Radiologists and engineers develop a modified catheter to reduce contrast material injuries

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Though rare, IV contrast material administration can sometimes result in patient injury. However researchers have developed a modified catheter that may prevent such events from occurring, according to a study in the October issue of the *American Journal of Roentgenology* (AJR).

The force of the contrast material exiting the end hole of a standard catheter is what is believed to be one of the main causes of patient injury. For this study, performed at Duke University Medical Center, modified catheters with side holes and slits were developed. An imaging system was used to compare the fluid flow from a modified catheter and a standard catheter.

"We found a less pronounced amount of contrast material exited the end holes of the modified catheter as compared with the standard end-hole-only catheter," said Rendon C. Nelson, MD, senior author of the study. "Numeric calculations showed that the addition of side holes or slits resulted in a nine to 30 percent reduction of the velocity of contrast material exiting the end hole of the catheter. And we saw more of a cloud like dispersal rather than a jet," said Dr. Nelson.

"The rate at which these injuries occur varies from practice to practice. We typically have 14-15 patients per month who suffer from them. Normally the injuries we see are mild, including pain and swelling at the injection site, however they can be more severe," he said.

"As our study suggests, the development of a modified catheter that decreases the jet like phenomenon seen with a standard-end-hole catheter could improve patient safety and decrease the likelihood of injury," said Dr. Nelson.

Source: American Roentgen Ray Society