

SUPPLEMENTARY APPENDIX

1. MICRODENERVATION OF THE SPERMATIC CORD (MDSC) TECHNIQUE

We typically perform the procedure in an outpatient setting under general anesthesia with the aid of an operating microscope at 4–8 × power. The patient is placed in a supine position and following skin preparation, an oblique 3–4 cm inguinal incision is centered over the external inguinal ring. The spermatic cord is then isolated circumferentially and the ilioinguinal nerve is identified. The ilioinguinal nerve typically runs along the lateral surface of the cord. A 2–3 cm segment of the nerve is excised and the cut ends are ligated. Subsequently, the nerve is buried under the external inguinal ring to decrease the risk of neuroma formation. Fibers of the genital branch of the genitofemoral nerve are reported to run along the floor of the inguinal canal. Cautery is used to divide those rarely visible fibers. The spermatic cord is then elevated and a Penrose drain (5/8 inch) is placed underneath the cord.

The operating microscope is brought to the field and the anterior spermatic cord fascia is incised to expose the cord contents. A 20 MHz Microvascular Doppler System ultrasound (Vascular Technology, Inc., [VTI] Nashua, NH, USA) is used to identify the testicular, cremasteric and deferential arteries. The arteries are secured with micro-vessel loops. All identifiable lymphatics are spared to decrease the risk of hydrocele formation. The internal spermatic veins are subsequently divided then ligated. The cremasteric musculature and spermatic cord fascia are divided using electrocautery (**Figure 2**).

Prior to closure, the micro-Doppler is used to check for pulsatile flow within the preserved arteries. Topical papaverine is applied to the vessel surface to encourage vasodilation if poor flow is noted. The cord is then returned to its original position and 10 cc of 0.25 bupivacaine without epinephrine is injected around the wound. The incision is closed in layers.

2. EPIDIDYMECTOMY TECHNIQUE

The surgical procedure is typically performed in an outpatient setting under local or general anesthesia. We utilize an anterior ipsilateral or median raphe scrotal incision to deliver the testicle. The tunica vaginalis is incised to allow access to the vas deferens and epididymis. The testicular end of the vasectomy and the convoluted vas is identified. The entire vas deferens from the severed vasectomy site back through the convoluted vas and epididymis is excised using blunt and sharp dissection to dissect the vas from the spermatic cord and testis. The epididymal arteries and testicular arteries are typically located at the middle and distal third of the epididymis. Care should be taken to preserve the vessels to the testis. A spermatic cord block is performed using 10 cc of 0.25% bupivacaine followed by electrocautery to achieve

hemostasis prior to closing the tunica vaginalis defect and the skin with absorbable sutures. We typically do not leave a drain unless there is persistent oozing of blood.

3. VASECTOMY REVERSAL TECHNIQUE

The surgical procedure is typically performed in an outpatient setting under general anesthesia. The incision may be through the median raphe, traverse scrotal or vertical incision on the anterior scrotal wall. We typically prefer a lateral vertical incision for unilateral reversal. The vas deferens is identified, both proximally and distally to the vasectomy site. Care is taken to preserve the periadventitial sheath of the vas deferens to ensure its blood supply remains intact. A 90° transection of healthy vas is performed at both ends, using slotted nerve-holding clamp (Accurate Surgical and Scientific Instruments Corp., Westbury, NY, USA). The obstructed segments along with any sperm granuloma and or sutures/clips are excised. Fluid from the testicular side of the vas is then examined microscopically for spermatozoa. The distal side of the vas is then cannulated with a 24-gauge angiocatheter and 10 cc of saline is injected through to confirm distal patency.

We utilize a microspike approximator (Accurate Surgical and Scientific Instruments Corp., Westbury, NY, USA) to stabilize both ends of the vas during reanastomosis. We start by placing full thickness 9-0 nylon double-armed sutures (Ethicon Sharpoint Nylon Black, Somerville, NJ, USA) at the 12, 3, 6 and 9 o' clock positions beginning within the lumen, through the muscularis and exiting the adventitia. The mucosal lumen may be dilated with a micro-vessel dilator to ease suture placement. Interrupted 9-0 nylon sero-muscular sutures are then placed between the full thickness sutures for a modified two-layer technique. The incision is closed in layers and 10 cc of 0.25% bupivacaine without epinephrine is injected around the wound.

4. ORCHIECTOMY TECHNIQUE

We prefer the inguinal approach when performing an orchiectomy. A 4–5 cm sub-inguinal incision is made, the spermatic cord is isolated and secured with a Penrose drain. The ilioinguinal nerve is sharply dissected off the spermatic cord and divided. The cord is dissected down to the level of the pubic tubercle. The testicle is delivered through the wound and the gubernaculum is divided with cautery while ensuring that button-holing of the scrotal skin does not occur. Suture ligation of the gubernacular attachments may be necessary.

The spermatic cord is isolated up to the internal inguinal ring by opening the external oblique fascia. The cord is separated into 2–3 packets which are ligated with 2-0 silk ties and divided. We typically isolate and tie the vas deferens separately from the cord. Meticulous hemostasis is achieved using electrocautery and the external oblique fascia is reapproximated using 3-0 dissolvable sutures followed by 4-0 monocril for the skin.