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ABDOMINAL IMAGING

LETTER TO THE EDITOR

Letter to the Editor: Small microspheres for prostatic artery embolization: balancing efficacy and safety

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Dear Editor,

I read with great interest the study by Moschouris et al.[1] comparing 40–120 µm and 100–300 µm trisacryl gelatin microspheres (TGMs) in prostatic artery embolization (PAE). The study provides valuable findings on the biological effects of very small microspheres. PAE is a highly effective technique, particularly for large prostates. A recently published trial also reported results comparable to those achieved with holmium laser enucleation of the prostate, a modern surgical technique;[2] however, the type of embolic agent selected for PAE is an important parameter that may affect treatment success and complication rates. In this study, the authors evaluated two different sizes of small microspheres in terms of treatment success and complications and reported highly interesting results. While I congratulate the authors on this valuable study, I believe that several important points warrant further discussion.

First, in PAE, is it more important to achieve maximal prostatic ischemia or sufficient ischemia while minimizing non-target embolization? Although 40–120 µm TGMs resulted in significantly greater prostatic infarction and midterm prostate volume reduction, this biological advantage did not translate into better International Prostate Symptom Score, quality of life, or postvoid residual volume. Smaller particles have greater distal penetration and may cause more extensive ischemia; however, when ischemia extends beyond the targeted prostate, it may become a safety concern rather than a clinical advantage. It is well established that the prostatic arterial bed has complex connections with the penile, vesical, and rectal arteries, providing potential pathways for non-target embolization.[3] Indeed, three grade 3a complications (bladder wall ischemia and prolonged severe anal/perineal pain) occurred in the 40–120 µm group, whereas none occurred in the 100–300 µm group. Several studies have reported favorable outcomes with 100–300 µm, 300–500 µm, or 400 µm microparticles without major complications.[4,5] In addition, n-butyl cyanoacrylate (glue) has emerged as an alternative for PAE, with the potential to reduce non-target embolization, procedure time, and radiation exposure.[6] Therefore, I believe that the primary goal should be sufficient ischemia to achieve meaningful clinical outcomes rather than maximal distal penetration and more extensive ischemia.

Second, the findings of this study further emphasize the importance of intraprocedural vascular assessment. In the study, cone-beam computed tomography (CBCT) was used selectively rather than routinely. Notably, in the patient who developed non-target embolization of the middle rectal artery, this artery had not been identified on preprocedural computed tomography angiography or digital subtraction angiography, and intraprocedural CBCT had not been performed. Particularly when particles with greater distal penetration potential, such as 40–120 µm particles, are used, I believe that more systematic use of CBCT to evaluate extra-prostatic vascular connections may be beneficial from a safety perspective.

In conclusion, this study demonstrates that smaller microspheres can achieve more extensive prostatic ischemia; however, the lack of additional clinical benefit and the occurrence of non-target ischemic complications highlight the importance of balancing clinical efficacy and safety rather than maximizing tissue ischemia. Particularly when small particles are used, careful evaluation of extra-prostatic vascular connections and more systematic use of CBCT may improve procedural safety.

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Footnotes

Conflict of interest disclosure

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