D probe and 10 by the 3D x matrix probe). Drainage of hepatic collections and biopsy from undiagnosed hepatic focal lesions was done on 10 patients (5 by the 2D probe and 5 by the 3D x matrix probe). Results: The efficacy of ultrasonography-guided hepatic interventions by 3D x matrix probe was higher than the 2D probe but not significantly higher, with a p-value of 0.705, 0.5428 for RFA, MWA respectively, 0.5312 for PEI, 0.2918 for drainage of hepatic collections and biopsy. The complications related to the use of the 3D X matrix probe were significantly lower than the 2D probe, with a p-value of 0.003. The timing of the procedure was shorter by the usage of 3D x matrix probe in comparison to the 2D probe with a p-value of 0.08,0.34 for RFA and PEI and significantly shorter for MWA, and drainage of hepatic collection, biopsy with a P-value of 0.02,0.001 respectively. Conclusions: 3D ultrasonography-guided hepatic interventions by X matrix probe have better efficacy, less complication, and shorter time of procedure than the 2D ultrasonography-guided hepatic interventions.

**Keywords :** 3D, X matrix, 2D, ultrasonography, MWA, RFA, PEI, drainage of hepatic collections, biopsy

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