VDM Vascular Disease Management

INTERVIEW

Early Outcomes and Safety of Prostate Embolization With n-Butyl Cyanoacrylate Liquid Embolic

An Interview With Dr. David Bamshad

David Bamshad, MD
Icahn School of Medicine at Mount Sinai (West), New York, New York

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David Bamshad, MD

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At the 2023 Society of Interventional Radiologists (SIR) Annual Meeting in Phoenix, Arizona, Resident Physician David Bamshad, MD, from the Icahn School of Medicine at Mount Sinai (West) in New York, presented results from a retrospective study that assessed the feasibility, safety, and short-term efficacy of n-Butyl cyanoacrylate (n-BCA) glue embolization for prostate artery embolization (PAE).

In this study, 80 patients who underwent PAE from June 2022 through February 2023 were reviewed. In all cases, which were performed by Dr. Aaron M. Fischman of Mount Sinai Health System, n-BCA was used as the primary embolic, with 1:9-1:12 dilution of n-BCA:lipiodol. All were performed using transradial access with separate microcatheters for the left and right sides. Technical success was defined as successful bilateral embolization.

Technical success was 90% or 72 out of 80 patients. The study concluded that the use of n-BCA as the primary embolic for PAE is technically feasible and safe with low radiation doses and significant improvement in post-procedural International Prostate Symptom Scores.

Vascular Disease Management spoke with Dr. Bamshad to discuss the results of the study and what it means for the use of liquid adhesive agents in PAE.

Dr. Bamshad, tell us about the study on n-BCA you presented at SIR 2023.

Basically, we studied and analyzed all the patients in our health care system who underwent PAE with glue. It's referred to as glue, but it's N-butyl cyanoacrylate, or n-BCA.

n-BCA is a liquid embolic that can be used for embolization. Historically, PAE has been done using particles, like microspheres, but there are some advantages in using glue. First, with particles, there are recurrence rates of 20% to 25%, and it could be technically challenging to redo PAE. We also found that using coils and particles is just so costly. With glue, the procedure could be potentially quicker, with immediate embolization. It's permanent, and we can visualize it in real time. We see the glue actually flowing, and we know when to stop, so we can decrease the risk of non-target embolization. Faster procedure time and lower radiation doses was our mindset in looking at the use of glue for PAE, as well as cost savings overall.

Tell us more about the study. How many patients were involved, and how long did it last?

We analyzed all patients that we did glue embolization on from June of 2022 through February of 2023, and it came out to about 85 patients. We excluded 5 of them because they also had particles usage for their embolization. So we had 80 patients overall that were selected to be analyzed that solely used glue for embolization of their prostate arteries.

The average age was 72 years. We looked at the demographics as well as preprocedural objectives and subjective assessments. The subjective assessments were the questionnaires of their symptom severity, and that's typically done with International Prostate Symptom Score (IPSS). Their average IPSS score was 21, which means severe lower urinary tract symptoms. We also reviewed their quality of life (QOL); for these patients, QOL was about 4, which is mostly dissatisfied.

For a nice amount of the patients that were included, we also looked at their uroflow with uroflowmetry to see what their peak max urinary flow rate was at their baseline. We also reviewed preprocedural imaging, mostly computed tomography angiography, of their pelvis to get their prostate measurements and look at their vascular anatomy. The average prostate gland volume size of our patient population was 163 mL, and their peak flow was 7.3. Of all the patients, 34% had a history of intermittent catheterization or indwelling Foley catheter, and 14% of them had a prior procedure.

The aim of our study was to determine if PAE with glue is safe and feasible. The actual clinical outcomes are very preliminary.

We were looking at technical aspects, like total fluoroscopy time, cumulative dose, and dose area product. We also looked at what the technical success rate was, the adverse outcomes, and, as an extra add-on bonus, whatever preliminary clinical follow-up data we received during short-term follow-up.
We found that technical success, which we defined as bilateral embolization, was at 90%, or 72 out of 80 patients. Eight of the 80 had unilateral embolization, about 9%. So we had a good technical success rate. Median fluoroscopy time was 21 minutes. The median cumulative dose was 600 mg, which is great, and potentially better than with particles, in terms of our metrics. There were no major adverse events.

Are you planning any follow-up research?

Yes, this is just the beginning. We have a lot of follow-up to do, especially with clinical outcomes. We want to look at several things: follow-up MRIs, whether the prostate glands have shrunken, and how durable the embolization is with glue. What are the chances of recurrence—will they need a repeat procedure or will they need it less often? We saw significant improvement of their symptoms. We have data that show the average IPSS score went down from about 20 to 7 in their baseline, which is 13 points. And their QOL went from about 4 to almost 1, which is an improvement of 65% to 68%. Their peak flow and prostate gland volume also improved. Their prostate shrunk for the ones that we have complete data for.
We obviously need more follow-up data. Also, we are looking into potentially analyzing with different subgroups within the population of people who need PAE to see if there is any other information that we could pull.

What is the one takeaway that you wanted the audience to get from your presentation?

The takeaway is that PAE with glue is safe and feasible. We have a short, fast procedure time, low radiation doses, and no major adverse events. Patients were very happy. Overall it seems to be a great success, and we're very excited about it. ■