Moderated Poster Session 8: Men's Health
June 29, 2010, 1400-1520

MP-08.01

The Effect of Surgical Wait Times on Outcomes and Complications after Transurethral Resection of the Prostate

Siemens D, Fuoco M, Izard J, Nickel J
Queen's University, Kingston, ON

Introduction and Objectives: Surgical wait times have become a contentious quality indicator in universal health care systems. The potential for cannibalization towards higher priority surgical cases has led to concerns for the inevitable prolonged wait times for non-priority urologic procedures. We describe and evaluate the effect of surgical wait times on the early outcomes and peri-operative complications after transurethral resection of the prostate (TURP).

Methods: Patients undergoing TURP for benign disease at a single centre in 2008 were included in this study. Wait times were determined utilizing a prospectively collected administrative database reporting a summary wait time from the time of OR booking to completion of surgery. Clinical data was supplemented by extensive chart review and included patient characteristics such as age, co-morbidity (ASA score) and indication for surgery. Associated outcomes investigated included additional hospitalization or urgent care visits while on the wait list, successful postoperative trial of voiding and complications within three months of surgery.

Results: Eighty-four patients with a mean age of 73 were identified having a TURP for benign disease and 46% of patients presented with urinary retention. Mean surgical wait time for the cohort was 59 +/- 48 days and there was no significant association with wait times and age or ASA score (Spearman correlation, 0.200, $p = 0.07$, 0.066, $p = 0.547$ respectively). There did not appear to be significant triaging of patients based on a presentation of urinary retention. Additional hospital visits for urologic complications was associated with prolonged wait times for TURP ($p = 0.03$, t-test); however, lower wait times for TURP was significantly associated with early failures of voiding and early postoperative complications ($p = 0.02$, $p = 0.03$ respectively; t-test). Dichotomizing wait time data at the median of 48 days confirmed that longer waits for TURP lead decreased postoperative complications ($p = 0.033$; chi square), including early failures of spontaneous voiding ($p = 0.005$; chi square) but was led to increased health care visits while waiting for surgery ($p = 0.038$; chi square). Subset analysis demonstrated that these results appeared to be driven mostly by those with a presentation of urinary retention.

Conclusions: Prolonged wait times for urologic surgery are distressing for patients and can be a quality indicator of health care delivery. This retrospective study suggests that modest delays to TURP did not negatively affect early outcomes and, in fact, shorter wait times were associated with higher postoperative complications. However, these findings need to be balanced with higher likelihood of complications and resource utilization during the prolonged waits for surgery.

5-STAR

MP-08.02

Short-Term Outcomes of Greenlight HPS Laser Photoselective Vaporization Prostatectomy (PVP) for Benign Prostatic Hyperplasia (BPH): Initial 200 Case Experience

Zorn K[1,2], Deklaj T[2], Katz M[2]
[1]University of Montréal Hospital Centre, Montréal, QC; [2]University of Chicago Medical Center, Chicago, IL, USA

Introduction and Objective: We evaluated our initial experience with the GreenLight HPS laser, a technologically improved version of the potassium-titanyl-phosphate (KTP) laser for PVP.

Methods: Transurethral PVP was performed using a GreenLight HPS side-firing laser system. Patients had American Urological Association Symptom Score (AUASS), Quality of Life (QoL) score, Sexual Health Inventory for Men (SHIM) score, serum prostate-specific antigen (PSA), maximum flow rate (Qmax) and post-void residual (PVR) determinations and volumetric prostate measurements with transrectal ultrasonography (TRUS). Laser and operative times and energy usage were recorded. AUASS, QoL, SHIM, Qmax and PVR were evaluated 4,12 and 24 weeks post-surgery. Serum PSA was obtained at 24 weeks.

Results: There were 200 consecutive men with a median age of 67 (range 48-91) years who underwent GreenLight HPS laser PVP from May 2007 through August 2009. Mean prostate volume and preoperative PSA were 68.1cc (32-160) and 3.4ng/mL (1.8 -13.7), respectively. Mean laser and operative times and energy usage were 39 minutes (27-53), 57 minutes (44-125) and 180kJ (100-450), respectively. 190 (95%) of procedures were outpatient-procedures with 81 men (40%) catheter-free at discharge. There were 93% of men who were catheter-free on postoperative day 1. Adverse events included delayed hematuria (>1 week) in 3 (1%), urinary retention requiring foley replacement in 11 (5%), urinary infection in 6 (3%) and retrograde ejaculation in 110 (55%). No urethral strictures or urinary incontinence were noted. Mean AUASS decreased from 22 to 9 and 8 ($p < 0.001$) while the mean Qmax increased from 8.7 to 21.1, and 22.0 mL/s ($p < 0.001$) during the follow-up period. The mean decrease in PSA at 6 months was 71%.

Conclusions: At 6 months, our experience further supports that GreenLight HPS laser PVP is safe and effective while providing the patient a minimally-invasive, out-patient surgical option for treating lower urinary tract symptoms secondary to BPH.

MP-08.03

Intermediate Outcomes of Greenlight HPS™ Laser Photoselective Vaporization Prostatectomy (PVP) for Symptomatic Benign Prostatic Hyperplasia (BPH)

Strom K, Gu X, Spaliviero M, Wong C
University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA

Introduction and Objective: GreenLight HPS™ laser PVP is a treatment option for lower urinary tract symptoms (LUTS) secondary to BPH. We review our experience using the GreenLightHPS™ laser system.

Methods: We prospectively evaluated our experience with GreenLight HPS™ laser PVP. All patients who failed medical therapy and/or surgery underwent GreenLight HPS™ laser PVP (CW). All had American Urological Association Symptom Score (AUASS), Sexual Health Inventory for Men (SHIM) score, American Society of Anesthesiologists (ASA) risk score,

serum prostate specific antigen (PSA), maximum flow rate (Qmax) and post void residual (PVR) determinations and volumetric measurements with transrectal ultrasonography. Transurethral PVP was performed using a GreenLight HPS™ side-firing laser system.
Results: There were 181 consecutive patients who were identified, having a mean age of 67.8 ± 9.7 years. The mean prostate volume was 69.2 ± 40.7 mL and the mean ASA score was 2.3 ± 0.7. Mean laser time, operating time and energy usage were 13.6 ± 9.9 minutes, 31.9 ± 22.8 minutes and 90.9 ± 67.5 kJ, respectively. All were outpatient procedures with 99 (54.7%) patients catheter-free at discharge. Of the patients who were discharged with a urethral catheter, 61 (33.7%) patients had it removed the following morning. 9 (5.0%) patients developed a urinary tract infection. Fourteen (7.7%) patients had persistent nonsignificant hematuria >1 week. One (0.6%) bladder neck contracture and no urethral strictures were noted. Mean AUASS decreased from 23 to 8, 7, 5, 5, 4, 3, 3 and 2 ($p < 0.05$) at 1 and 4 weeks and 3, 6, 12, 18, 24 and 36 months, respectively. Qmax values also showed statistical significant improvement ($p < 0.05$) during the follow-up period. The SHIM score did not change postoperatively.
Conclusions: Our intermediate results suggest that GreenLight HPS™ laser PVP is safe and effective for the treatment of LUTS secondary to BPH.

MP-08.04

Single Centre Results for 400 Consecutive Canadian Men Evaluated for Peyronie's Disease (2008-2009) do not Support Incident Traumatic Event as Underlying Etiology

Shamloul R, Zappavigna C, Cagiannos I, Bella A
University of Ottawa, Division of Urology, Ottawa, ON
Introduction and Objective: The most widely-accepted explanation for the development of abnormal collagen deposits in the tunica albuginea covering of the penis, known as Peyronie's disease (PD) is that it follows aberrant wound healing after penile injury. It is suggested that following trauma to the erect penis, probably during sexual intercourse, microscopic tears develop in the tunica albuginea. Contemporary data suggests incidence in 5-9% of men, as "tunical scarring" results in development of penile plaques and subsequent penile curvature or other deformity during erection and in some, erectile dysfunction. On the other hand, data to support the involvement of penile trauma in precipitating PD are inconclusive. Interestingly, while the testes have a similar tunica albuginea covering to that of the penis, testicular injury (direct trauma) does not seem to result in tunical scarring. The aim of this study was to clarify the prevalence of penile injury in a large contemporary cohort of patients diagnosed with PD.
Methods: Patients were evaluated between January 2008 and October 2009 and diagnosed with PD based on history, genitourinary examination and high resolution penile ultrasound (US). Penile US was used to confirm the penile plaques sites, size, and presence/absence of calcification. If erectile function was compromised, color penile US was done. Patients were questioned for injury events (self and/or partner stimulation) to the erect penis prior to the development of penile deformity. Institutional approval was obtained.
Results: The 400 consecutive patients included in this study had a mean age of 52 y and duration of disease prior to presentation of 1.1 y. Plaque distribution was primarily dorsal or dorso-lateral. Calcification of the penile plaques was present in 18% (n = 72) of patients, while only 15% (n = 60) of patients reported history of penile injury. There were no significant differences between the patients with and without history of penile injury regarding age, penile plaque size, site and presence of calcification.
Conclusions: This large prospective series solidifies recent evolving data that penile injury does not appear to be the primary cause of PD; potential causes may include immunological or inflammatory disorders, or as yet unidentified causes.

MP-08.05

Changes in the Primary Care Delivery of Men's Health Care in Ontario: Nurse Practitioner Needs Assessment and Pilot Targeted Education for Erectile Dysfunction, Peyronie's Disease, and Low Testosterone/Hypogonadism

Zappavigna C[1], Shamloul R[1], Cagiannos I[1], Gerridzen R[1], **Bella A**[1]
[1]Division of Urology, University of Ottawa, Ottawa, ON
Introduction and Objective: Previous studies have identified several barriers to effective delivery of men's health care; in Ontario, there is a recent shift to increased diagnostic and therapeutic decision-making by nurse practitioners, including prescribing privileges. Screening for erectile dysfunction (in the context of both enhanced quality of life and as a window into cardiovascular health), ED treatment options ranging from risk and lifestyle factor modification to pharmacologic intervention, Peyronie's disease, and low testosterone states have not been adequately addressed in primary care nurse practitioner training. We present results from a pilot project whereby an initial needs assessment was performed, followed by trial small group teaching and re-evaluation of information delivery efficacy.
Methods: There were 70 nurse practitioners in the health care network catchment area identified. Initial needs assessment was performed by a broad 8 question (multiple subheading) web-based survey. Data were collated, and areas of interest identified pertaining to non-oncologic core men's health issues.
Results: ED, Peyronie's disease, and low testosterone states were seen as areas of knowledge deficiency. Initial speaker curriculum underwent modification following trial small group teaching to enhance educational experience; 20-30 minute presentation followed by group discussion, facilitator provision of key information (including published peer-reviewed manuscripts), and step-wise approaches were prioritized. Permanent web-based availability of programs, and targeted references to web-based sites such as the SMSNA site, were found useful.
Conclusions: The changing landscape of primary care offers an opportunity for enhanced men's health through targeted education of nurse practitioners and implementation of simple, time-effective screening, diagnosis, and treatment implementation in everyday practice.

MP-08.06

Benefit from Sildenafil Treatment and Risk for Concomitant Disease in Mild Erectile Dysfunction

Carrier S[1], Benard F[2], Lee J[3], Talwar V[4], Defoy I[5]
[1]McGill University, Montréal, QC; [2]CHUM-St-Luc Hospital, Montréal, QC; [3]Rockyview Hospital, Calgary, AB; [4]Sciformix Technologies Pvt. Ltd., Mumbai, India; [5]Pfizer Canada Inc., Kirkland, QC
Introduction and Objective: In men with mild erectile dysfunction (ED), the risk for diseases associated with ED is unclear, and ED may be overlooked in clinical practice, often because of patient hesitation to seek treatment. We previously showed improved erectile function and high treatment satisfaction with sildenafil in an 8-week, Canadian, double-blind placebo-controlled (DBPC) trial in mild ED (Erectile Function domain of the International Index of Erectile Function [IIEF-EF] score 22–25). Here we assess response to sildenafil (50 mg, adjustable to 25 or 100 mg) in the 6-week open-label (OL) extension (n = 152) and compare the risk for diseases associated with ED in the DBPC trial population (n = 176) relative to a database of 14,537 men enrolled in 67 other DBPC sildenafil trials in ED.
Methods: Treatment satisfaction was defined by the Erectile Dysfunction Inventory of Treatment Satisfaction (Index score >50).
Results: At OL end, 93% of men had treatment satisfaction and 77% had no ED (per IIEF-EF score); mean scores on IIEF domains, the Quality of Erection Questionnaire, and analog scales (erection firmness, reliability, and maintenance, and general sexual performance) were >80% of the maximum; and most intercourse occasions had completely hard/fully rigid erections (60%), hardness sufficient for penetration (85%), duration sufficient for successful intercourse (83%), and ejaculation/orgasm (81%). Mild to moderate headache, nasal congestion, and flushing were the most common adverse events. In the mild ED and database populations, most

had an organic component to their ED etiology; mean ± SD age was 50 ± 12 vs. 55 ± 11 years, body mass index was 29 ± 5 versus 28 ± 5 kg/m^2, and ED duration was 3.5 ± 3.2 vs. 4.6 ± 4.7 years; the prevalence of comorbidities was similar (hypertension [26% vs. 33%], diabetes mellitus [14% vs. 22%], dyslipidemias [13% vs. 12%], hypercholesterolemia [13% vs. 10%], gastroesophageal reflux disease [11% vs. 6%], benign prostatic hyperplasia [10% vs. 10%], depression [6% vs. 6%], and anxiety [4% vs. 2%]).
Conclusions: In men with mild ED, the potential for clinical benefit from sildenafil treatment and the risk for underlying disease are substantial. Inquiry into ED should be part of routine clinical evaluation to facilitate rapid identification and early intervention, including evaluation for underlying cardiovascular risk.

MP-08.07
Volume and Surgical Technique of Hydrocelectomy Affect Outcomes at 3 Months
Zappavigna C, Oake S, Blew B
Division of Urology, University of Ottawa, Ottawa, ON
Introduction and Objective: A hydrocele is accumulation of fluid around a testicle, common in general urology practice. Treatment options include observation, aspiration with sclerotherapy, or surgery. The most widely used surgical techniques are the Jaboulay and Lord's procedure. The Jaboulay technique involves evertion of the sac and suture behind the testis. It is associated with a reduced risk of recurrence, but patients may have an increased risk of hematoma. The Lord's technique involves plication of the sac, used for small to medium hydroceles. The benefits of this technique are reduced risk of hematoma, there may be a higher risk of recurrence.
Methods: We retrospectively reviewed all hydrocelectomies done by two urologists at The Ottawa Hospital from 2005-2009. The rate of successful hydrocele resolution at 3 months was assessed. Results were stratified intra-operative hydrocele volume (<200 cc small, 200-500 cc moderate and >500 cc large) and by surgical technique (Jaboulay vs. Lord's).
Results: There were 68 hydrocelectomies performed, of which a complete 3 month follow-up was available for 50. A Lord's technique was used in 35 cases, Jaboulay in 11 and technique was unreported in 22. At 3 months postoperatively, resolution was observed in 66% (33/50) of patients. Patients undergoing Lord's technique had resolution in 77% of cases (17/22) versus 78% (7/9 cases) of those undergoing a Jaboulay repair. Of the 7 patients without resolution at 3 months, 6 month follow up indicated 3 resolved, 2 were lost to follow up and 2 required aspiration. Those without technique reported had resolution in 44% (7/16) of cases. Of the 9 without resolution at 3 months, 6 month follow up indicated 4 resolved, 3 were lost to follow up and 2 remained. There were 33 hydroceles reported as large, 13 as moderate, 7 as small and 15 unreported with f/u data available for 38. Of large hydroceles 57% (13/23) are resolved at 3 months vs. 50% (5/10) moderately sized hydroceles and 80% (4/5) small hydroceles.
Conclusions: Roughly two thirds of patients have resolution of swelling 3 months after hydrocelectomy. Most patients with swelling have further resolution at 6 months with rare need for repeat surgery or aspiration. Many patients with residual swelling at the initial follow up did not attend further schedule appointments, which may indicate further resolution. The technique of hydrocelectomy did not appear to affect successful resolution but small hydroceles had better results that those with over 200 cc of fluid.

MP-08.08
Correction of Complicated Cases of Induratio Penis Plastica Using Buccal Mucosa and Geometrical Plaque Incision
El-Seweifi A
Praxis of Urology "Masculine", Berlin, Germany
Introduction and Objective: Management of Peyronie's Disease is still controversial. This includes contra lateral plication or incision of the plaque, and grafting using autologous or homologous grafts did not give satisfactory results. It is aimed at evaluating definitive management using buccal mucosal grafts and geometrical incisions to overcome the curvature.
Methods: Eleven patients were included in the series. Eight of them had normal erection. Three had erectile dysfunction being treated by a single oral phosphodiesterase-5 inhibitor and six had associated disease such as Diabetes mellitus, hypertension or hypospadius. All were successfully operated upon. Mean age of patients was 46.6 years. The mean difference in short/long limb of the curve was 1.2 cm. The plaque was incised and the defect was covered by buccal mucosal graft. The International Index of Erectile Function (IIEF-5) and pharmacodynamic colour Doppler study, serum hormone profile and history including partner satisfaction were done pre- and postoperatively (Fig. 1).

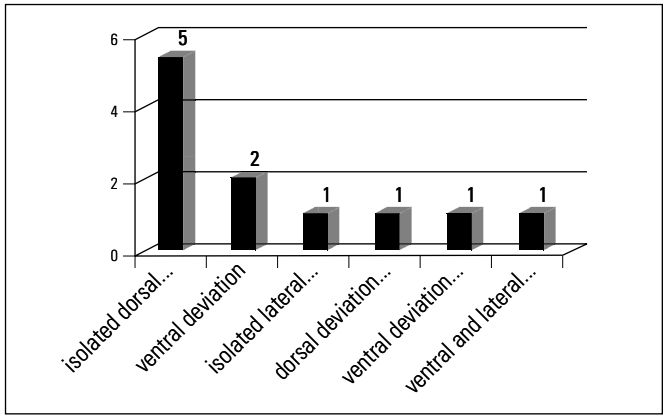

Fig. 1. MP-08.08. Forms of deviation included, n = 11.

Results: Two years of postoperative follow up were documented. Good erection was observed under pharmacodynamic colour Doppler sonography study 6 months later. All patients have shown 100% penile straightening retaining normal length. All have reported on satisfaction of the partner 6 weeks postoperatively except for a patient who is still far away from his female partner. There was 1.8 mean increase of the IIEF-5. No recurrence was observed during the follow up period (mean 14.8 months).
Conclusion: The use of buccal mucosa and geometrical incisions for surgical management of Peyronie's Disease gives excellent results and is free of complication or recurrence.

MP-08.09
Varicocele Surgery or Embolization: Which Is Better? It Depends Which Side You Are on
Cassidy D[1], Ranev D[2], Caughlin C[3], Lo K[1], Grober E[1], Beecroft R[1], Jarvi K[1]
[1]Division of Urology, Mount Sinai Hospital, University of Toronto, Toronto, ON; [2]Faculty of Medicine, University of Toronto, Toronto, ON; [3]Division of Radiology, University Health Network, University of Toronto, Toronto, ON
Introduction and Objective: A varicocele remains the most commonly identified correctable cause of male factor infertility. In North America, surgical correction is the most commonly performed technique to treat varicoceles with an expected technical failure rate of less than 5%. An alternative to surgery is selective catheterization and embolization of the gonadal vein using sclerosing agents, tissue adhesives, or detachable coils. The improvements in fertility following varicocele repair appear to be independent of the type of repair, as long as the repair was successful. Our objective was to the review the failure rates of varicocele embolization done for male factor infertility from our institution to determine if these rates were higher than expected with a surgical repair.
Methods: Retrospective review of the University of Toronto varicocele database. All of the patients included in the database had clinical varicoceles with ultrasound confirmation. Patients that had ultrasound evidence of a contralateral subclinical varicocele were offered bilateral varicocele embolization.

Results: A total of 158 patients were identified from 2004 to 2008 who underwent embolization for clinical varicocele(s) and male factor infertility. There was 56% (88/158) who underwent attempted bilateral embolization, 43% (68/158) unilateral left sided embolization, and 1.3% (2/158) unilateral right sided embolization. Of those patients who underwent attempted bilateral embolization, there was a 19.3% (17/88) technical failure rate in achieving successful obliteration of the right gonadal vein and a 2.3% (2/88) technical failure rate in the embolization of the left gonadal vein. Of the 2 attempts at unilateral right sided embolization there were no failures (0/2). Of 68 unilateral left sided embolization attempts there was a 4.4% failure rate (3/68). Of all of the right sided embolization attempts, 18.9% failed (17/90), while 3.2% (5/156) of the left sided attempts failed.
Conclusions: This review represents the largest contemporary series of varicocele embolization outcomes currently in the literature. Our 19.3% technical failure rate for bilateral varicocele embolization is higher than the current published rate of 13%. This was almost universally secondary to failure to access the right gonadal vein from the inferior vena cava. This supports our belief that bilateral varicoceles are best managed with a primary microsurgical approach where technical failure rates are expected to be less than 5% based on published data.

MP-08.10

A Study on Efficacy and Safety of Percutaneous Embolisation of the Internal Spermatic Vein Using Customized Coil for Treatment of Varicocele

Mete U, Sandhu J, Lal A, Khandelwal N, Mandal A
Postgraduate Institute of Medical Education and Research, Chandigarh, India

Introduction: The treatment of varicocele includes invasive modalities like Palomo's operation,microsurgical varicocele ligation and minimally invasive procedures laparoscopic varicocele ligation. Percutaneous embolisation is another attractive option. We prospectively studied the efficacy in terms of ability to access the internal spermatic vein, achievement of satisfactory embolisation documented by absence of flow by follow-up Color Doppler flow studies and changes in semen parameters.
Methods: A total of 22 patients with varicocele were treated, amongst them 12 had infertility, 11 had scrotal discomfort and 5 patients had loss of testicular volume. 11% had grade 1, 44.5% had grade 2 and 44.5% had grade 3 varicoceles. As an out-patient procedure, via trans femoral route spermatic vein was cannulated under local anaesthesia. Variable numbers of customized coils prepared locally from 0.035 inch PTFE coated stainless steel guidewires, placed to achieve complete embolisation. Follow-up Doppler Ultrasonography was performed at one month to confirm the reduction of venous diameter and absence of flow. Semen parameters were re-evaluated at 3 months after the procedure.
Results: In 18 patients (81.8%) spermatic vein could be accessed and all of them were successfully embolised. All of them except one had significant reduction in venous diameter on Doppler ultrasonography. The technical failure rate was 18% (n = 4). Seventy-eight percent of the patients had significant improvement in symptomatology. Follow-up semen parameter revealed improvement in sperm counts amongst 70.3% of patients with average increase of 16.2 million/ml in grade 3 and 5.7 million/mL in grade 2 varicocele patients. Sperm morphology and motility had improved in 58.8% & 41.1% of the patients respectively. We noted that greater the degree of varicocele greater the symptomatic improvement as well as semen quality improvement.
Conclusion: Percutaneous embolisation of varicocele is incision-free and out-patient procedure. It avoids testicular arterial injury which is a possibility for ligation procedures. Embolisation can be achieved by balloons, sclerosing agents, hot contrast materials or stainless steel coils. Customized coils used in the present study had reduced the cost substantially without affecting the efficacy. Hospital stay is very short. Semen parameter improvements are comparable to traditional non-embolisation procedures. However, it needs expertise in the field of angiography.

MP-08.11

Patency Outcomes Following Mini-Incision Vasectomy Reversal

Grober E, Shin E, Lo K, Jarvi K
Division Of Urology, Mount Sinai & Women's College Hospital, University of Toronto, Toronto, ON

Introduction and Objectives: The mini-incision vasectomy reversal (MIVR) using no-scalpel vasectomy principles and instruments (Urology, 2008) was developed with the goal of reducing surgical morbidity and expediting recovery, while preserving high quality patient outcomes. The current study details the patency outcomes of a large series of patients following MIVR.
Methods: From May 2008 to November 2009, 105 consecutive vasectomy reversals (VR) were reviewed (86% bilateral VV, 9% mixed VV/VE, 5% bilateral VE). Among the bilateral VV group, 48% had a bilateral MIVR, 23% had a mixed MIVR/traditional incision VR and 29% had a bilateral traditional incision VR. MIVR were performed via a sub-centimeter incision after the vas was captured and brought through the skin using the no-scalpel vasectomy ring forceps applied to the site of vassal occlusion. Traditional VR were performed via a high scrotal incision with delivery of the testis as necessary. Traditional incisions were indicated if there was uncertainly as to the location of the vasectomy occlusion site as well as for wide vasal gaps, large sperm granulomas, re-do reversals and patients requiring VE. Semen analyses were obtained 2 and 4 months postoperatively, and then every 3 months until pregnancy was achieved. Patency was defined as the presence of motile sperm in the ejaculate following VR.
Results: Mean patient age and vasal occlusion interval was 39 years and 6.8 years, respectively. Mean follow up was 9 months. Postoperative patency rates were 96%, 100% and 94% for the bilateral MIVR, mixed MIVR/traditional incision and bilateral traditional incision VR groups, respectively ($p = 0.7$). Among patients with available follow up following bilateral VV, mean semen parameters are summarized in Table 1. No patients with an initially patent bilateral MIVR have become azoospermic.
Conclusions: MIVR is technically feasible in a significant proportion of men undergoing VR and yields patency rates similar to more traditional approaches to VR. We are currently reviewing postoperative morbidity and pain outcomes with validated instruments.

Table 1. MP-08.11

	% patent	Sperm conc. mil/ml	% motile	% normal morph-ology	Total motile count
Bilateral MIVR (n = 22)	96%	46	40%	36%	49
MIVR - Traditional (n = 13)	100%	39	42%	44%	46
Traditional (n = 17)	94%	33	30%	31%	48
	$p = 0.7$	$p = 0.6$	$p = 0.4$	$p = 0.4$	$p = 0.9$