# A Rabbit Animal Model For Uterine Fibroid Embolization

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## Technology description

Northwestern investigators tested the hypothesis that VX2 implantation in the rabbit uterus could induce a successful fibroid model and that MRI could detect acute perfusion changes in this model following UAE.

Although uterine artery embolization (UAE) is widely used clinically, an animal model containing actual uterine fibroids does not exist. Development of such an animal model would be desirable as a platform for interventional radiologists to a) test embolic therapies; b) determine the most appropriate endpoint for UAE; and c) develop innovative imaging techniques. The rabbit VX2 carcinoma model has been used in the liver, lung, and kidneys.

**BACKGROUND**

VX2 cells were implanted into the uterus of 3 New Zealand White rabbits and incubated for 21-30 days. Once MRI (Siemens 1.5T Sonata) confirmed growth of uterine tumors, each rabbit underwent bilateral uterine digital subtraction arteriography. Subsequent UAE was carried out to stasis with 100-300 micron spherical PVA (BeadBlock, Terumo). Pre and post-UAE contrast enhanced T1-weighted MRI was performed using intravenous gadolinium (Gd) contrast agent. Following UAE, rabbits were euthanized and each uterus harvested for pathologic analysis. Using a computer workstation, signal enhancement was measured pre and post-UAE in 4 quadrants for each uterine tumor (n = 8 separate measurements for each uterine tumor). Mean fibroid enhancement pre and post-UAE using the Student's t-test was statistically compared, with alpha=0.05.

**RESULTS**

In 3 rabbits, 3 discrete VX2 uterine tumors were successfully grown, imaged, and embolized. All tumors were confirmed on gross pathology and ranged in size from 2-4cm in diameter. On MRI, mean tumor enhancement pre-embolization was 32.2±14.1 and post-embolization was 9.60±5.62. This difference was statistically significant ($p<0.01$).

VX2 uterine implantation in rabbits successfully induces a fibroid animal model that responds to UAE. In the acute setting, UAE significantly reduces perfusion to rabbit VX2 uterine tumors, as documented by enhanced MRI.

Institution

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