



The Role of Micro-Ultrasound for Vasectomy Reversal. Can We Identify the Obstruction?

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INTRODUCTION

- Micro-ultrasound (MUS) is a high-resolution imaging technology that operates at a frequency of 29 MHz. MUS delivers images with a resolution of up to 70 μ m
- Standard ultrasounds operate at a frequency of 5-9 MHz
- MUS has been studied as a modality for prostate imaging with reported results comparable to multiparametric MRI. A prostate cancer risk identification system using MUS has also been developed (PRI-MUS)
- MUS has also been evaluated in its possible role for detection of bladder cancer lesions
- About 500,000 vasectomies are performed annually in the United States. Of these patients, about 6% will later go on to pursue a vasectomy reversal

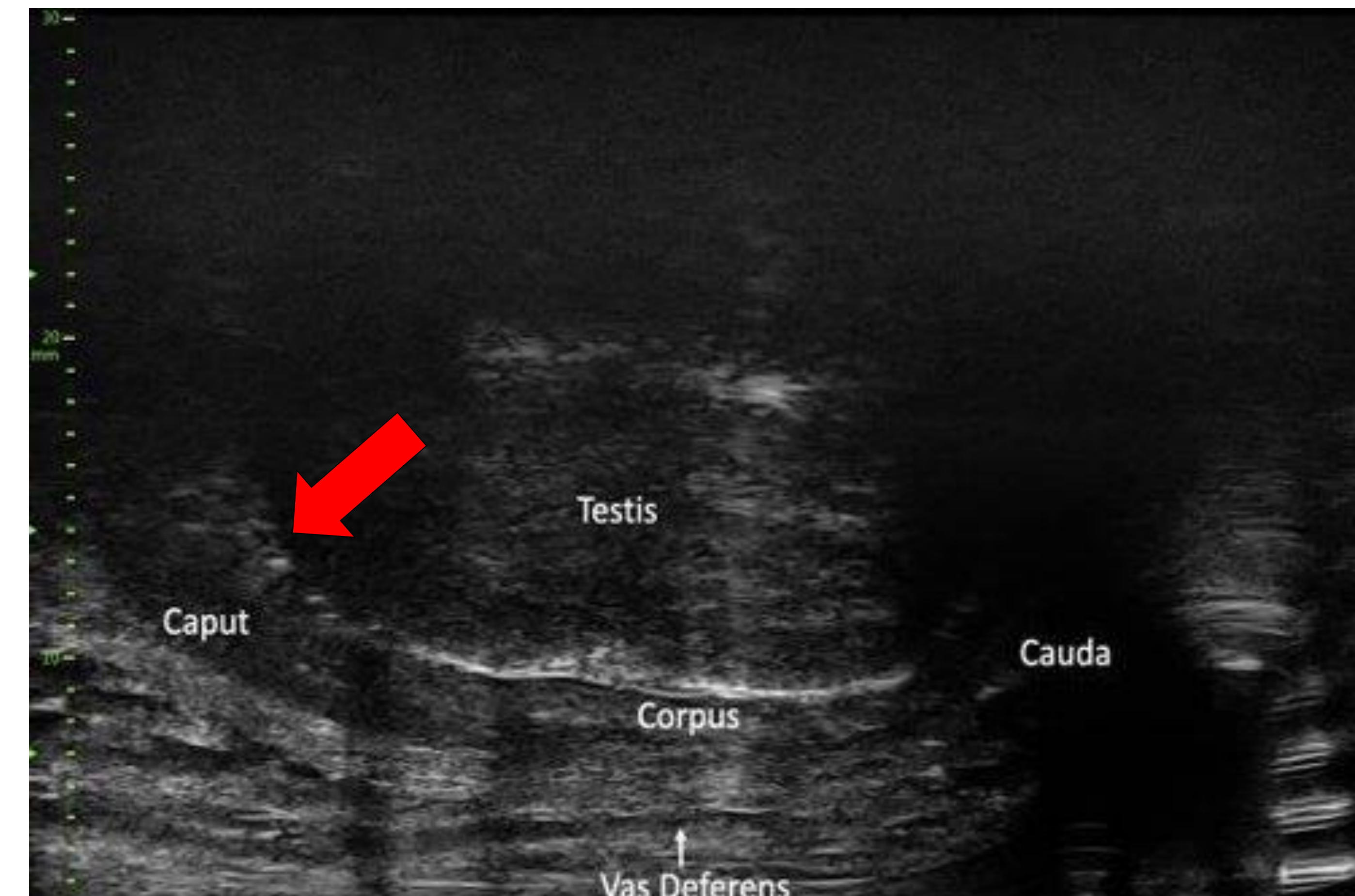
Objective: Determine whether pre-operative micro-ultrasound imaging can accurately identify the level of obstruction in the vas deferens in men undergoing vasectomy reversals.

METHODS

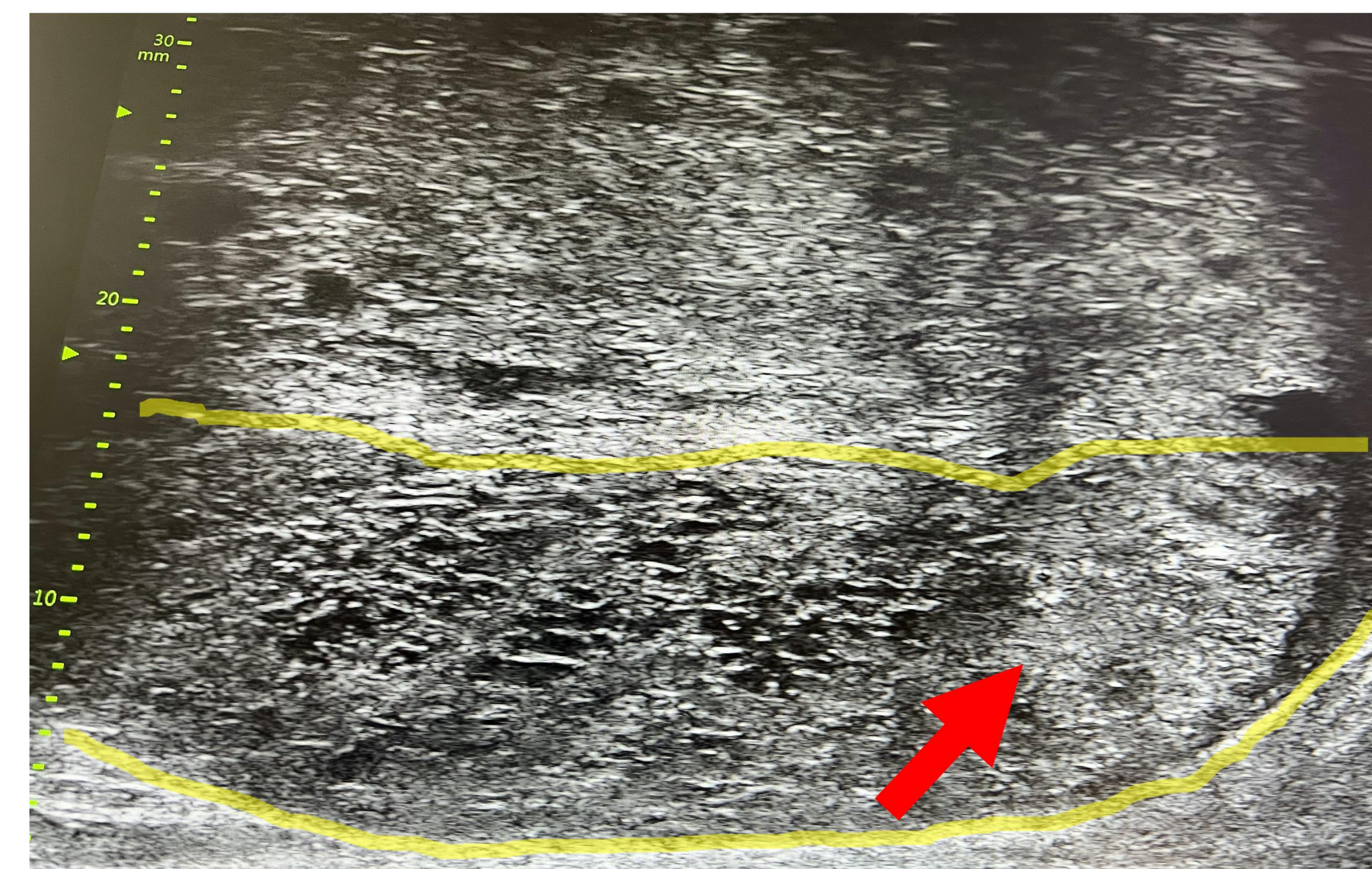
- Two men with history of iatrogenic infertility from prior vasectomy identified in clinic
- Vasectomy obstruction interval (VOI) was >20 years
 - Patient 1: VOI of 21 years and prior unsuccessful vasectomy reversal at another institution
 - Patient 2: VOI of 20 years followed by a failed vasectomy reversal
- Preoperative evaluation included MUS to assess:
 - Patency and caliber of vasa deferentia
 - Area of obstruction proximal to site of vasectomy

- Images were correlated with intra-operative findings to determine whether micro-ultrasound successfully identified the level of obstruction in the vas deferens

RESULTS



Micro-ultrasound image showing dilated caput epididymis (red arrow) versus flat cauda epididymis (Patient 2)



Micro-ultrasound image showing the point of epididymal obstruction (red arrow) in Patient 2

Patient 1:

- MUS - normal caliber proximal vasa deferentia
- OR - left vasal occlusion at a mid-high vasal site with vasovasostomy performed. Right occlusion at corpus epididymis with right vasoepididymostomy performed

Patient 2:

- MUS - normal caliber proximal vasa deferentia
- OR - bilateral proximal vasal obstruction with atretic lumen. Bilateral vasoepididymostomies performed at the cauda epididymis.

DISCUSSION

- **Intraoperatively, the level of obstruction was found by marching proximally up the vas until sperm could be seen**
- **No sperm was encountered until we reached the proximal vas in both patients, where sperm was found in the dilated epididymis**
- **MUS images correlated with intraoperative findings for approximate level of obstruction**
- **MUS able to demonstrate distinct differences in lumen size of epididymis and vas deferens**

CONCLUSIONS

- **MUS offers higher resolution images which may assist in preoperative planning and counselling in men undergoing vasectomy reversal**
- **Use of MUS may become standard of care in workup for vasectomy reversal to better identify patients who would most benefit from the procedure**