AUA 2026 Washington, DC MAY 15-18

New AUA Vasectomy Guidelines 2026: Case Presentations and Critical Information for Every Urologist

Stanton Honig MD

Faculty Chair

Guideline Panel Member, Vasectomy Guideline (2026), (2012)

Professor of Urology

Yale School of Medicine

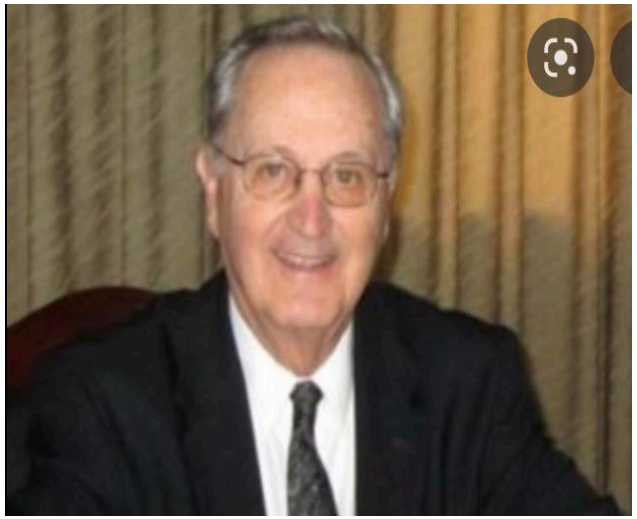
New Haven CT

Disclosures-2026

- AUA Vasectomy Guidelines committee
- Stock Holder
  - **Fellow**, Posterity Health
- Consultant/Lecturer/Advisory Board
  Coloplast, HIMS, Haleon, Tolmar, Win

History of the Course

Started in 2013 after 1st Guidelines Released



History of this Course

Started in 2013 after 1st Guidelines Released-2025

- Ira Sharlip – Chair
- Jay Sandlow- surgical techniques/ complications
- Joel Marmar- PVSA data
- Stanton Honig – preop considerations/anesthesia

- Didactics of important factors of vasectomy
- Case Presentations

Original Guidelines 2012

VASECTOMY: AUA GUIDELINE

Ira D. Sharlip, Arnold M. Belker, Stanton Honig, Michel Labrecque, Joel L. Marmar, Lawrence S. Ross, Jay I. Sandlow, David C. Sokal

Approved by the AUA Board of Directors May 2012

Purpose: The purpose of this Guideline is to provide guidance to clinicians who

Other Guidelines

VASECTOMY:
AUA GUIDELINE

Ira D. Sharlip, Arnold M. Belker, Stanton Honig, Michel Labrecque, Joel L. Marmar, Lawrence S. Ross, Jay I. Sandlow, David C. Sokal

Approved by the AUA Board of Directors May 2012

Purpose: The purpose of this Guideline is to provide guidance to clinicians who

2016 Laboratory guidelines for postvasectomy semen analysis: Association of Biomedical Andrologists, the British Andrology Society and the British Association of Urological Surgeons

P Hancock,[1] B J Woodward,[1,2] A Muneer,[3,4,5] J C Kirkman-Brown[3,6,7]

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Washington, DC
MAY 15-18

CUA BEST PRACTICE REPORT

UPDATE — 2022 Canadian Urological Association best practice report: Vasectomy

Armand Zini[1], John Grantmyre[2], Victor Chow[3], Peter Chan[1]

[1]Division of Urology, Department of Surgery, McGill University, Montreal, QC, Canada; [2]Department of Urology, Dalhousie University, Halifax, NS, Canada, [3]Department of Urologic Sciences, University of British Columbia, Vancouver, BC, Canada

Cite as: Zini A, Grantmyre J, Chow V, et al. *UPDATE* — 2022 Canadian Urological Association best practice report: Vasectomy. *Can Urol Assoc J* 2022;16(5):E231-6. http://dx.doi.org/10.5489/cuaj.7860

(Table 1). The objective of this guideline is to help standardize the treatment of men presenting for vasectomy.

Progrès en Urologie

Volume 33, Issue 5, April 2023, Pages 223-236

Recommendations of the Committee of Andrology and Sexual Medicine of the AFU concerning the management of Vasectomy

V. Hupertan [a], J.P. Graziana [b], N. Schoentgen [c], A. Boulenger De Hauteclocque [d], M. Chaumel [e], L. Ferretti [f], C. Methorst [g], E. Huyghe [h i j]

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EAA-ASA Guidelines on Male Contraception 2023

Received: 30 August 2023 | Accepted: 31 August 2023

DOI: 10.1111/andr.13525

ANDROLOGY WILEY

CLINICAL PRACTICE GUIDELINES

Practice and development of male contraception: European Academy of Andrology and American Society of Andrology guidelines

Christina Wang[1] | Maria Cristina Meriggiola[2] | John K. Amory[3] | Christopher L. R. Barratt[4] | Hermann M. Behre[5] | William J. Bremner[3] | Alberto Ferlin[6] | Stanton Honig[7] | Zsolt Kopa[8] | Kirk Lo[9] | Eberhard Nieschlag[10] | Stephanie T. Page[11] | Jay Sandlow[12] | Regine Sitruk-Ware[13] | Ronald S. Swerdloff[14] | Frederick C. W. Wu[15] | Dimitrios G. Goulis[16]

We recommend
We suggest

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New Vasectomy Guidelines 2024-26

- Peter Schlegel-Chair
- Stanton Honig
- Michel Lebreque
- Sarah Vij
- Steven Hirschberg
- Matt Coward
- Peter Tiffany

- Akanska Mehta-Chair
- Cigdem Tanrikut
- Joseph Clark
- Wayland Hsiao
- Richard Lee

Complete rewrite with PICO questions

Course Outline

- Introduction
- Process of New Guidelines-including discussion of prostate cancer
- Review of New Guidelines

History of Guidelines/Controversies and Standard Guidelines that have NOT changed !

Major Changes to Guidelines

Course Outline

- Case Presentations:
  - Guideline Based
  - Non- Guideline Based-interesting cases

- Roundtable Discussion of Cases
- How I will Change My Practice after this Course and New Guidelines
- Audience Cases (if time permits)
- Summary of Continued Guidelines and New Guidelines 2025

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New AUA Vasectomy Guidelines 2026: Case Presentations and

Critical Information for Every Urologist

Welcome !

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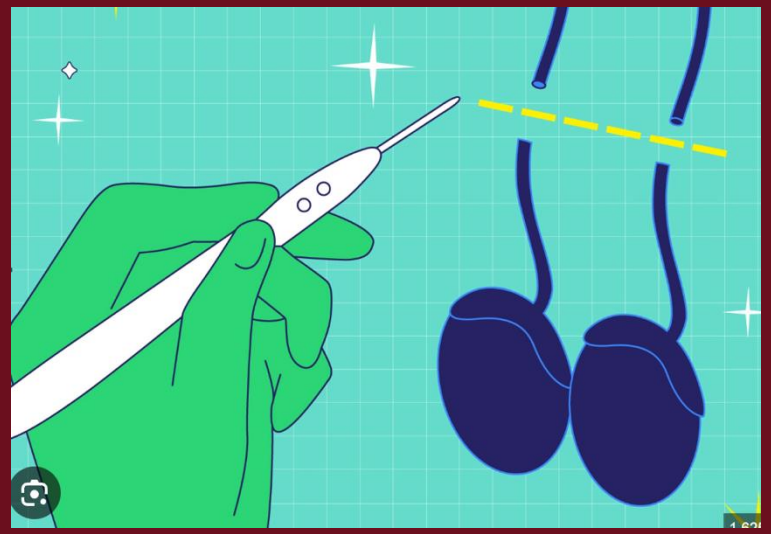

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Vasectomy Guideline: AUA Process

Peter N Schlegel, MD

New York Men's Health Medical

New York, NY

AUA Instructional Course
Vasectomy
May 18, 2026

AUA Guideline Process

Peter N Schlegel, MD

Guideline Panel Chair, Vasectomy Guideline (2026)

Vasectomy

- Vasectomy is one of the most commonly-performed outpatient procedures in Urology
- 21% of men with one or more children, aged 44-49 have had a vasectomy
- Increased interest and demand for vasectomies in the current medical and political landscape
- White males 3 to 4-fold more likely to have a vasectomy than Hispanic or Black males
- College-educated men almost 10-fold more likely to have a vasectomy than men with only high school education
- Vasectomy is the safest and most reliable method of male contraception

AUA Guideline process

- Nomination for topic review/update by AUA for AHRQ (Agency for Heath Research and Quality) review on vasectomy, initiated in 2023
- Topic assessed for Appropriateness and Importance
- Duplication
- Feasibility
- Impact
- Value
- Approval by AUA Practice Guideline Committee
- Panel members selected by Guideline chair after open application process
  - Conflicts of interest assessed for all panel committee members

AUA Guideline Process

- Emergency Care Research Institute (ECRI) Evidence-based Practice Center team
  - Search of PubMed, Embase, and Medline 1/2000 – 5/2019
- PICO-based questions
  - Patient, Intervention, Comparator, Outcome orientation
- Evidence strength rated
- Panel members wrote guideline statements & discussion
- Additional statements: Clinical Principle/Expert Opinion

PICO-based questions

- What clinical investigations should be used to evaluate a patient prior to vasectomy?
- What is the comparative effectiveness of peri-procedural antibiotics?
- What is the comparative effectiveness of skin preparation prior to procedure?
- What is the comparative effectiveness of various means of delivery of anesthetics and peri-procedural pain management options?
- What is the comparative effectiveness of techniques for vas isolation during procedure?
- What is the comparative effectiveness of techniques for vas occlusion?

PICO-based questions

- What is the optimal timing for performing the first PVSA?
- What is the optimal frequency for post-vasectomy semen analysis?
- What are the optimal techniques for performing post-vasectomy semen analysis?
- What are adequate PVSA findings for clearance for use of contraception?
- When is repeat vasectomy recommended?
- What is the comparative effectiveness of treatments for complications post-vasectomy?

PICO-based questions

- What is the comparative effectiveness of vasectomy versus other contraceptive approaches for contraception?
- Does performance of vasectomy predispose to any medical conditions/ problems?
  - Nephrolithiasis (single study)
  - Cardiovascular disease (no)
  - Prostate Cancer (?)

Vasectomy & Prostate Cancer

- Overall risk of prostate cancer after vasectomy:

  OR= 1.13 (1.08 – 1.19)

- 13% increased risk of prostate cancer detection
  - ?causal relationship
  - ?detection bias
  - ?clinically significant cancers

Schlegel PN, Vij SC, Prison C, Penzo-Mendez A, Mehta A J Urol. 2026 Apr;215(4):369-372.

Prostate cancer after vasectomy

- Overall risk of prostate cancer after vasectomy:

  OR= 1.13 (1.08 – 1.19)

- 4.5% risk after vasectomy vs. 4.0% baseline

- Vasectomy & high-grade prostate cancer (>7)

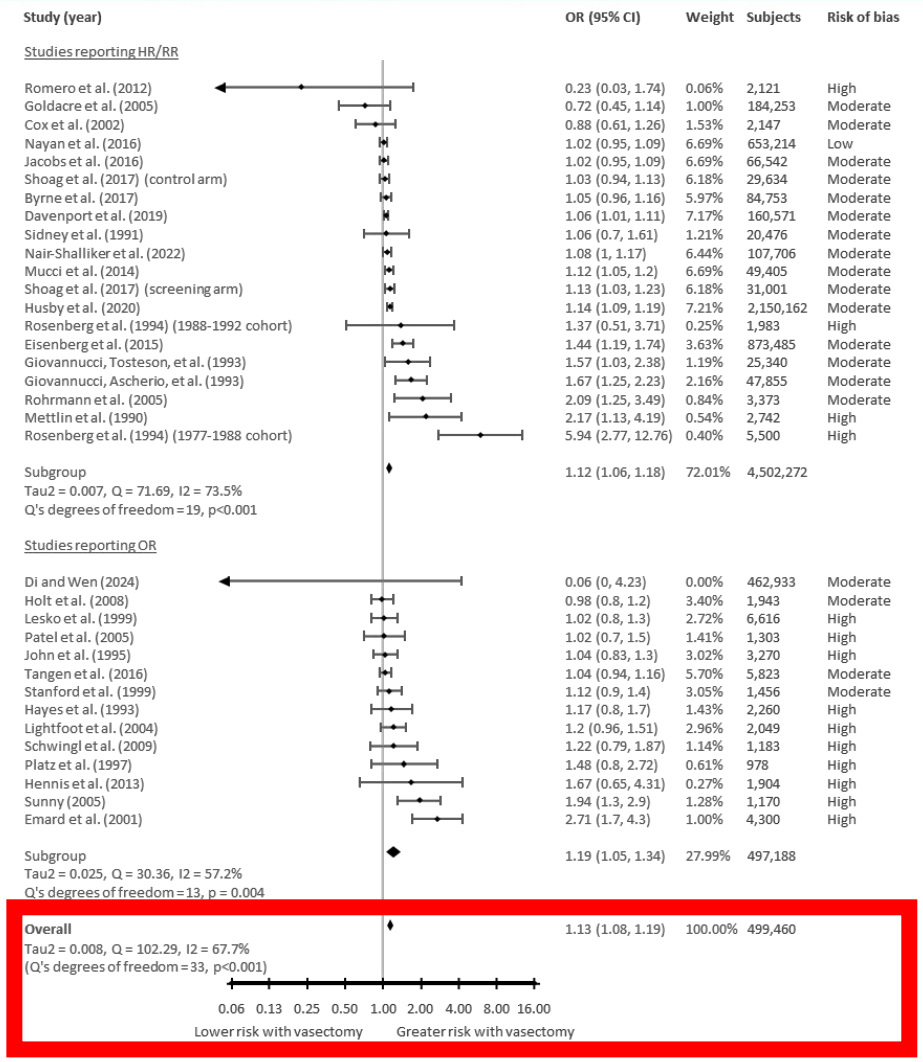
  OR = 1.01 (0.92 – 1.11)

- Vasectomy & prostate cancer mortality

  OR = 0.99 (0.92 - 1.07)

- No biologically plausible reason for vasectomy to cause prostate cancer

Schlegel et al., J Urol 215:369, 2026



Vasectomy & Prostate Cancer

- GS#3: Clinicians may inform patients that no causal link has been established between vasectomy and the development of prostate cancer. (Conditional Recommendation; Evidence Level: Grade B)
- GS#4: Clinicians may inform patients that no causal link has been established between vasectomy and development of high-grade prostate cancer or increased prostate cancer mortality. (Conditional Recommendation; Evidence Level: Grade B)
- Increased risk of prostate cancer after vasectomy is likely attributable to detection bias (urologists performing vasectomy in US)
- There is no evidence that choice to have a vasectomy increases risk of development prostate cancer

Schlegel et al., J Urol 215:369, 2026

Acknowledgements

Special thanks to the AUA & Guideline Panel Members

Joseph Y Clark

R Matthew Coward

Steven J Hirshberg

Stanton Honig

Wayland Hsaio

Erin Kirkby

Michel Labrecque

Richard Lee

Jonathan Stack

Cigdem (Cori) Tanrikut

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Sarah C. Vij

Akanksha Mehta (Co-chair)

AUA Staff

APPROVED BY THE AUA BOARD OF DIRECTORS NOVEMBER 2025

Authors' disclosure of potential conflicts of interest and author/staff contributions appear at the end of the article.

Vasectomy: AUA Guideline (2026)

Guideline Panel

Peter N. Schlegel, MD; Joseph Y. Clark, MD; R. Matthew Coward, MD; Steven J. Hirshberg, MD; Stanton Honig, MD; Wayland Hsiao, MD; Michel Labrecque, MD, PhD; Richard Lee, MD, MBA; Jonathan Stack; Cigdem Tanrikut, MD; Peter Tiffany, MD; Sarah C. Vij, MD; Akanksha Mehta, MD, MS

Staff and Consultants

Jonathan R. Treadwell, PhD; Erin Kirkby, MS

Illustrator

Divya Lagisetti

SUMMARY

Purpose

This Guideline aims to provide a contemporary overview of vasectomy, including a discussion of indications, pre-operative counseling and preparation, peri-operative considerations, procedural techniques, potential risks and complications, and post-operative care, to ensure that healthcare providers offer accurate, evidence-based information to patients considering this method of permanent contraception. The Guideline also discusses options for future fertility following vasectomy.

Methodology

A comprehensive search of the literature was performed and covered articles published between January 1, 1990 and January 30, 2024. Relevant study designs included randomized controlled trials (RCTs), controlled clinical trials (CCTs), and observational studies (cohort with and without comparison group, case-control). Systematic reviews were searched as an additional resource to identify any relevant studies with the designs noted above that may not have been captured in the literature search.

GUIDELINE STATEMENTS

PATIENT EVALUATION AND COUNSELING

1. Clinicians should provide pre-operative consultation for the patient considering vasectomy. *(Clinical Principle)* Consultation may be accomplished virtually or in person. *(Conditional Recommendation; Evidence Level: Grade C)*

2. Clinicians should counsel patients that vasectomy is a safe and effective means of permanent contraception. *(Conditional Recommendation; Evidence Level: Grade C)*

3. Clinicians may inform patients that no causal link has been established between vasectomy and the development of prostate cancer. *(Conditional Recommendation; Evidence Level: Grade B)*

4. Clinicians may inform patients that no causal link has been established between vasectomy and development of high-grade prostate cancer or increased prostate cancer mortality. *(Conditional Recommendation; Evidence Level: Grade B)*

5. Clinicians may inform patients that no causal link has been established between vasectomy and the risk of cardiovascular disease. *(Conditional Recommendation; Evidence level: Grade C)*

6. Clinicians may inform patients that no causal link has been established between vasectomy and nephrolithiasis. *(Conditional Recommendation; Evidence Level: Grade B)*

PERI-PROCEDURAL ANTIBIOTICS

7. Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection. *(Expert Opinion)*

SKIN PREPARATION

8. Clinicians should prepare the skin with a sterilizing solution prior to vasectomy. *(Clinical Principle)* Clinicians may remove hair pre-operatively. *(Expert Opinion)*

ANESTHETICS AND PERI-PROCEDURAL PAIN MANAGEMENT

9. Clinicians should perform vasectomy with local anesthesia delivered by skin infiltration with a needle and/or jet injector. Topical anesthetic may lessen the pain of local anesthetic infiltration during vasectomy. *(Moderate Recommendation; Evidence Level: Grade C)*

10. Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories [NSAID]) for post-operative pain control. *(Expert Opinion)*

VAS ISOLATION

11. Surgeons should isolate and expose the vas deferens for vasectomy using a minimally invasive approach such as the no-scalpel vasectomy (NSV) technique. *(Moderate Recommendation; Evidence Level: Grade A)*

VAS OCCLUSION

12. Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery (MC) and fascial interposition (FI). *(Strong Recommendation; Evidence Level: Grade B)*

13. Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)*

14. Surgeons may omit routine histological evaluation of excised tissues. *(Expert Opinion)*

VASECTOMY COMPLICATIONS

15. Surgeons who perform vasectomy should be able to recognize and treat complications after vasectomy, including bleeding, infection, epididymitis, and chronic scrotal pain. *(Clinical Principle)*

POST-VASECTOMY SEMEN ANALYSIS

16. Patients should provide at least one appropriately collected semen sample following vasectomy to confirm occlusive success. *(Moderate Recommendation; Evidence Level: Grade C)*

17. An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing. *(Conditional Recommendation; Evidence Level: Grade C)*

18. Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 rare non-motile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection. *(Conditional Recommendation; Evidence Level: Grade B)* A sample evaluated >2 hours after collection should show azoospermia to stop contraception. *(Expert Opinion)*

19. A post-vasectomy semen sample may be submitted as early as 8 weeks following vasectomy. *(Conditional Recommendation; Evidence Level: Grade C)*

REPEAT VASECTOMY

20. In patients with any persistent motile sperm in the ejaculate 6 months following vasectomy, counseling for repeat vasectomy should be offered. In patients with >100,000 non-motile sperm per mL persisting after 6 months, shared decision-making should be utilized to determine whether to repeat vasectomy, continue contraception and/or obtain repeat semen evaluations. *(Expert Opinion)*

FERTILITY RESTORATION AFTER VASECTOMY

21. Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with intracytoplasmic sperm injection (ICSI) are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. *(Expert Opinion)*

22. Surgeons should inform patients considering vasectomy reversal that duration of the obstructive interval, patient age, and female partner age are the best preoperative predictors of post-operative reversal success. *(Moderate Recommendation; Evidence Level: Grade C)*

23. Surgeons should evaluate vasal fluid microscopically at the time of vasectomy reversal as the presence of sperm at the site of planned reconstruction is the best intraoperative predictor of patency after vasectomy reversal. *(Strong Recommendation; Evidence Level: Grade B)*

24. Surgeons should perform a microsurgical vasovasostomy using a modified one-layer or a two-layer anastomosis based on surgeon preference. *(Moderate Recommendation; Evidence Level: Grade C)*

25. Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. *(Expert Opinion)*

26. Surgeons may perform vasoepididymostomy using longitudinal intussusception, triangulation intussusception, end-to-end anastomosis, or end-to-side anastomosis. *(Conditional Recommendation; Evidence Level: Grade C)*

INTRODUCTION

BACKGROUND

Vasectomy is a safe, minimally invasive, and effective means of permanent contraception for men. With over 500,000 vasectomies performed annually in the United States, it remains one of the most common outpatient procedures performed by urologists.[1] A 2021 study using data from the National Survey of Family Growth identified a decline in vasectomy utilization from 2002 through 2017.[2] More recent data, however, suggest that vasectomy consultation and procedural volumes have increased more than 150% following the *Dobbs v. Jackson* ruling by the US Supreme Court in 2022, which overturned the 1973 *Roe v. Wade* ruling establishing abortion as a protected constitutional right.[3]

This Guideline aims to provide a contemporary overview of vasectomy, including a discussion of indications, pre-operative counseling and preparation, peri-operative considerations, procedural techniques, potential risks and complications, and post-operative care, to ensure that healthcare providers offer accurate, evidence-based information to patients considering this method of permanent contraception. The Guideline also discusses options for future fertility following vasectomy.

METHODOLOGY

Determination of Guideline scope and assessment of the final systematic review to inform Guideline statements was conducted in conjunction with the Vasectomy Guideline Panel. The systematic review utilized to inform this Guideline and methodological support was provided by an independent methodological consultant team from ECRI (founded as the Emergency Care Research Institute).

Panel Formation

The Panel was created in 2023 by the American Urological Association Education and Research, Inc. (AUAER). The Practice Guidelines Committee (PGC) of the American Urological Association (AUA) selected the Panel Chair who in turn appointed the additional panel members following an open nomination process to identify members with specific expertise in this area. Funding for the Panel was provided by the AUA; panel members received no remuneration for their work.

Searches and Article Selection

A comprehensive search of the literature was performed by ECRI. This search covered articles published between January 1, 1990 and January 30, 2024. Relevant study designs included randomized controlled trials (RCTs), controlled clinical trials (CCTs), and observational studies (cohort with and without comparison group, case-control). Systematic reviews were searched as an additional resource to identify any relevant studies with the designs noted above that may not have been captured in the literature search.

Four analysts reviewed the abstracts identified in the literature search. Articles that potentially fulfilled the outlined inclusion criteria and answered one or more of the questions specified by the Panel were retrieved in full text for review by the team. For all full-text exclusions, ECRI recorded the reason for exclusion.

To focus the analysis on the most relevant evidence, ECRI only considered articles published in full after January 1, 1990 in the English language and reporting data for one or more of the Key Questions. For most Key Questions, selected studies had to have included at least 10 patients per treatment arm; the exception being the question pertaining to the association of vasectomy with any medical conditions, which required a minimum of 1,000 patients per study. Systematic reviews were used only as a supplemental source to identify relevant studies that may have been missed by the literature search.

A total of 1,343 articles were retrieved by the search, and ECRI ordered full text for 271 of them for further review. Of these, 157 articles were excluded; the most common reasons for exclusion were: publication as a conference abstract only, lack of inclusion of an intervention or comparator of interest, and study results being superseded by a more recent or comprehensive publication.

Data Abstraction and Synthesis

Information from each article included was extracted by one of four team members (all ECRI analysts) using standard extraction forms. The team lead developed the forms, trained the extractors, reviewed the work of the other extractors, and searched for inconsistencies and missing information in the extracted data.

ECRI performed meta-analyses using Stata when sufficient outcome data from multiple comparative studies

of the same study design was available. When meta-analyses were not possible or inappropriate, ECRI conducted narrative syntheses summarizing study findings.

Risk of Bias Assessment

For RCTs, ECRI used a Cochrane Risk of Bias tool to assess risk of bias, whereas for non-randomized comparative studies, ECRI used the Risk of Bias in Non-Randomized Studies of Intervention (ROBINS-I) tool. For assessment of prognostic studies, ECRI used the Quality in Prognosis (QUIPS) tool. The ROBINS-I tool results in ratings of Low, Moderate, Serious, or Critical; for grading purposes ECRI categorized Serious and Critical as "High" risk of bias.

Determination of Evidence Strength

The overall certainty of the body of evidence supporting the findings for the outcomes of interest in this report was assessed using the GRADE system, which involves consideration of the following factors: study limitations, inconsistency, indirectness, imprecision, and publication bias across studies. The GRADE system rates the certainty in the evidence as high, moderate, low, or very low. For instance, a body of evidence that consists of RCTs automatically starts with a rating of high certainty. This rating can be downgraded if some of the RCTs have serious flaws such as lack of blinding of outcome assessors, not reporting concealment of allocation, or high dropout rate. Similarly, the certainty can be downgraded if inconsistencies of findings are present or if there is a lack of precision surrounding an outcome's effect size.

The AUA employs a 3-tiered strength of evidence system to underpin evidence-based guideline statements. **Table 1** summarizes the GRADE categories, definitions, and how these categories translate to the AUA strength of evidence categories. In short, high certainty by GRADE translates to AUA A-category strength of evidence, moderate to B, and both low and very low to C.

By definition, Grade A evidence is evidence about which the Panel has a high level of certainty, Grade B evidence is evidence about which the Panel has a moderate level of certainty, and Grade C evidence is evidence about which the Panel has a low level of certainty.[4]

Table 1: Strength of Evidence Definitions

AUA Strength of Evidence Category	GRADE Certainty Rating	Definition
A	High	• Very confident that the true effect lies close to that of the estimate of the effect
B	Moderate	• Moderately confident in the effect estimate • The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
C	Low	• Confidence in the effect estimate is limited • The true effect may be substantially different from the estimate of the effect
	Very Low	• Very little confidence in the effect estimate • The true effect is likely to be substantially different from the estimate of effect

AUA Nomenclature: Linking Statement Type to Evidence Strength

The AUA nomenclature system explicitly links statement type to body of evidence strength, level of certainty, magnitude of benefit or risk/burdens, and the Panel's judgment regarding the balance between benefits and risks/burdens (**Table 2**). Strong Recommendations are directive statements that an action should (benefits outweigh risks/burdens) or should not (risks/burdens outweigh benefits) be undertaken because net benefit or net harm is substantial. Moderate Recommendations are directive statements that an action should (benefits outweigh risks/burdens) or should not (risks/burdens outweigh benefits) be undertaken because net benefit or net harm is moderate. Conditional Recommendations are non-directive statements used when the evidence indicates that there is no apparent net benefit or harm, or when the balance between benefits and risks/burden is unclear. All three statement types may be supported by any body of evidence strength grade. Body of evidence strength Grade A in support of a Strong or Moderate Recommendation indicates that the statement can be applied to most patients in most circumstances and future research is unlikely to change confidence. Body of evidence strength Grade B in support of a Strong or Moderate Recommendation indicates that the statement can be applied to most patients in most circumstances, but better evidence could change confidence. Body of evidence strength Grade C in support of a Strong or Moderate Recommendation indicates that the statement can be applied to most patients in most circumstances, but better evidence is likely to change confidence. Conditional Recommendations also can be supported by any evidence strength. When body of evidence strength is Grade A, the statement indicates that benefits and risks/burdens appear balanced, the best action depends on patient circumstances, and future research is unlikely to change confidence. When body of evidence strength Grade B is used, benefits and risks/burdens appear balanced, the best action also depends on individual patient circumstances and better evidence could change confidence. When body of evidence strength Grade C is used, there is uncertainty regarding the balance between benefits and risks/burdens, alternative strategies may be equally reasonable, and better evidence is likely to change confidence.

Where gaps in the evidence existed, the Panel provides guidance in the form of Clinical Principles or Expert Opinions with consensus achieved using a modified Delphi technique if differences in opinion emerged.[5] A Clinical Principle is a statement about a component of clinical care that is widely agreed upon by urologists or other clinicians for which there may or may not be evidence in the medical literature. Expert Opinion refers to a statement, achieved by consensus of the Panel, that is based on members' clinical training, experience, knowledge, and judgment.

Peer Review and Document Approval

An integral part of the guideline development process at the AUA is external peer review. The AUA conducted a thorough peer review process to ensure that the document was reviewed by clinicians with expertise in vasectomy. In addition to reviewers from the AUA PGC, Science and Quality Council (SQC), and Board of Directors (BOD), the document was reviewed by external content experts, who were identified as follows: (a) a call for reviewers was placed on the AUA website from December 10, 2024 to January 3, 2025 to allow all interested parties to request a copy of the document for review, and (b) notifications were sent through various AUA membership and patient advocacy channels to specifically promote the availability of the document for review. The draft Guideline was ultimately distributed to 89 peer reviewers. All peer review comments were blinded and sent to the Panel for review. In total, 42 reviewers provided comments. At the end of the peer review process, a total of 266 comments were received. Following comment discussion, the Panel revised the draft as needed. Once finalized, the Guideline was submitted to the AUA PGC, SQC, and BOD for final approval.

Table 2: AUA Nomenclature Linking Statement Type to Level of Certainty, Magnitude of Benefit or Risk/Burden, and Body of Evidence Strength

Evidence Grade	Evidence Strength A (High Certainty)	Evidence Strength B (Moderate Certainty)	Evidence Strength C (Low Certainty)
Strong Recommendation (Net benefit or harm substantial)	• Benefits > Risks/ Burdens (or vice versa) • Net benefit (or net harm) is substantial • Applies to most patients in most circumstances and future research is unlikely to change confidence	• Benefits > Risks/ Burdens (or vice versa) • Net benefit (or net harm) is substantial • Applies to most patients in most circumstances but better evidence could change confidence	• Benefits > Risks/ Burdens (or vice versa) • Net benefit (or net harm) appears substantial • Applies to most patients in most circumstances but better evidence is likely to change confidence (rarely used to support a Strong Recommendation)
Moderate Recommendation (Net benefit or harm moderate)	• Benefits > Risks/ Burdens (or vice versa) • Net benefit (or net harm) is moderate • Applies to most patients in most circumstances and future research is unlikely to change confidence	• Benefits > Risks/ Burdens (or vice versa) • Net benefit (or net harm) is moderate • Applies to most patients in most circumstances but better evidence could change confidence	• Benefits > Risks/Burdens (or vice versa) • Net benefit (or net harm) appears moderate • Applies to most patients in most circumstances but better evidence is likely to change confidence
Conditional Recommendation (Net benefit or harm comparable to other options)	• Benefits=Risks/Burdens • Best action depends on individual patient circumstances • Future research is unlikely to change confidence	• Benefits=Risks/ Burdens • Best action appears to depend on individual patient circumstances • Better evidence could change confidence	• Balance between Benefits & Risks/Burdens unclear • Net benefit (or net harm) comparable to other options • Alternative strategies may be equally reasonable • Better evidence likely to change confidence
Clinical Principle	A statement about a component of clinical care that is widely agreed upon by urologists or other clinicians for which there may or may not be evidence in the medical literature		
Expert Opinion	A statement achieved by consensus of the Panel that is based on members' clinical training, experience, knowledge, and judgment for which there may or may not be evidence in the medical literature		

GUIDELINE STATEMENTS

PATIENT EVALUATION AND COUNSELING

1. **Clinicians should provide pre-operative consultation for the patient considering vasectomy. *(Clinical Principle)* Consultation may be accomplished virtually or in person. *(Conditional Recommendation; Evidence Level: Grade C)***

As with any surgical procedure, vasectomy requires a pre-operative consultation to review the patient's medical, reproductive, and surgical history, and to allow for a dialogue regarding the procedural risks, benefits, alternatives, and recovery. This discussion allows the clinician to set peri- and post-operative expectations and provides an opportunity for the patient to ask questions regarding this important decision.

The pre-operative consultation may be performed virtually or in person and should include the following information: 1) vasectomy is intended to be a permanent form of contraception, 2) vasectomy does not produce immediate sterility, 3) following vasectomy, another form of contraception is required until vas occlusion is confirmed by post-vasectomy semen analysis (PVSA), 4) even after vas occlusion is confirmed, vasectomy is not 100% reliable in preventing pregnancy; the risk of pregnancy after vasectomy is approximately 1 in 2,000 for men who have post-vasectomy azoospermia or PVSA showing rare non-motile sperm (RNMS), 5) repeat vasectomy is necessary for failure of occlusion in up to 1% of vasectomies, provided that a technique for vas occlusion known to have a low occlusive failure rate has been used, 6) options for fertility after vasectomy include vasectomy reversal and sperm retrieval with *in vitro* fertilization (IVF); however, these options are not always successful and may be expensive, 7) rates of surgical complications such as symptomatic hematoma and infection are 1-2%, 8) chronic scrotal pain associated with a negative impact on quality of life (QOL) may occur after vasectomy in 1-2% of men, 9) other permanent and non-permanent alternatives to vasectomy are available.[6, 7]

The availability of pre-vasectomy sperm cryopreservation may be discussed but is not a required component of counselling. Patients who have not yet had children at the time of vasectomy consultation or who are younger than the average paternal age in the United States may be at higher risk of post-surgical regret following vasectomy and more likely to benefit from a dedicated discussion about options for sperm banking.

One of the most common misconceptions amongst men is the fear of impaired sexual performance following vasectomy. For that reason, pre- and post-operative consultation should include reassurance that vasectomy is not associated with risk of sexual dysfunction or change in ejaculation.[8]

While partner involvement in the pre-operative consultation can be suggested, partner assent to vasectomy is not required as contraceptive decisions are an individual choice.

A thorough scrotal exam should be performed prior to vasectomy as it may identify: 1) a testis mass or other scrotal abnormality warranting further evaluation prior to proceeding with vasectomy, 2) anatomic characteristics such as absence of the vas, difficult isolation of the vas or specific elements of body habitus that could make vasectomy technically difficult, or 3) patient anxiety or discomfort that would preclude performing the procedure using local anesthesia alone. The scrotal exam can be performed at the time of the pre-operative consultation or on the day of surgery.

Pre-operative laboratory testing is not required unless the patient's history raises concern for a bleeding diathesis.

2. **Clinicians should counsel patients that vasectomy is a safe and effective means of permanent contraception. *(Conditional Recommendation; Evidence Level: Grade C)***

Vasectomy in men, and tubal ligation in women, are the most performed procedures used to achieve permanent contraception. Historically, the two procedures were considered to have generally equivalent clinical efficacy. However, a contemporary review of a large nationally representative sample of patients (2002-2015), including open and laparoscopic tubal ligation, demonstrated a 4-5 times higher risk of failure compared with earlier patient series, with pregnancy rates of 2.9% at one year and 8.4% at 10-years after bilateral tubal ligation.[9] The risk of failure after tubal ligation was highest amongst patients younger than 25 years of age (3.9% at one year).[10, 11] In comparison, pregnancy rates after vasectomy have been estimated at 0.1-1.1% at 2-5 years post-procedure, with a

review of over 400,000 vasectomies reporting a pregnancy rate of 0.58%.[12] As compared to tubal ligation, vasectomy is less invasive, associated with fewer anesthetic and surgical risks, and allows for faster recovery.

3. **Clinicians may inform patients that no causal link has been established between vasectomy and the development of prostate cancer.** ***(Conditional Recommendation; Evidence Level: Grade B)***

Contemporary literature review suggests an association between vasectomy and prostate cancer incidence (i.e., prostate cancer diagnosis) based on a meta-analysis of 32 relevant studies (**Figure 1, Appendix A**).[13-44] The pooled effect estimate indicated a modest increase in prostate cancer detection in vasectomized men (odds ratio [OR]: 1.13; 95% confidence interval [95% CI]: 1.08 to 1.19), with significant heterogeneity (τ^2 = 0.008, I^2 = 67.7%). However, this association does not necessarily reflect a causal link between vasectomy and prostate cancer development as observational studies cannot account for unknown confounders.[45] There is no plausible biological rationale for vasectomy to cause prostate cancer. A possible explanation for these results is that detection of prostate cancer cases is largely driven by PSA testing, which is more likely to have occurred for men who have previously seen a urologist, including men who have had a vasectomy performed by a urologist. The median rate of prostate cancer detection among the control groups in these observational studies was approximately 4% after a typical follow-up of 15 years. In comparison, the summary OR of 1.13 corresponds to a rate of 4.5% prostate cancer detection among men who underwent vasectomy. It is well recognized that many prostate cancers detected are not clinically important, so further analysis was done to examine the relationship between vasectomy and clinically significant (high-grade prostate cancer) as well as prostate cancer mortality (**Figure 2A-C, Appendix A**).

4. **Clinicians may inform patients that no causal link has been established between vasectomy and development of high-grade prostate cancer or increased prostate cancer mortality.** ***(Conditional Recommendation; Evidence Level: Grade B)***

Twelve recent studies compared advanced prostate cancer diagnoses in patients with and without vasectomy. Authors defined advanced tumors as those with stage T3+ or N1 or M1 in five studies, as Whitmore-Jewett stage C or D in two studies, and as stage T3b+ or N1 or M1, stage T4 or N1 or M1, SEER stage 3 or 4, pT3+ or lethal tumor, and tumors with regional or metastatic spread in one study each.[15-17, 19, 20, 22-24, 28, 34, 37, 40] Despite the different definitions, the studies were deemed suitable for random-effects meta-analysis. The pooled estimate indicates a slight increase in the incidence of clinically concerning prostate tumors in men with vasectomy (OR: 1.08; 95% CI: 1.03 to 1.14). For interpretation, the 0.8% median incidence of advanced prostate cancer reported in the studies for non-vasectomized men over the typical 15-year follow-up would increase to 0.9% in vasectomized patients (i.e., one additional case for every 1,000 patients).

Eight studies reported on the incidence of high-grade cancers defined as those with Gleason score 8 to 10;[15-17, 19, 20, 23, 28, 37] meta-analysis found no association between this outcome and vasectomy (OR: 1.01; 95% CI: 0.92 to 1.11) with a narrow confidence interval.

Meta-analysis also found no association between vasectomy and prostate cancer mortality (OR: 0.99; 95% CI: 0.92 to 1.07), as reported in five studies.[15, 16, 19, 20, 46]

One study reported on prostate cancer treatments.[23] The prospective cohort study found treatment rates were similar for men with and without history of vasectomy after adjusting for age and tumor grade.

Taken together, these studies suggest that most new diagnoses of prostate cancer in men with a history of vasectomy are indolent or localized cancers. Given the lack of biological plausibility for vasectomy causing cancer, and the variability of cancer detection based on screening prevalence, there is no reason to dissuade a patient from having a vasectomy based on any potential risk of the procedure inducing prostate cancer.

5. **Clinicians may inform patients that no causal link has been established between vasectomy and the risk of cardiovascular disease.** ***(Conditional Recommendation; Evidence level: Grade C)***

Four studies were identified that examined the risk of experiencing a cardiovascular event in association with a history of vasectomy, reporting either adjusted hazard ratio (HR), relative risk (RR), or adjusted person-year disease rates. Importantly, none of these studies found an increase in detection of cardiovascular disease after vasectomy. The study[14] reporting on adjusted person-year disease rates in a UK cohort found no association

between vasectomy and myocardial infarction (MI) or coronary artery disease (CAD) and a negative association between vasectomy and stroke. The study[47] reporting on adjusted HRs in a US cohort found no association between vasectomy and MI, stroke, or CAD. Of the two studies reporting on adjusted RRs in US cohorts, one[48] found no association between vasectomy and MI, stroke, or the composite risk of developing angina pectoris or requiring coronary revascularization; the other,[49] which included only physicians, also found no association between vasectomy and MI, stroke, angina pectoris, or thrombophlebitis.

6. **Clinicians may inform patients that no causal link has been established between vasectomy and nephrolithiasis.** ***(Conditional Recommendation; Evidence Level: Grade B)***

A single case-cohort study[50] reported a positive association between vasectomy and first-episode nephrolithiasis incidence in a US cohort ($p<0.04$). However, when results of this study were stratified by time since vasectomy, there was an inconsistent relationship between time since vasectomy and incidence of nephrolithiasis. Although there was an increased risk of nephrolithiasis for men <5 years from vasectomy ($p<0.05$) as well as for men 10-15 years after vasectomy, there was no association noted for men 5-10 years after vasectomy or for men >15 years after vasectomy ($p>0.05$). The short-term positive association is, therefore, unlikely to represent a causal relationship because the increased risk of stone events does not hold up for all time intervals, especially the longest interval.

PERI-PROCEDURAL ANTIBIOTICS

7. **Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection.** ***(Expert Opinion)***

The AUA's Clinical Consensus Statement on Urologic Procedures and Antimicrobial Prophylaxis considers vasectomy a Class I/clean procedure with low risk for development of surgical site infection (SSI) in the healthy patient.[51] Selective use of pre-operative antibiotics may be considered for those patients at higher risk of SSI, such as patients with prosthetics, diabetic patients with suboptimal blood glucose management, patients taking immunomodulating medications, including patients on chronic corticosteroids. As such, clinicians may engage in shared decision-making with patients regarding potential risks (i.e., adverse reactions, antibiotic overuse) and benefits (i.e., potential reduced risk of SSI) of antibiotic prophylaxis. When indicated, a single pre-operative dose of an antimicrobial such as a first-generation cephalosporin (e.g., cephalexin, cefazolin) or ampicillin/sulbactam may be administered.[51] Topical antibiotics applied to the wound have not been demonstrated to reduce infection risk.[52]

SKIN PREPARATION

8. **Clinicians should prepare the skin with a sterilizing solution prior to vasectomy.** ***(Clinical Principle)*** **Clinicians may remove hair pre-operatively.** ***(Expert Opinion)***

Hair removal may help improve visualization in the operative field, but data do not indicate that this step decreases risk of SSI.[51] Clinicians can give patients the option of self-trimming scrotal hair prior to the procedure. If additional hair removal is deemed necessary, SSI may be slightly reduced when hair removal is performed on the same day immediately before surgery compared with the day prior.[53] Although the use of clippers may be associated with lower rate of infection in general surgical procedures, hair removal accomplished via a razor may result in less skin trauma to the male genitalia without an increase in SSI.[53, 54]

Skin preparation should be performed using an alcohol-based sterilizing solution (e.g., chlorhexidine) immediately prior to the procedure, unless contraindicated.[52] Povidone-iodine is a suitable alternative for skin preparation before vasectomy.

ANESTHETICS AND PERI-PROCEDURAL PAIN MANAGEMENT

9. **Clinicians should perform vasectomy with local anesthesia delivered by skin infiltration with a needle and/or jet injector. Topical anesthetic may lessen the pain of local anesthetic infiltration during vasectomy.** ***(Moderate Recommendation; Evidence Level: Grade C)***

Vasectomy procedures should routinely be performed using local anesthesia. Adjunctive oral, intravenous, or inhalational agent sedation may be considered when the pre-operative scrotal exam identifies difficult vasal

isolation or when patients have considerable anxiety related to the procedure.

There are several considerations related to the technique and approach for administration of local anesthesia:

Means of Infiltration

One non-randomized controlled study compared pain during both anesthesia administration and vasectomy amongst patients receiving local infiltration of anesthesia (LIA) using a needle versus LIA combined with spermatic cord block (SCB), versus local anesthesia administered using a hydraulic jet injector (no-needle approach).[55] Pain during administration of anesthesia was lowest for the LIA group and comparable for the LIA+SCB and the no-needle groups. However, pain during vasectomy was lowest for the LIA+SCB group. The no-needle approach may be particularly useful for men who are anxious about use of a needle for the administration of local anesthesia.

Needle Size

When administering local anesthesia, the Panel recommends the use of the smallest gauge needle possible in order to minimize pain.[56] A prospective non-comparative study in 277 patients showed that with a 30 gauge needle, the average level of pain on a Visual Analogue Scale (VAS) was 1.5/10 and 0.6/10 during infiltration of unbuffered 2% lidocaine and vasectomy, respectively.[57]

Buffer

One RCT compared the effectiveness of buffered versus unbuffered commercial lidocaine for intraoperative pain reported on the VAS in vasectomy patients.[58] A total of 85 patients with a mean age of 40 years were randomized into 4 groups allowing comparison of buffered versus unbuffered lidocaine. Use of buffered lidocaine was associated with less infiltration-associated and procedural pain compared with the use of unbuffered local anesthetic.

Topical

A limited number of small studies suggest that the application of topical anesthetic cream prior to infiltration of local anesthesia may reduce pain associated with local anesthesia.[59, 60] Topical anesthetic cream should be applied to the scrotum at least one hour prior to injection of local anesthesia. Topical anesthetic should not be used as the only means of anesthesia as it does not provide adequate block of peri-vasal sensation.

10. **Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories [NSAID]) for post-operative pain control. *(Expert Opinion)***

Based on the AUA's White Paper on Rationale and Strategies for Reducing Urologic Post-Operative Opioid Prescribing, routine use of opioids is not recommended post-vasectomy.[61] One RCT compared post-vasectomy etodolac as needed versus acetaminophen with codeine as needed in 40 patients (20 per group).[62] At the 1-, 6-, and 24-hour follow-up intervals, there were no differences in pain as measured on the VAS. However, more patients taking etodolac believed they could return to work 24 hours post-vasectomy than those taking acetaminophen with codeine (p=0.04).

Pre-procedural administration of oral acetaminophen or nonsteroidal anti-inflammatory (NSAID) may reduce peri- and post-operative pain.[61] Similarly, a multimodal approach using analgesics with different mechanisms of action, such as acetaminophen in combination with an NSAID, may optimize post-operative pain management. There are no data that suggest that the risk of hematoma is higher with NSAID use after vasectomy or other scrotal surgery.[63, 64]

If post-operative opioids are deemed necessary due to insufficiently managed post-procedural pain, clinicians should prescribe the lowest effective dose for the shortest timeframe possible.

VAS ISOLATION

11. **Surgeons should isolate and expose the vas deferens for vasectomy using a minimally invasive approach such as the no-scalpel vasectomy (NSV) technique. *(Moderate Recommendation; Evidence Level: Grade A)***

In the incisional vasectomy technique (IVT) to isolate and deliver the vas deferens, the surgeon utilizes either one or two scrotal skin incisions to enter the scrotum, allowing dissection to localize and isolate the vas. This approach is carried out using standard surgical instruments. The skin incision is made with a scalpel, and the wound is typically sutured closed at the conclusion of the procedure.

In contrast, a minimally-invasive vasectomy (MIV) is performed through a small opening (< 10 mm) in the skin with minimal dissection to identify and isolate the vas using a dedicated vas dissector and vas ring clamp, or similar instruments. A scalpel is not typically used to create the small skin opening for an MIV, limiting the need for sutures to close the skin.

The no-scalpel vasectomy (NSV) is a commonly used minimally invasive technique for vas isolation in which a vas ring clamp is used to percutaneously grasp the vas along with the overlying skin, and a vas dissector is used to puncture the skin to expose the surface of the vas, dissect off peri-vasal tissue, pierce the wall of the vas, and deliver the vasal segment through the skin opening.[65, 66]

Although IVT, MIV, and NSV are labelled as "vasectomy" techniques, these are limited to the isolation and delivery of the vas deferens. The approach to isolate and deliver the vas may not have any influence on the occlusive and contraceptive effectiveness of vasectomy that is likely determined by the occlusion technique performed.

No-Scalpel Vasectomy versus Incisional Vasectomy Technique

One RCT compared outcomes amongst 705 men undergoing NSV and 723 men undergoing IVT.[67] The NSV approach was associated with greater difficulty in isolating the vas deferens (8.1% versus 4.6%), better pain control (66.8% versus 60.2%), and lower rates of scrotal hematoma formation (1.8% versus 12.2%). Notably, despite the higher hematoma rate in the IVT group, only one patient in each group was hospitalized and required surgery to evacuate the hematoma.

In a second RCT comparing outcomes amongst 92 men undergoing NSV and 84 men undergoing IVT,[68] NSV was associated with lower rates of infection (3.3% versus 14.3%) and lower rates of hematoma (1.1% versus 11.9%), with two men in the IVT group needing to undergo hematoma drainage.[68]

Four retrospective studies compared outcomes between NSV and IVT approaches.[66, 69-71] Taken together, findings from these studies demonstrate that the NSV approach is associated with decreased pain and discomfort in the early post-vasectomy period,[69-71] as well as decreased risk of bleeding.[66]

No-Scalpel Vasectomy versus Other Minimally Invasive Vasectomy Techniques

One RCT[72] compared outcomes amongst 215 men undergoing NSV and 202 men undergoing MIV, where a ring forceps was inserted inside the scrotum through a small opening made with the dissecting forceps. No differences between the two groups were observed for hematoma (6% versus 4%), infection (1% in both groups), granuloma (4% versus 2%), or level of satisfaction in sexual life (69% versus 70%).

An additional RCT[73] compared outcomes amongst 215 men undergoing NSV and 234 men undergoing MIV using a technique called an "instrument-independent" NSV, performed without the specialized instruments required for standard NSV. A higher rate of hematoma formation was found after standard NSV compared to the MIV (6% versus 1%); no difference in risk of infection was observed between the groups (1% in both groups).

Taken together, these studies result in the Guideline recommendation that a minimally invasive approach should be used for exposure and delivery of the vas deferens. NSV is the most used minimally invasive approach, although specialized instruments and some training are valuable for effective application of this technique.

VAS OCCLUSION

12. **Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery (MC) and fascial interposition (FI).** ***(Strong Recommendation; Evidence Level: Grade B)***

Vasectomy Effectiveness

Vasectomy success can be defined as either **contraceptive success**, which is the absence of pregnancy, or **occlusive success**, demonstrated by the finding on PVSA of azoospermia or RNMS, as defined in a subsequent section of this Guideline. Most vasectomy failures are thought to occur from recanalization caused by a less effective surgical technique of occlusion. A failure is less commonly due to a surgical error where the same vas is cut twice or another structure is divided, and very rarely because of a missed vas duplication. Contraceptive failures may occur despite adequate occlusion, from residual sperm in the reproductive tract despite a technically successful occlusive procedure,

especially within the first 3-4 weeks after vasectomy.[74-76] Residual sperm may cause pregnancy if no contraceptive method is used prior to the confirmation of occlusive success.[74-76]

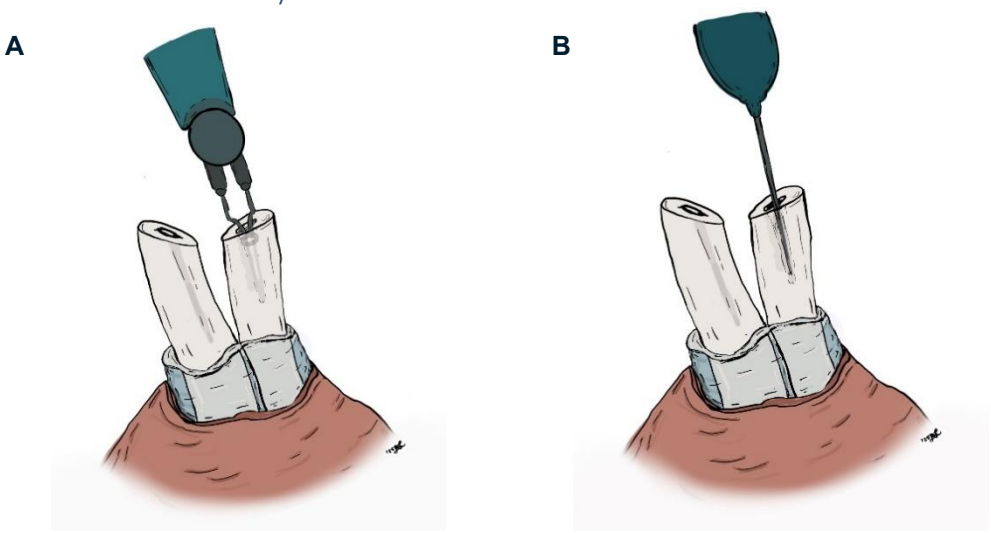
Vasectomy effectiveness is the most important and relevant outcome associated with vasectomy techniques. The Panel considered the acceptable risk of occlusive failure as ≤ 1%. The Panel undertook review of the comparative studies on vas occlusion techniques published since 1990 with the goal of identifying techniques that consistently produce success. However, the vas occlusion literature suffers from a lack of studies published since 1990 and serious methodological flaws in most studies; this reduces certainty regarding conclusions about the relative efficacy of various occlusion techniques. These flaws include 1) failure to identify whether enrollment is comprised of consecutive or selected patients, 2) failure to document PVSA results in large proportions of vasectomized men, 3) lack of information about follow-up protocols, 4) unclear criteria for vasectomy failure, 5) wide variations in follow-up duration, and, possibly, 6) failure to report series that had high failure rates. The Panel analysed data on occlusive effectiveness (based on PVSA results) as none of the retrieved studies had adequate design to determine the risk of contraceptive failure.

Vasectomy Occlusion Techniques

In the US, most surgeons initiate vasectomy by dividing the vas. Following division of the vas, the divided vasal ends may be separated by one of several techniques such as excising a vasal segment and/or fascial interposition (FI). The flow of fluid and sperm within the vasal lumen may also be obstructed by one of several methods such a ligating the vas or cauterizing the lumen of the vas deferens. In this Guideline, vas occlusion is used to reflect that the vas has been completely divided unless otherwise stated.

Commonly utilized vasectomy occlusion techniques, which may be used in combination, include the following:

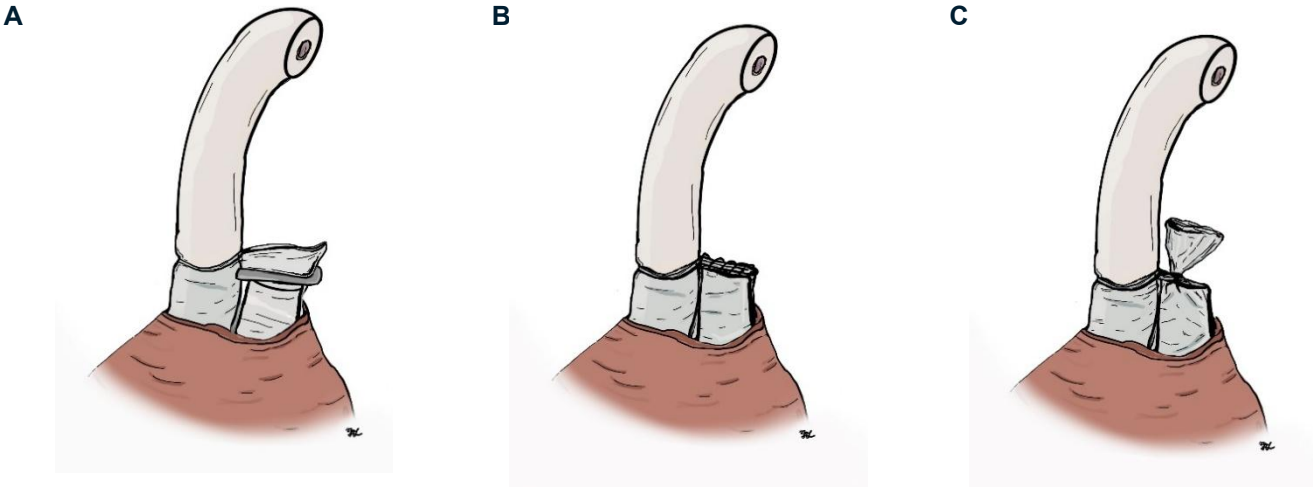
Figure 3A-B: Mucosal Cautery*



Mucosal cautery (MC) is the technique of applying thermal (A) or electrical cautery (B) to the mucosa of the cut ends of the vas to destroy the vasal mucosa while avoiding or minimizing damage to muscle layers. The goal of MC is to create a plug of scar tissue that occludes the vas lumen. The length of the cauterized segment varies from a few mm to 1.5 cm. MC may be combined with excision of a vas segment, folding back, or FI. Cauterizing the mucosa while simultaneously limiting cautery damage to the muscular layer of the vas prevents sloughing of the cauterized portion of the vas that could occur if its full thickness was destroyed by cautery. Both electrical (monopolar) cautery and thermal cautery, usually provided by a battery-powered hand-held device, can be used for MC. There is a small risk of full thickness necrosis of the vas with electrical cautery, which is best avoided as the goal of MC is to keep the wall of the vas intact and effect obstruction of the vasal lumen.

*Illustrations provided by Divya Lagisetti

Figure 4A-C: Fascial Interposition*



Fascial interposition (FI) is the technique of placing a layer of the vasal sheath between the two divided ends of the vas. The sheath is closed over the testicular or abdominal end using a metal clip (A), a suture placed with a tapered needle (B), or a free tie (C).

FI is often combined with other techniques such as ligation of the vas and excision or MC of the vasal lumen. When **open-ended vasectomy** is performed, (leaving the testicular end of the divided vas non-occluded), FI is critical to prevent recanalization.

*Illustrations provided by Divya Lagisetti

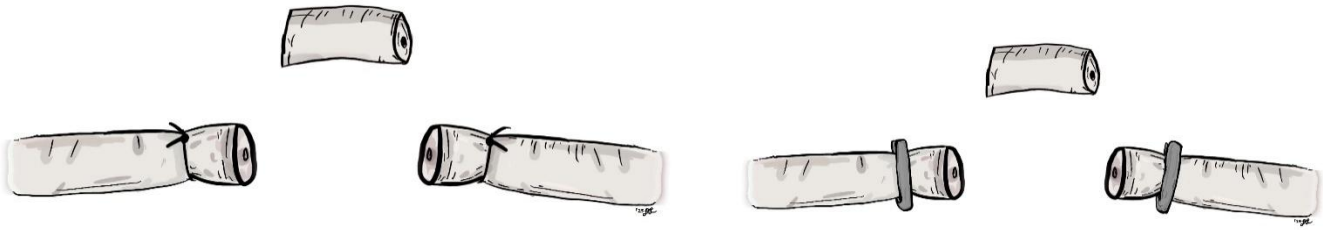
Figure 5: Folding Back*

Folding back (“doubling”) is the technique of folding and suturing/ligating one or both divided vasal end(s) back onto itself to prevent the two cut ends from facing each other.

*Illustrations provided by Divya Lagisetti

Figure 6A-B: Ligation and Excision*

A **B**



Ligation refers to occlusion of the vas with suture material (
occluded points. The number of clips or sutures placed on each end of the divided vas is usually one or two but may be more. Ligation of the vas is commonly accompanied by **excision** of a 0.5-1 cm segment of vas deferens, although some surgeons routinely remove a longer segment of vas deferens during the procedure.

*Illustrations provided by Divya Lagisetti

A non-divisional extended monopolar electrocautery technique of vas occlusion has been described (Marie Stopes International [MSI] technique) that consists of electrocoagulation of the full thickness of the anterior wall and a partial thickness of the posterior wall of the vas for a length of approximately 2.5 to 3 cm without dividing the vas.[77, 78] This technique does not completely divide the vas, and has mainly been used in the UK, Australia, and New Zealand.

Comparative Effectiveness of Vasectomy Occlusion Techniques

There is moderate certainty that the risk of failure with electrical or thermal MC techniques is acceptable; however, the risk of recanalization and failure is nearly eliminated when FI is combined with MC, whether the testicular end is left open or not (**Table 3, Appendix B**).

One study compared the risk of failure of ligation and excision combined with FI performed by ligating the vas sheath on the abdominal segment to MC without or with FI[79] using data from two high-quality studies.[80, 81] Using the same failure criteria, the risk of failure with ligation and excision (4.9%) was higher than the risk with MC (1%). Although the risk of bias in both studies was low, the risk of bias when comparing the two treatment groups from different studies was rated as high.

A secondary analysis of the two source studies provide further evidence about the risk of failure and comparison of the various techniques.[82] Based on the examination of serial PVSA by three vasectomy experts blinded from each other and from the vasectomy techniques, the frequency of presumed recanalization and failure for each technique was as follows: ligation and excision (25% and 13%), ligation and excision with the FI technique performed by ligating the vas sheath on the abdominal segment (6% and 10%), mucosal electrocautery without FI (1% and 9%), and mucosal thermal cautery with FI (0.5% and 0%).

One retrospective cohort study[83, 84] reported confirmed and possible failure risks of 0.1% (1/1165) and 0.3% (3/1165), respectively, with mucosal thermal cautery with FI covering the abdominal vas segment with a titanium clip applied on the vas sheath and the testicular end left open. Another study[84] observed a similar risk of failure with testicular end left closed (0.03%, 1/3081) or open (0.03%, 1/3103).

Observations in a study[85] evaluating mucosal thermal cautery, and electrocautery combined with ligatures reported that failure risk was 4.8% overall (21/242), 6.1% (15/248) with the use of electrocautery and 3.1% (6/194) with the use of thermal cautery, respectively. These high failure risks are possibly due to the application of ligatures on the cauterized vas segment causing necrosis of the segment distal to the ligatures applied. Ligature and necrosis of the vas may predispose to vasal recanalization and failure of vasectomy.

The Panel acknowledges that in creating an evidence-based Guideline, recommendations are necessarily based on the data that are available in the medical literature. The Panel recognizes that there may be other techniques or combinations of vas occlusion that are reliable in producing occlusive effectiveness, even though detailed reports of the results of such occlusive methods have not been published. Examples of such techniques are excision of a vas segment of 4 cm or more, additional ligatures with clips or sutures on each segment of the divided vas, folding back of one or the two vas segments, and extensive electrocautery of the vas with or without dividing the vas.

13. **Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)***

The combined observations of nearly all comparative studies demonstrate that vasal ligation and excision (< 1 cm) poses a higher risk of occlusive failure (**Table 3, Appendix B**), likely because vasal ligation alone may result in necrosis of the vas deferens that could predispose to local leakage of sperm and potential recanalization. Ligation with excision of a longer length of vas (i.e., 4 cm or more) may be associated with a lower and acceptable risk of recanalization, but there is limited published evidence for this approach. One RCT[80] and three retrospective cohort studies[83, 86, 87] evaluated the "classical" occlusion technique (i.e., ligation of the vas deferens with ligatures or clips + excision of a small segment [~1 cm] of vas). The risk of failure observed in one study was 1.4%, but it varied between 6% and 13% in all other studies, with the highest risk observed in the low-risk-of-bias RCT. There is high certainty that ligation of the vas deferens with ligatures or clips + excision of a small segment (~1 cm) results in a higher risk of occlusive failure, reflected by persistence of sperm in the ejaculate, than that reported for techniques with MC and FI.

There is, likewise, high certainty that adding FI to ligation and excision decreases the risk of failure compared to ligation and excision without FI.[80]

14. **Surgeons may omit routine histological evaluation of excised tissues. *(Expert Opinion)***

Previous iterations of the AUA Vasectomy Guideline have noted that physicians in practice and residency training programs no longer require histologic confirmation of the vas deferens as a measurement of vasectomy success as the PVSA is the determinant of success of the procedure. The Panel agrees with the lack of value of histologic examination of resected vas deferens segments as a determinant of success of the vasectomy.

VASECTOMY COMPLICATIONS

15. **Surgeons who perform vasectomy should be able to recognize and treat complications after vasectomy, including bleeding, infection, epididymitis, and chronic scrotal pain. *(Clinical Principle)***

The Panel found no comparative studies between draining a hematoma after a vasectomy versus a conservative approach in terms of recovery time, pain, harms, and QOL. Likewise, the Panel did not find any eligible comparative studies of options for treating infection, congestive epididymitis, or chronic scrotal pain after vasectomy. Therefore, the Panel recommends that decisions for evaluation and treatment of these complications be left to the judgment of the treating surgeon. The management of chronic scrotal pain is further discussed in the AUA Guideline on management of Male Chronic Pelvic Pain, Part III.[88]

Other Risks Associated with Different Occlusion Techniques

Although occlusive effectiveness is a primary consideration for recommendation of an occlusive technique, other complications (e.g., bleeding, infections, perioperative pain), long term complications (e.g., painful sperm granuloma, chronic pain), and patient satisfaction are relevant considerations. Three studies of low quality with high risk of bias were considered.[83, 84, 89]

Risks of infection were higher (2.6%) with ligation and excision relative to techniques of MC and FI (0.8-0.9%), 1.0%, and 1.3% for extended electrocautery with division of the vas, and 2.6% for ligation, excision, and FI in an observational study including 133,044 vasectomies.[89] Another study[83] reported lower frequency (0.5%) of hematoma and/or infection for ligation with clips compared to 1.6% for MC and FI with clips. No difference in pain was observed with different techniques. The third study[84] reported a very low risk of infection (0.03% versus 0.06%), and hematoma (0% versus 0.06%) for closed and opened-ended MC and FI with clips occlusive techniques,

respectively. The risk of congestive epididymitis was estimated at 6% for closed-ended and 2% for open-ended procedures. These results did not modify the Panel's recommendations for preferred occlusion techniques.

POST-VASECTOMY SEMEN ANALYSIS

16. **Patients should provide at least one appropriately collected semen sample following vasectomy to confirm occlusive success.** ***(Moderate Recommendation; Evidence Level: Grade C)***

One cohort study[90] examined the effect of requiring one versus two PVSA samples on the outcomes of patient compliance with testing and detection of occlusive failure. The study compared two interventions. In the first, a semen sample was requested 4 months after vasectomy, and the absence of sperm in one specimen was considered sufficient to declare the patient azoospermic. In the other, semen samples were requested at 3 and 4 months after vasectomy, and the absence of sperm in two consecutive samples was needed to declare the patient azoospermic. For all non-azoospermic patients, additional samples were obtained monthly until the criterion for azoospermia was met. Compliance rates were higher in the 1-sample group than in the 2-sample group, both for initial and additional testing. Rates of occlusive failure were similar across groups.

17. **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing.** ***(Conditional Recommendation; Evidence Level: Grade C)***

The Panel acknowledges the increasing availability of home-based and mail-in options for PVSA testing. Home-based tests seek to allow self-assessment of sperm vasectomy success at home. Mail-in kits allow patients the convenience of collecting PVSA samples at home that are then transported by mail or another service to a laboratory for a detailed analysis. Since sperm motility cannot be reliably evaluated with these tests, and in the absence of evidence on sperm concentration threshold assuring contraceptive effectiveness, the Panel notes that mail-in and home-based specimens should demonstrate complete azoospermia in order to maximize the chance of vasectomy contraceptive success.[91]

Home-based versus Lab/Office-based PVSA

Data are conflicting on whether the availability of home semen analysis kits increases compliance with PVSA testing.

One pre/post-intervention study[92] and two retrospective cohort studies[93, 94] compared home-based PVSA testing to lab/office-based testing. In the pre/post-intervention study, 285 patients who underwent vasectomy in 2014-2017 were asked to use a home-based immunochromatographic PVSA kit, and 201 patients who underwent vasectomy in 2017-2020 were referred to a local laboratory for PVSA testing. Compliance rates were higher for the laboratory-based group (46% versus 35%).

One of the retrospective cohort studies examined PVSA compliance amongst 364 patients who underwent vasectomy between 2007 and 2019.[95] Prior to 2016, only in-office PVSA testing was offered; starting in 2016, patients were offered the choice between using in-office testing and using a home-based immunochromatographic PVSA kit. Compliance was identical between the 255 patients in the in-office group and the 109 patients choosing at-home testing (58.8% versus 59.6%).

In the second retrospective cohort study of 226 vasectomy patients, 141 completed lab-based PVSA testing while 85 completed home-based immunochromatographic PVSA testing.[94] There was no difference in compliance between the lab-based and home-based groups (66% versus 76%, p=0.095). The estimated risk of vasectomy failure rates was slightly higher in the home-based group (3.65% versus 4.09%). Until evidence is available that home-based PVSA tests can reflect contraceptive success, these tests are not recommended for routine testing for clearance to cease contraception after vasectomy, unless azoospermia is demonstrated.

Mail-in versus Lab/Office-based PVSA

One retrospective cohort study[96] conducted in the United Kingdom compared a mail-in test strategy in which samples were produced at home and sent to the laboratory through the mail (N = 32,708), with a lab/office-based test strategy in which samples were either produced at the laboratory or produced at home and delivered in-person to the laboratory (N = 26,192). The mail-in strategy had a substantially higher rate of

compliance (79.5% versus 59.1%), and lower rate of occlusive failure (0.73% versus 0.94%).

Centrifuged versus Uncentrifuged (neat) PVSA

In a secondary analysis of data from an RCT, one study evaluated 3,205 semen samples to compare the accuracy of uncentrifuged (neat) versus centrifuged PVSA samples. The authors compared azoospermia without centrifugation against two thresholds for a positive test at post-centrifugation: azoospermia and sperm concentration <100,000 per mL. For azoospermia, uncentrifuged analysis had a sensitivity of 72.1%, specificity of 99.8%, positive predictive value of 99.6%, and negative predictive value of 79.8%. For sperm concentration <100,000 per mL, the uncentrifuged analysis had a sensitivity of 99.3%, specificity of 80.6%, positive predictive value of 54.0%, and negative predictive value of 99.8%. Based on these results, analysis of semen specimens without centrifugation was deemed adequate and effective for PVSA given that detection of no motile sperm or RNMS (<100,000 non-motile sperm per mL) are equivalent outcomes with regards to occlusive effectiveness.

18. **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 rare non-motile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection.** ***(Conditional Recommendation; Evidence Level: Grade B)*** **A sample evaluated >2 hours after collection should show azoospermia to stop contraception.** ***(Expert Opinion)***

Both azoospermia and RNMS in an uncentrifuged semen sample are acceptable criteria for vasectomy occlusive success. The definition of RNMS used in medical literature has varied from more than 0 to less than 1 million/mL, but the most used definition of RNMS is ≤100,000 per mL.[97, 98]

Comparing the clearance definition of <100,000/mL non-motile sperm to the traditional clearance definition of azoospermia, one study considered the need for multiple evaluations, patient compliance, and vasectomy contraceptive failure as outcomes.[99] Of 230 patients, just over 48% (111/230) completed testing. The clearance rate (patient cleared to stop using contraception) with the azoospermia criterion was 64% (71 of 111); with a definition of <100,000/mL non-motile sperm, the clearance rate was 98% (109 of 111). No pregnancies were reported for any patients during the follow-up period.

Patients with sperm found on their initial PVSA (n = 40 of 230) were asked to provide an additional semen sample several weeks later. Fourteen patients (35%) completed a second PVSA with one patient having >100,000/mL non-motile sperm not completing a second test. Four of the 14 (29%) had no sperm on their second PVSA while the other 10 (71%) still showed sperm. All patients with a positive second PVSA had RNMS only. The authors concluded that integration of post-vasectomy special clearance parameters (such as 100,000/mL non-motile sperm) can avoid repeat testing in most patients with sperm identified on initial PVSA.

If semen evaluation is not done within two hours of collection, progressive decrease in sperm motility may occur, so the presence or absence of motility cannot be reliably determined.[100] For semen specimens evaluated over two hours after collection (for example with mail-in samples), azoospermia is required for contraceptive clearance.

19. **A post-vasectomy semen sample may be submitted as early as 8 weeks following vasectomy.** ***(Conditional Recommendation; Evidence Level: Grade C)***

The timing of the first PVSA may be left to the surgeon's judgment. The longer the time period before the first PVSA, the better the chance that the PVSA will show azoospermia but the longer the time that the patient must continue to use another method of contraception. There is no evidence, however, that this is the case when using the RNMS (<100,000 non-motile sperm per mL) threshold.[101] It is ultimately desirable to select a time period that minimizes both the number of PVSAs needed to establish vasectomy success and allows patients to cease other forms of contraception as soon as possible following vasectomy. The frequency of ejaculation may also affect time to azoospermia after vasectomy, especially for men over age 40.[102]

One study[103] compared three protocols for PVSA timing, amongst 1,124 patients who underwent vasectomy over a 5-year period. PVSA samples were requested from the patients at either 8- and 12-weeks post-vasectomy (N=351), at only 12 weeks post-vasectomy (N = 364), or at 16 weeks post-vasectomy (N = 409). Compliance (i.e.,

returning at least one sample) was highest for earlier testing (86%, 80%, and 73%, at 8-, 12-, and 16-weeks, respectively). Clearance to cease contraception was also highest in the earlier testing group (82%, 80%, and 72%, at 8-, 12-, and 16-weeks, respectively). Overall, although azoospermia rates increased with a longer time to PVSA, declining compliance meant that the proportion of patients given clearance remained the same irrespective of PVSA timing. Of note, the risk of bias for this study was rated as high, primarily due to the confounding of intervention with time period.

Another retrospective cohort study[104] compared two protocols for PVSA timing, evaluating patients at 3 months (N = 245) versus 6 months (N = 100) post-vasectomy. Rates of compliance were similar between the two groups (76%). Sperm were present in 20% of the PSVA samples collected for the 3-month group, compared to 13% of the samples in the 6-month group. The authors interpreted this result as an indication that "the disappearance of spermatozoa after vasectomy takes longer than is generally thought."

Taken together, compliance with testing is higher at earlier time points, but the chance that all the sperm will have disappeared (and clearance be given to stop contraception on this criteria) is higher with later testing. This may not be the case when using RNMS clearance criteria. The Panel recommends early testing (starting 8 weeks after vasectomy), recognizing that repeat PVSA is more likely to be needed if testing is started earlier and azoospermia is used as the clearance criteria, but probably not if RNMS criteria is used.

REPEAT VASECTOMY

20. In patients with any persistent motile sperm in the ejaculate 6 months following vasectomy, counseling for repeat vasectomy should be offered. In patients with > 100,000 non-motile sperm per mL persisting after 6 months, shared decision-making should be utilized to determine whether to repeat vasectomy, continue contraception and/or obtain repeat semen evaluations. ***(Expert Opinion)***

When the vas is successfully occluded, motile sperm typically disappear by a few weeks after vasectomy.[74, 82, 105, 106] The presence of motile sperm more than six months after vasectomy indicates that recanalization has occurred, or that there was a technical failure in vas occlusion. Motile sperm any time after vasectomy represent a risk of pregnancy and indicates the need for continued use of another contraceptive method, further PVSA testing, and, if persistent, repeat vasectomy.

Vasectomy may not need to be repeated immediately if motile sperm are found on PVSA within six months after vasectomy. When motile sperm are found on PVSA within 6 months after vasectomy, additional PVSAs should be considered at intervals of four to six weeks for up to six months after vasectomy. Approximately 30% to 75% of men with recanalization eventually achieve azoospermia or RNMS over a period of six months after vasectomy due to fibrosis of the vas and occlusion of the recanalization.[80, 107] These men continue to have effective occlusion on long-term follow-up.[107] Therefore, the decision to repeat the vasectomy should not rely on a single semen analysis showing motile sperm within six months after vasectomy. Repeat vasectomy should be offered if the number of motile sperm increases in subsequent semen analyses or if motile sperm persist for >6 months after vasectomy. There are no data to suggest that occlusive success occurs in men who still have motile sperm in a PVSA six months or more after vasectomy.

If greater than 100,000 non-motile sperm per mL are present on a PVSA, repeat PVSAs should be performed to determine if the number of sperm decreases to less than 100,000 per mL on fresh samples, or azoospermia develops on a delayed sample of more than 2 hours. If less than 100,000 non-motile sperm per mL is not achieved by six months after vasectomy on a fresh sample, then PVSA in a high-complexity semen testing laboratory should be considered.

The Panel's opinion is that the decision to consider vasectomy a failure if >100,000 non-motile sperm per mL persist should be based on clinical judgment that includes the trend of sperm counts, the patient's preferences, and the patient's tolerance for the risk of pregnancy. In patients with >100,000 non-motile sperm per mL persisting after 6 months, shared decision-making should be utilized to determine whether to repeat vasectomy or consider additional forms of contraception.

FERTILITY RESTORATION AFTER VASECTOMY

21. **Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with intracytoplasmic sperm injection (ICSI) are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building.** ***(Expert Opinion)***

Options for family building after vasectomy include vasectomy reversal and surgical sperm extraction for use with IVF with intracytoplasmic sperm injection (ICSI), as well as adoption and use of donor sperm. The interventional options are not always successful, and they may be expensive. Given that the primary predictive factor of conception is female partner age, this, along with any other female factor pathology and economic factors should be considered when counseling patients regarding options for fertility after vasectomy. A detailed review of these options, optimization of sperm production after standard evaluation and other considerations for post-vasectomy fertility are discussed in the Diagnosis and Treatment of Infertility in Men: AUA/ASRM Guideline.[108] This Guideline also addresses improving sperm production in men who are currently or were previously taking testosterone or other androgenic steroids.

Limited data exist comparing outcomes of vasectomy reversal versus other post-vasectomy fertility treatments. Valerie et al.[109] compared results of vasectomy reversal to post-vasectomy surgical sperm retrieval and ICSI. Mean age of male patients was 35.5 years at the time of initial vasectomy, then 44.4 (±6.7) and 45.6 (±7.7) years at the time of the study intervention for re-anastomosis and ICSI, respectively. No statistically significant differences were found between the two groups in partner characteristics, such as age and parity. Overall, 99 patients underwent surgical reconstruction, and 64 couples pursued primary sperm extraction and ICSI. Among the 99 patients who underwent surgical reconstruction, 45 chose this option as the primary intervention, while 54 had vasectomy reversal and then requested ICSI (50 couples) or intrauterine insemination (IUI) (4 couples, of whom 2 subsequently also proceeded to IVF/ICSI).

The cumulative delivery rates among the groups were as follows:

- Primary re-anastomosis: 40% (18/45) versus primary IVF/ICSI: 44% (28/64)
- Re-anastomosis combined with ICSI: 57% (31/54) versus primary IVF/ICSI: 43.8% (28/64)
- Overall re-anastomosis: 50% (49/99) versus primary IVF/ICSI: 44% (28/64)

None of these comparisons showed statistically significant differences, but the study may not have had sufficient statistical power to demonstrate clinically relevant differences. Time to achieve pregnancy was not evaluated in this study. In theory, ICSI may allow an earlier chance of pregnancy than vasectomy reversal.

22. **Surgeons should inform patients considering vasectomy reversal that duration of the obstructive interval, patient age, and female partner age are the best preoperative predictors of post-operative reversal success.** ***(Moderate Recommendation; Evidence Level: Grade C)***

The preoperative factors that predict vasectomy reversal success include patient age, duration of obstructive interval, and female partner age.

The age of the patient undergoing vasectomy reversal is associated with surgical success rates. Older patient age, particularly over 40 years, is associated with lower chances of success as it relates to pregnancy outcomes.[110-112] Age-related declines in sperm quality and testicular function may contribute to this finding. Older patient age is independently associated with older age of the female partner, which, in turn, has a dramatic effect on natural pregnancy as well as success of ICSI.[110, 112] Lastly, patient age may be a proxy for obstructive interval, with longer interval adversely affecting surgical outcomes of patency and pregnancy.

The length of time since the vasectomy, known as the obstructive interval, is an important pre-operative predictor of vasectomy reversal success. While there is no discrete cutoff for years of obstructive interval that adversely affects outcome, studies suggest that longer intervals between the vasectomy and the vasectomy reversal procedure are associated with reduced likelihood of success in terms of patency and pregnancy rates.[113-115] As the duration of obstruction increases, the need for vasoepididymostomy to provide successful

reconstruction also increases, resulting in lower chance of patency and pregnancy when compared to vasovasostomy.[113, 114-116]

Female partner age may significantly impact pregnancy success after vasectomy reversal.[110, 114, 117, 118] Female fertility declines with age; therefore, pregnancy rates post-reversal decrease as the partner ages. Advanced maternal age is also associated with decreased pregnancy rates, and assisted reproductive technologies (ART) such as IVF and ICSI may become necessary to achieve pregnancy for older female partners.[115, 118]

Other preoperative factors that have been evaluated and not found to be predictive of success are FSH levels,[119, 120] testicular volume,[120, 121] and the presence of antisperm antibodies.[122]

In summary, the best predictors of success for vasectomy reversal are the duration of obstruction, the age of the patient, and the age of the partner, with longer obstructive intervals and older age being associated with decreased success rates. Despite these trends, there is no absolute timeframe or age cutoff that precludes success. Individual patients should be counseled regarding the success rates of both vasectomy reversal and assisted reproduction.

23. **Surgeons should evaluate vasal fluid microscopically at the time of vasectomy reversal as the presence of sperm at the site of planned reconstruction is the best intraoperative predictor of patency after vasectomy reversal.** ***(Strong Recommendation; Evidence Level: Grade B)***

Intraoperative gross and microscopic vasal fluid evaluation are useful tools in aiding intraoperative decision-making for whether to perform vasovasostomy or vasoepididymostomy.

The use of a bench microscope to microscopically evaluate the presence of sperm in the vasal fluid from the testicular end of that vas deferens is highly recommended during vasectomy reversal. The presence of sperm in the vasal fluid is the best intraoperative predictor of vasectomy reversal success.[113, 115, 123] If sperm are not seen initially on microscopic examination, additional samples from the vas deferens should be evaluated looking for sperm or sperm parts. The presence of clear copious fluid also should prompt the surgeon to perform a vasovasostomy, even if no sperm are seen.

If no sperm are found in the vasal fluid and there is lack of clear copious fluid emanating from the testicular end of the vas deferens, then the surgeon should perform vasoepididymostomy.

Gross vasal fluid quality,[116, 118, 119, 124] gross epididymal fluid quality,[125] location of prior vasectomy,[112] and type of anesthesia[116] used during the procedure are not predictive of patency or pregnancy outcomes, though studies are limited.

24. **Surgeons should perform a microsurgical vasovasostomy using a modified one-layer or a two-layer anastomosis based on surgeon preference.** ***(Moderate Recommendation; Evidence Level: Grade C)***

Several techniques for vasovasostomy have been described. These include two-layer and modified one-layer microsurgical approaches, two-layer and one-layer macrosurgical or loupe-assisted approaches, and robotic-assisted approaches. The one-layer approach involves using multiple interrupted permanent sutures full-thickness through the adventitial, muscular, and mucosal layers of the vas deferens in an evenly distributed circumferential manner. The modified one-layer approach involves the same steps described for the one-layer approach with the addition of multiple adventitial interrupted sutures in the gaps between the full-thickness sutures. The two-layer approach involves the placement of evenly distributed mucosal sutures followed by muscular circumferential sutures in two separate layers. These approaches can be performed with the assistance of the surgical microscope, surgical loupes, or robotic surgical systems.

When comparing surgical approaches for vasovasostomy, effectiveness can be defined by patency and/or pregnancy rates. The largest study to date demonstrating patency and pregnancy rates using the microsurgical approach was published in 1992.[116] The authors demonstrated high patency and pregnancy rates for microsurgical vasectomy reversal (**Table 4**). Studies comparing surgical technique and magnification are limited by small comparative populations and biases.[126-131] Despite these limitations, published data do not prove that the surgical technique and the use of microscopic assistance affect patency or pregnancy rate. The Panel favors the microsurgical approach given that there are more substantial data supporting successful vasectomy reversal with this approach.

Table 4: Obstructive interval versus postoperative result for first reversals

Obstructive Interval (Years)*	Number of patients with sperm in semen/ total number in group (%)	Number of achieving pregnancy/ total number in group (%)
<2	38/39 (97)	23/31 (74)
2	48/50 (96	33/43 (77)
3	63/74 (85)	31/56 (55)
4	103/112 (92)	49/86 (57)
5	97/112 (87)	44/89 (49)
6	83/95 (87)	40/74 (54)
7	88/100 (88)	44/87 (51)
8	91/107 (85)	45/86 (52)
9	46/60 (77)	20/46 (43)
10	65/85 (76)	30/70 (43)
11	39/51 (76)	16/40 (40)
12	29/34 (85)	7/25 (28)
13	15/17 (88)	14/19 (74)
14	11/14 (79)	5/9 (55)
≥15	32/45 (71)	11/37 (30)
*Obstructive interval equals nearest completed year from vasectomy to reversal.		

Reproduced with permission from *J. Urol.* Belker et al., Table 3[116]

25. Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. *(Expert Opinion)*

Vasectomy reversal mandates an intra-operative decision regarding the type of reconstruction (vasovasostomy versus vasoepididymostomy) that should be based on the intra-vasal fluid appearance and microscopic examination of the fluid. It is the opinion of the Panel that surgeons offering vasectomy reversal should have the microsurgical skillset to perform both a vasovasostomy and a vasoepididymostomy since the decision as to which procedure is needed is made intra-operatively. The diminutive size of the epididymal tubules requires microscopic amplification to perform an effective vasoepididymostomy.

26. Surgeons may perform vasoepididymostomy using longitudinal intussusception, triangulation intussusception, end-to-end anastomosis, or end-to-side anastomosis. *(Conditional Recommendation; Evidence Level: Grade C)*

Vasoepididymostomy is regarded as the most technically challenging operation in reproductive urology. Several techniques have been described for vasoepididymostomy. Longitudinal intussusception involves the pre-placement of two double-armed microsurgical sutures longitudinally through the epididymal tubule. The epididymal tubule is punctured and the fluid is examined for sperm or sperm parts. The microsurgical sutures are then passed through the vasal mucosa and muscular layers in an “inside-out” fashion, distributed equally around the circumference of the vas. This maneuver leads to intussusception of the epididymal tubule into the lumen of the vas deferens. The triangulation intussusception technique is similar except that three double-armed microsurgical sutures are placed in a triangular fashion through the epididymal tubule and then intussuscepted into the lumen of the vas. The end-to-side anastomosis is performed by approximating the vasal lumen to an identified opening in the epididymal tubule whereas end-to-end anastomosis requires the creation of a cross-sectioned epididymal tubule through which interrupted microsurgical sutures are placed circumferentially. A single non-randomized cohort study has compared the effectiveness of these techniques; however, the small sample sizes limited the ability to determine any differences in outcome amongst the techniques.[132]

FUTURE DIRECTIONS

Although this Guideline demonstrates substantial progress since the initial publication of the 2012 AUA Vasectomy Guideline, there are many areas where gaps of knowledge persist.

With respect to patient evaluation and counseling, this Guideline addresses the safety and efficacy of vasectomy as a permanent contraception method. For patients in a heterosexual relationship, the decision-making process is highly variable. Despite data showing that vasectomy has a lower failure rate than tubal ligation and is very safe, many couples still decide to proceed with tubal ligation. This occurs both in the United States and around the world. There may be cultural, religious, reliability factors, and access to care that influence these couples in this shared decision-making process. Nevertheless, male patients appear to be taking more responsibility for family planning. Patient education studies could help promote more interest in vasectomy. Education of couples with respect to the value of vasectomy for permanent contraception may aid couples' decision-making process. Partnering with obstetrics and gynecology colleagues may be beneficial in this process of patient education. In the era of direct-to-consumer care for medical needs, taking information directly to couples may be a better approach to promulgate accurate information on the safety and efficacy of vasectomy.

Patient requests for vasectomy are occurring at an earlier age, and data on patient choice for permanent contraception are limited. The consequences of early vasectomy choice have also not been well studied. Regret regarding vasectomy choice is an area where data are lacking. Regret can be based on post-operative pain, need for reversal, or general regret. Relevant factors may include age less than 30, lack of information about reversibility, high impulsivity score, lower education level, involvement with a responsible partner, and child status.[133]

The published literature speaks volumes about the utilization of MC and FI in techniques for vas occlusion. Published data with only ligation and excision have shown much higher failure rates, although these techniques have historically been commonly used for vasectomy in the United States. One goal of this Guideline is to promulgate information on the effectiveness of MC and FI for vas occlusion.

Large well-designed studies on failures and complications are needed to evaluate outcomes after:

1. Extensive electrocautery (MSI technique with or without division) versus MC and FI
2. Mucosal electrical versus thermal cautery
3. MC with and without FI
4. FI technique (clips, free tie, suture with needle)
5. FI without MC with and without folding back of one or both segments
6. Open-ended versus closed-ended vasectomy
7. Excision versus no excision of vasal segments

Further, there is a need for well-designed observational studies on how the differences encountered when performing the same technique (e.g., length of cauterized vas segment and volume of tissues included in FI) influence the risk of failure and of complications (non-infectious inflammation, painful granuloma, and congestive epididymitis).

PVSA testing is probably one of the most controversial topics in vasectomy care at the time of writing this Guideline. Compliance with obtaining PVSA samples is far from 100% in routine practice. Analysis of fresh versus "mail-in" and laboratory versus "home testing" are both areas that are evolving. The current Guideline changes the paradigm to allow evaluation of semen samples more than 2 hours after collection with mail-in testing.

If failure rates are so low for occlusive techniques such as combined MC and FI, is a PVSA needed? Failure rates without PVSA testing are similar to those achieved with perfect use of oral contraceptives (99%) and far better than with typical use of oral contraceptives (91%).[134] Some patients may be willing to accept the low risk of pregnancy after vasectomy alone when given this information rather than pursue PVSA.

If one agrees that PVSA is recommended, then optimizing compliance becomes important. As stated in the body of the Guideline, data are conflicting on whether the availability of home semen analysis kits increases compliance with PVSA testing.

In addition, many variables can affect whether a patient provides a PVSA. Future studies evaluating factors like "providing a cup," scheduling a post op visit, travel distance for fresh semen analysis, method of PVSA

testing, test location (home versus lab), timing of test (fresh versus mail-in), increased "touch points" or reminders via email/text to complete the test, and pre-procedure payment for testing, will all be important to consider in order to optimize compliance with PVSA .[95, 135, 136] Lastly, patient comfort with "relative risk" of failure using non-azoospermic criteria for clearance need to be addressed.[137] What are the failure rates with 250,000 RNMS, 500,000 RNMS or 1 million RNMS? Shared decision-making between the provider and patient for relative risks based on hard data will be important in the future. At present, most studies report about a 50% compliance rate for a single PVSA. Optimization of compliance is critical to assess overall vasal occlusive rates and allay fears of some patients.

There is no discussion in this Guideline on non-surgical male contraceptive options. This area of research includes less invasive procedures, as well as hormonal and non-hormonal male contraceptive protocols that are experimental to-date.[138] Hormonal agents investigated include 7α-methyl-19-nortestosterone (MENT), DMAU, 11β-MNTDC, and the combination of segesterone acetate with testosterone in gel form. These agents show promise due to their ability to suppress the gonadotropins FSH and LH, resulting in suppression of spermatogenesis with minimal side effects. Rebound of sperm production after treatment has also been studied. Among the agents evaluated, oral DMAU, 11β-MNTDC, and the segesterone acetate–testosterone gel have the greatest potential for male hormonal contraception since they are efficacious, easy to administer, highly reversible and have favorable safety profiles. Phase 3 hormonal contraception trials are in progress.[139]

Non-hormonal contraceptive approaches are topics of active investigation. They target key elements of spermatogenic function, including the acrosome reaction (e.g., with ADCY inhibitors), basic spermatozoal function (e.g., BRDT, HIPK4), and disruption of sperm production, (e.g., with retinoic acid antagonists).[140] Most of these agents have only been tested in pre-clinical models, and issues regarding effectiveness, reversibility and tolerability have not been fully investigated.

Interventional procedures including percutaneous intra-vasal injection of hydrogel and other materials have the ability to induce short- or long-term contraception without surgery. These procedures include Reversible Inhibition of Sperm Under Guidance (RISUG) that results in gel binding to the wall of the vasal lumen, with the injected agents disrupting the membrane of spermatozoa, disabling enzymes involved with fertilization, and resulting in only dysfunctional spermatozoa in the ejaculate.[141] The implant can be reversed by intra-vasal injection of another substance to remove the gel. A similar hydrogel with complete blockade of the vas lumen and possibility of removing the gel, and a shorter acting hydrol with efficacy for two years are under development in USA.

This Guideline addresses restoration of fertility after vasectomy for the first time. A review of the pertinent literature on this topic identified some important issues that will need to be delineated in the future. There are no published data regarding what microsurgical expertise is necessary to provide vasectomy reversal surgical care; as such, this information is provided as Expert Opinion in this Guideline. With this gap in knowledge, success rates of vasoepididymostomy are based mostly on single series with non-randomized data to evaluate results. Many practitioners who perform only vasovasostomies might report their data of outcomes with vasovasostomy despite typical indications for need for vasoepididymostomy, such as increased obstructive interval, no sperm seen with vasal fluid sampling, inspissated vasal fluid at time of reversal, and epididymal induration. In addition, a single surgeon randomized trial of different microsurgical techniques would be valuable to determine if one technique is better than the others. Although expertise in vasoepididymostomy is recommended for the surgeon offering vasectomy reversal, the number of urologists with such expertise in the United States is limited. Many urologists offering vasectomy reversal today do not have training or experience in performance of vasoepididymostomy despite the value of this procedure for a substantial number of men undergoing attempted vasectomy reversal.

What is the best option for fertility after vasectomy? There are limited data in comparative trials to assess different interventions, and assisted reproduction as well as microsurgical reconstructive results can vary greatly at different centers. Further, a randomized trial may be difficult to accrue. However, a randomized trial comparing vasectomy reversal versus sperm retrieval and ICSI would be a valuable study. This would need to be performed in a health system that offers both options without cost limitations and control for patient and partner age/type of anastomosis (vasovasostomy versus

vasoepididymostomy) and delay of cross-over for periods of time that may limit patient acceptance.

Finally, this Guideline addresses post vasectomy pain syndrome as part of the preoperative counselling of patients considering vasectomy. The incidence of post vasectomy pain syndrome that is persistent and affects QOL is typically reported to be about 1-2%.[142] This important topic is addressed in the AUA Guideline on Chronic Pelvic Pain (Part III).[88] Reassurance and good bedside manner are important elements of maintaining an effective patient-physician relationship for management of this syndrome. Future studies directed towards identifying the cause(s) of pain, diagnostic evaluation and effective treatment are needed.

ABBREVIATIONS

95% CI	95% confidence interval
ART	assisted reproductive technologies
ASRM	American Society of Reproductive Medicine
AUA	American Urological Association
CAD	coronary artery disease
CCT	controlled clinical trial
FI	fascial interposition
HR	hazard ratio
ICSI	intracytoplasmic sperm injection
IUI	intrauterine insemination
IVF	*in vitro* fertilization
IVT	incisional vasectomy technique
LIA	local infiltration of anesthesia
MC	mucosal cautery
MI	myocardial infarction
MIV	minimally-invasive vasectomy
MSI	Marie Stopes International
NSAID	non-steroidal anti-inflammatory drug
NSV	no-scalpel vasectomy
OR	odds ratio
PGC	Practice Guidelines Committee
PVSA	post-vasectomy semen analysis
QOL	quality of life
RCT	randomized controlled trial
RISUG	reversible inhibition of sperm under guidance
RNMS	rare, non-motile sperm
RR	relative risk
SCB	spermatic cord block
SQC	Science & Quality Council
SSI	surgical site infection
VAS	Visual Analogue Scale

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CONFLICT OF INTEREST DISCLOSURES

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Consultant/Advisor: Honig, Endo, Coloplast, HIMS, Winfertility, Infertility, Haleon, Tolmar; **Labrecque,** Signati Medical, Next Life Sciences; **Schlegel**, Theralogix, Roman Health, Posterity Health, Igyxos, ReproNovo, Xenetic Biosciences; **Tanrikut,** PSFertility; **Vij**, Swiss Precision Diagnostics, Marius Pharmaceuticals

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DISCLAIMER

This document was written by the Vasectomy Panel of the American Urological Association Education and Research, Inc., which was created in 2023. The PGC of the AUA selected the Panel Chair. Panel members were selected by the Panel and PGC Chair following an open application process.

Membership of the Panel included specialists in urology with specific expertise on this disorder. The mission of the Panel was to develop recommendations that are analysis based or consensus based, depending on Panel processes and available data, for optimal clinical practices in vasectomy.

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While this guideline does not necessarily establish the standard of care, AUA seeks to recommend and to encourage compliance by practitioners with current best practices related to the condition being treated. As medical knowledge expands and technology advances, the guidelines will change. Today these evidence-based guidelines statements represent not absolute mandates but provisional proposals for treatment under the specific conditions described in each document. For all these reasons, the guidelines do not pre-empt physician judgment in individual cases.

Treating physicians must take into account variations in resources, and patient tolerances, needs, and preferences. Conformance with any clinical guideline does not guarantee a successful outcome. The guideline text may include information or recommendations about certain drug uses ("off label") that are not approved by the Food and Drug Administration (FDA), or about medications or substances not subject to the FDA approval process. AUA urges strict compliance with all government regulations and protocols for prescription and use of these substances. The physician is encouraged to carefully follow all available prescribing information about indications, contraindications, precautions and warnings. These guidelines and best practice statements are not intended to provide legal advice about use and misuse of these substances.

Although guidelines are intended to encourage best practices and potentially encompass available technologies with sufficient data as of close of the literature review, they are necessarily time-limited. Guidelines cannot include evaluation of all data on emerging technologies or management, including those that are FDA-approved, which may immediately come to represent accepted clinical practices. For this reason, the AUA does not regard technologies or management which are too new to be addressed by this guideline as necessarily experimental or investigational.

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APPENDIX A

Figure 1: Meta-analysis of the association between vasectomy and prostate cancer: Subgroup analysis by study design

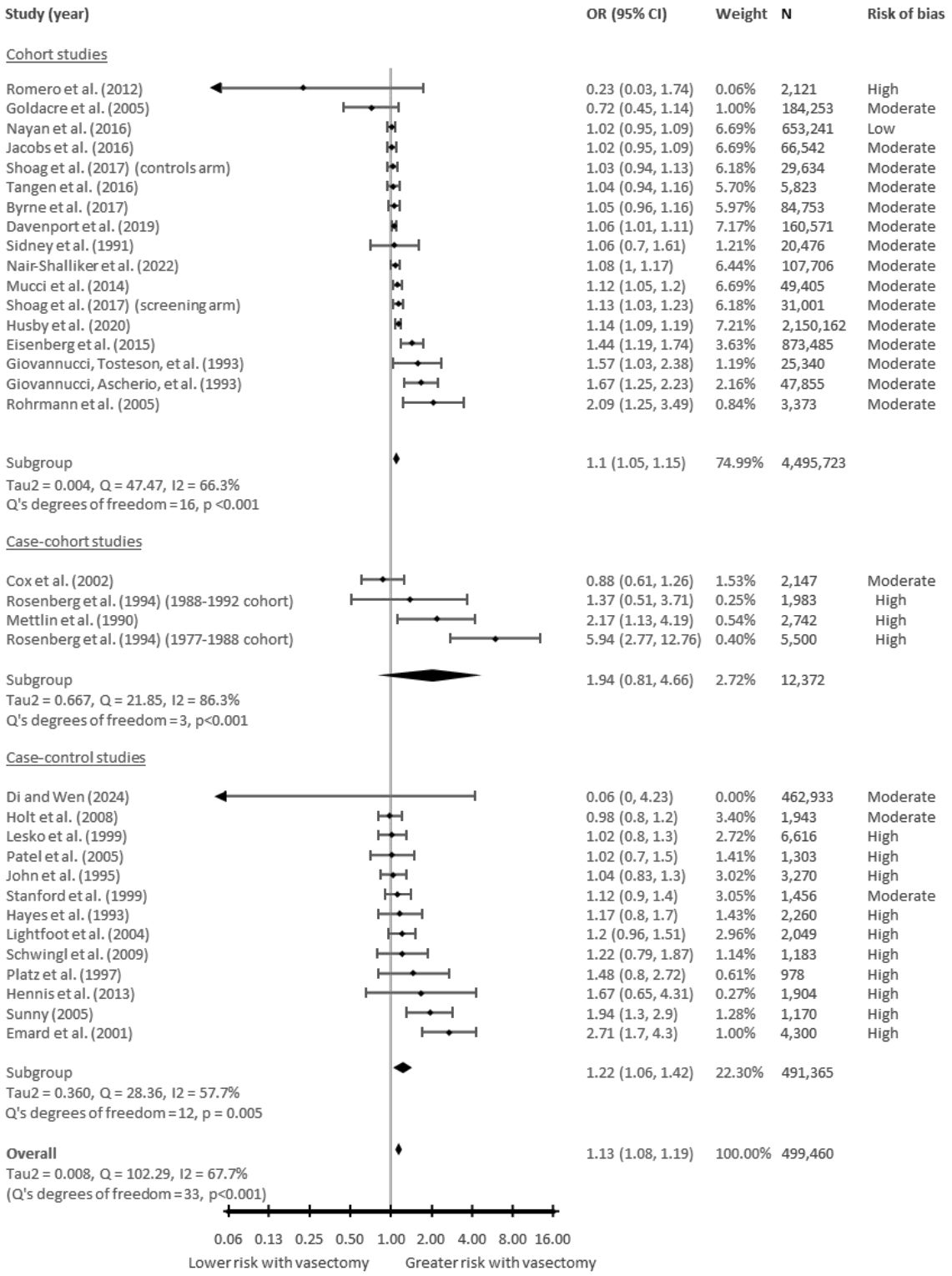
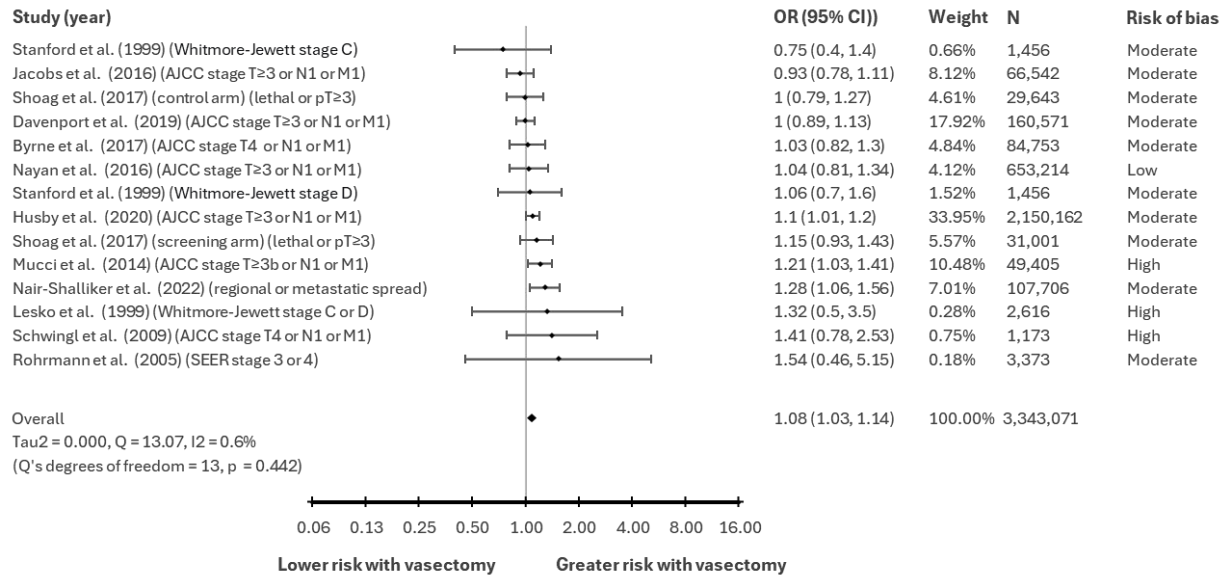
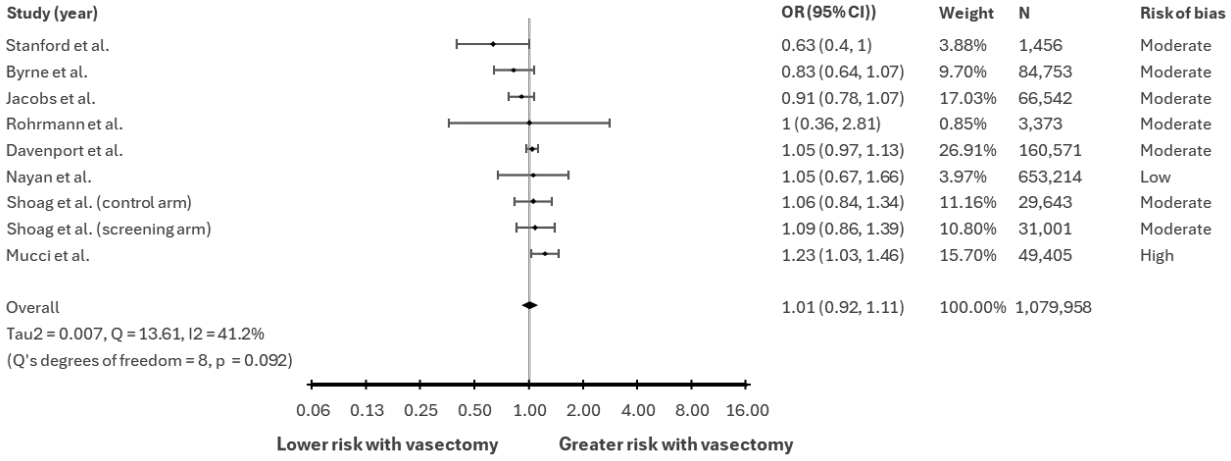


Figure 2A: Meta-analysis of the association between vasectomy and locally advanced or metastatic prostate cancer



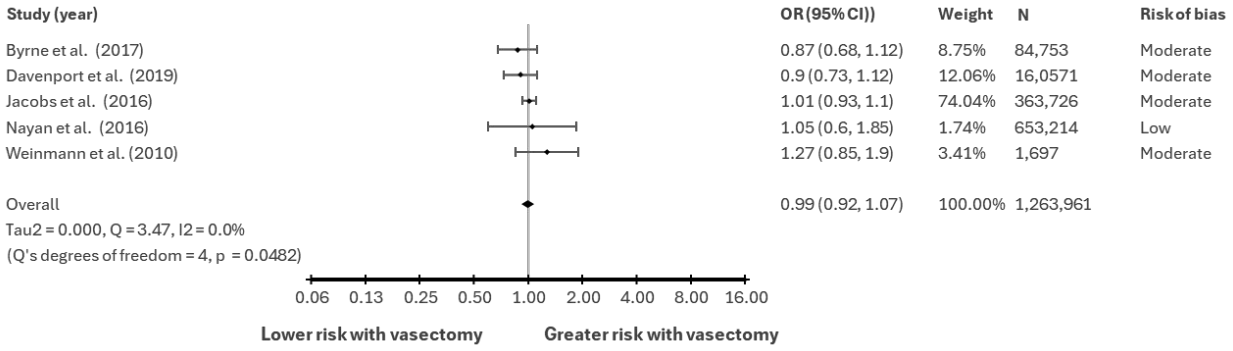
CI, confidence interval; OR, odds ratio; Q, Chi-squared statistic; Tau2, tau-squared statistic; I2, heterogeneity index. Risk of bias is according to the Quality in Prognostic Studies tool.

Figure 2B: Meta-analysis of the association between vasectomy and high-grade (Gleason score >7) prostate cancer



CI, confidence interval; OR, odds ratio; Q, Chi-squared statistic; Tau2, tau-squared statistic; I2, heterogeneity index. Risk of bias is according to the Quality in Prognostic Studies tool.

Figure 2C: Meta-analysis of the association between vasectomy and prostate cancer mortality



CI, confidence interval; OR, odds ratio; Q, Chi-squared statistic; Tau2, tau-squared statistic; I2, heterogeneity index. Risk of bias is according to the Quality in Prognostic Studies tool.

APPENDIX B

Table 3. Risk of occlusive failure in comparative studies published after 1990 according to occlusion techniques and risk of bias

Study	Occlusion technique n/N (%)							
	L+E	L+E+FI-T1	EC+E+FI-T1	L+E+FI-T2	MC± E ± FI-T2/A	MC+FI-A-C	MC+FI-A-O	Risk of Bias
Altok[143]		5/66 (7.6)	4/59 (6.8)					High
Labrecque[83]	126/1453 (8.7)						3/1165 (0.3)	High
Li*[85]	6/427 (1.4)	10/380 (2.6)			21/442 (4.8)			High
Moss[84]						1/3081 (0.03)	1/3103 (0.03)	High
Shakeri[86]	13/228 (5.7)			0/954 (0)				High
Sokal[80]	53/416 (12.7)	24/410 (5.9)						Low
Sokal[79]		20/410 (4.9)			4/389 (1.0)			High

L+E= Ligatures of vas deferens with suture or clips + excision of a small segment (~1 cm)

L+E+F1-T1= Ligatures of vas deferens with suture or clips +excision of a small segment (~1 cm) + fascial interposition covering the testicular segment with a ligature applied on the abdominal segment.

EC+E+FI-T1 = Extremities of both ends of the divided vas cauterized using a bipolar electrocautery + excision of a small segment (~1 cm) + fascial interposition covering the testicular segment with a ligature applied on the abdominal segment.

L+E+FI-T2 = Ligatures of vas deferens with suture or clips with excision of a small segment (~1 cm) + fascial interposition covering the testicular segment with ligation of the fascia.

MC± E± FI-T2/A= Mucosal cautery of one or both vas segments of the divided vas using thermal cautery ± excision of a small segment (1-2 cm) ± fascial interposition covering the testicular or abdominal segment with ligation of the fascia with metal clip/suture.

MC+FI-A-C =Mucosal cautery of both vas segments of the divided vas using thermal cautery + fascial interposition covering the abdominal segment with ligation of the fascia with metal clip/suture material

MC+FI-A-O =Mucosal cautery of abdominal vas segment with testicular end left open(open-end) using thermal cautery without excision of vas segment + fascial interposition covering the abdominal segment with ligation of the fascia with metal clip/suture material

* The Li et al. study compared seven combinations of occlusion technique, but only three were included in the table because of the lack of precision or relevance of the techniques presented.

AUA 2026 Washington, DC MAY 15-18

Vasectomy Course: Highlights of Important Changes

Stanton Honig MD
Faculty Chair
Guideline Panel Member, Vasectomy Guideline (2026), (2012)

Professor of Urology
Yale School of Medicine
New Haven CT

Disclosures-2026

- AUA Vasectomy Guidelines committee
- Stock Holder
  - **Fellow**, Posterity Health
- Consultant/Lecturer/Advisory Board
  Coloplast, HIMS, Haleon, Tolmar, Win

Old vs New

Old Guidelines

- Technique: Most are okay despite data
- No need to discuss Prostate cancer
- PVSA only fresh

New Guidelines

- Mucosal Cautery with and without Fascial interposition
- Need to review prostate cancer risk
- PVSA fresh or mail in
- Fertility after vasectomy
- Antibiotics
- Pain control

Highlights and Important Changes

Surgical Technique: Mucosal Cautery and Fascial Interposition

Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)*

Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)*

Highlights and Important Changes

- **Post Vasectomy Semen Analysis (PVSA) Testing**

- **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing. *(Conditional Recommendation; Evidence Level: Grade C)***

- **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 nonmotile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection; *(Conditional recommendation; Evidence Level: Grade B)* A sample evaluated >2 hours after collection should show azoospermia to stop contraception. *(Expert Opinion)***

Highlights and Important Changes

Fertility after Vasectomy

Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. ***(Expert Opinion)***

Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. ***(Expert Opinion)***

Highlights and Important Changes

Fertility after Vasectomy

Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. ***(Expert Opinion)***

Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. ***(Expert Opinion)***

Antibiotics

- **Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection.** ***(Expert Opinion)***

- The AUA's Clinical Consensus Statement on Urologic Procedures and Antimicrobial Prophylaxis

- Clean Case – low risk of infection in healthy patient
- ***Can use in rare cases of the immunosuppressed, DM etc***

Analgesics and Vasectomy

- **Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories) for post-operative pain control. *(Expert Opinion)***

Vasectomy and Post op Pain

An Opioid Prescription for Men Undergoing Minor Urologic Surgery Is Associated with an Increased Risk of New Persistent Opioid Use

Blayne Welk [a, b, c], J. Andrew McClure [b], Collin Clarke [d], Kelly Vogt [a], Jeffrey Campbell [a]

Primary outcome: evidence of at least two opioid prescriptions filled 9–15 mo after urologic surgery.

Secondary outcome was admission for opioid overdose.
91, 000 men (78% vasectomy) at 1 year

OR 1.4 of long term opioid use if filled an opioid prescription
OR 3 for opioid overdose

Vasectomy and Post op Pain

Routine Prescription of Opioids for Post-Vasectomy Pain Control Associated with Persistent Use

David W. Barham,* Leah P. McMann, John E. Musser, John Q. Schisler, Ryan W. Speir, Seth P. Olcese, Joseph R. Sterbis, Timiyin M. E-Nunu and George B. Stackhouse

From the Division of Urology, Department of Surgery, Tripler Army Medical Center, Honolulu, Hawaii

J Urol 2019
228 pts
7.8% vs 1.5 % (Persistent opioid use)
in the opioid group vs. non opioid group
At 3-6 months
No difference in scrotal pain

Vasectomy: Opioid Use (ASA-EAS)

-
- We **suggest** that post vasectomy pain control should be managed with non-opioid medication unless complications arise.
- Clinicians should weigh the need for **pain control versus potential abuse** of opioids in their decision-making process for post operative pain control
- ⊕⊕OO low quality evidence

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CLINICAL PRACTICE GUIDELINES

ANDROLOGY WILEY

Practice and development of male contraception: European Academy of Andrology and American Society of Andrology guidelines

Christina Wang[1] | Maria Cristina Meriggiola[2] | John K. Amory[3] | Christopher L. R. Barratt[4] | Hermann M. Behre[5] | William J. Bremner[3] | Alberto Ferlin[6] | Stanton Honig[7] | Zsolt Kopa[8] | Kirk Lo[9] | Eberhard Nieschlag[10] | Stephanie T. Page[11] | Jay Sandlow[12] | Regine Sitruk-Ware[13] | Ronald S. Swerdloff[14] | Frederick C. W. Wu[15] | Dimitrios G. Goulis[16]

Highlights and Important Changes

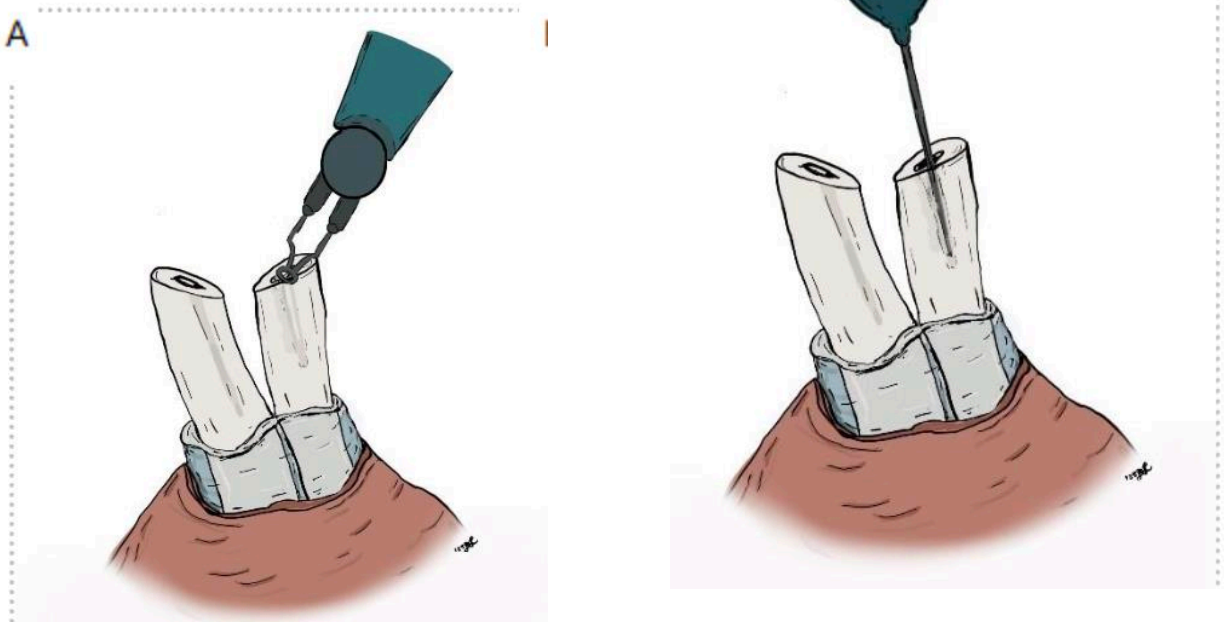
Surgical Technique: Mucosal Cautery and Fascial Interposition

Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)*

Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)*

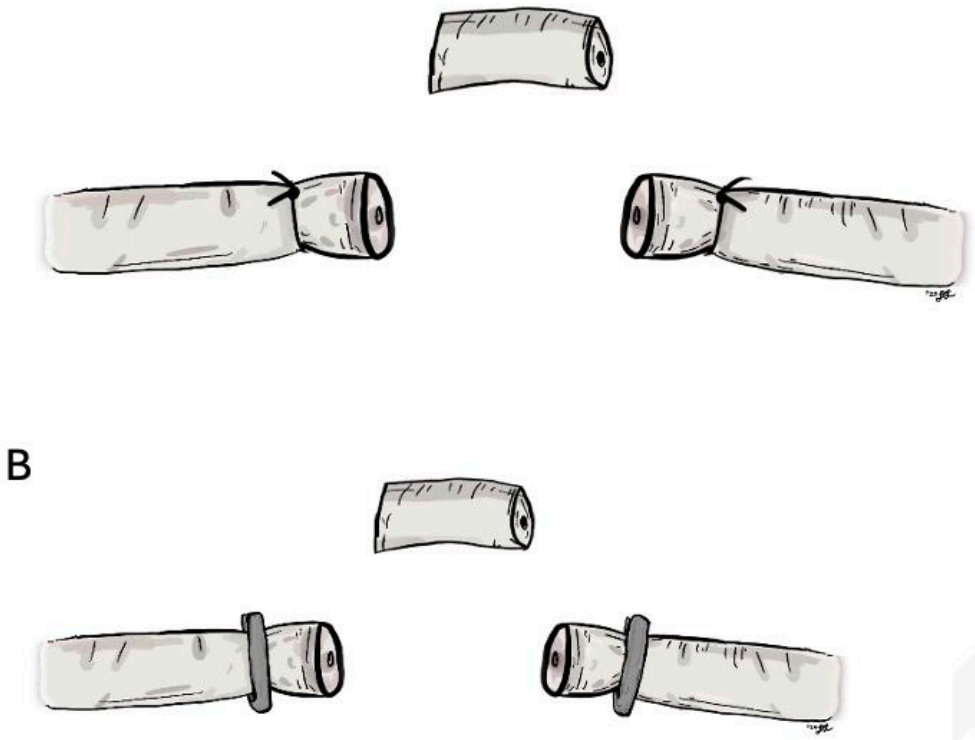
- **Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)***

Figure 6. Mucosal Cautery*



Surgical Technique : Ligation Alone

- **Surgeons should NOT perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)***



- ***NO!!***

Highlights and Important Changes: PVSA

- **PVSA Testing**

- **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing.** ***(Conditional Recommendation; Evidence Level: Grade C)***

- **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 nonmotile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection;** ***(Conditional recommendation; Evidence Level: Grade B)*** ***A*** **sample evaluated >2 hours after collection should show azoospermia to stop contraception.** ***(Expert Opinion)***

- ***This is new !***

Prior Guidelines: Mail-in Semen Analyses: Is this okay?

AUA Guidelines:
Body

- Some clinicians recommend for convenience and compliance reasons, that PVSA specimens can be sent by mail (following regulations regarding shipping biohazards). **This approach is adequate to assess only the presence or absence of sperm.** Motility cannot be evaluated reliably in a semen sample produced more than two hours before microscopic examination.

- So, this **IS** saying that Mail-in Testing is okay to identify sperm: yes or No **ONLY**.
- Does not check for motility !!!!!!

IP 18-28: Is A Fresh Semen Analysis Necessary For A Post Vasectomy Semen Analysis?

Assessment of Stability of Sperm Concentration over a 10-day Time Frame as a Model for Post Vasectomy Semen Analysis Using the Fellow System

Ellen M. Cahill, MD[1], Stanton C. Honig, MD[1], Sharath S. Reddy, MD[1], Andrew Fernandez, CLS[2], Terri Schroeder, CLS[2], Inderpreet Kaur, CLS[2], Elsa Chen, CLD[2], Andre Belarmino, MD[3], Akanksha Mehta, MD[4], Daniel Civello, CLS[2], Stacey Kenfield, ScD[5], Daniel Nolte, MS[2], James F. Smith, MD[5], Katherine Rotker, MD[1]

[1]Yale University School of Medicine, New Haven, CT ; [2]Fellow Health, San Leandro, CA; [3]UCLA Medical Center, Los Angeles, CA; [4]Emory University, Atlanta, GA; [5]UCSF, San Francisco, CA

Yale Medicine UROLOGY

Yale SCHOOL OF MEDICINE
Department of Urology

Introduction

- AUA guidelines recommend patients stop using other methods of contraception when examination of one uncentrifuged, fresh post-vasectomy semen specimen shows azoospermia or only rare non-motile sperm (RNMS)
- Guideline 11 states:

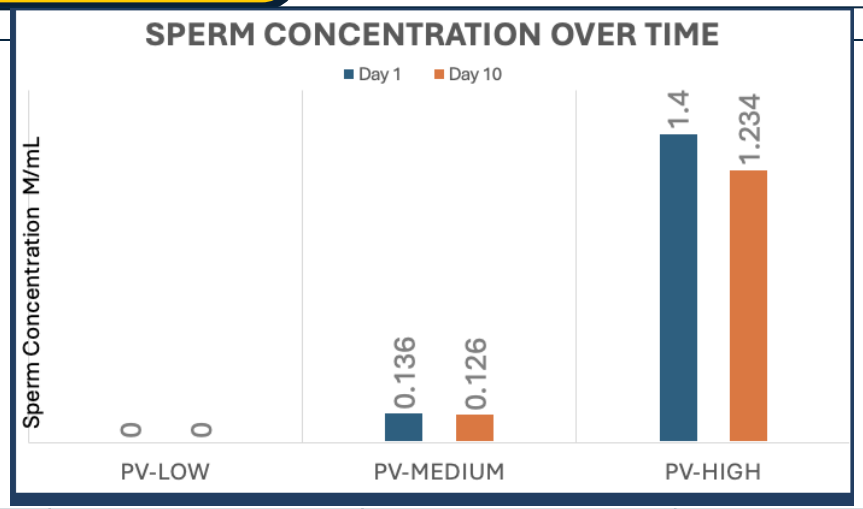
Some clinicians recommend for convenience and compliance reasons, that PVSA specimens can be sent by mail (following regulations regarding shipping biohazards). This approach is adequate to assess only the presence or absence of sperm.

- Fellow Post Vasectomy Semen Analysis (PVSA) is a mail-in semen analysis system in the United States
- While it is known that motility of sperm samples decreases with time, there is no published data on the stability of sperm sample concentration over time
- **We aimed to determine if any low concentration specimens reduced to zero when evaluated over a 10-**

Methods

- Fresh semen samples were diluted from higher concentrations to standard aliquots: 0 sperm (PV-low), 0.1M/mL (PV-medium), and 1M/mL (PV-high) and the Fellow PVSA preservation solution was added
- 20 replicates of each cellular concentration were created (total N=60) to accurately estimate concentration at each time point
- Sperm concentration was measured at 2 time points (Day 0 and Day 10)

Results



	PV-low	PV-medium	PV-high
Day 1	0	0.136 (SD: 0.026; min: 0.110; max: 0.161)	1.4 (SD: 0.250; min: 1.149; max: 1.650)
Day 10	0	0.126 (SD: 0.023; min: 0.103; max: 0.149)	1.234 (SD: 0.092; min: 0.142; max: 1.327)

No specimen went to concentration zero; p<0.001

Conclusion

- For men utilizing the Fellow PVSA preservation system, sperm concentration remains stable and none went down to ZERO from day 0 to at least day 10 after production
- **Urologists can feel confident that results from the Fellow PVSA accurately reflect their immediate fresh post-ejaculatory status regarding dropping to zero with delay in evaluation.**

IP 18-29: Mail-In Semen Analysis vs Fresh Sample for Post-Vasectomy Semen Analysis: Identifying an Efficient Approach to Achieving Post-Vasectomy Clearance

Ellen M. Cahill, MD[1], Stanton C. Honig, MD[1], Sharath S. Reddy, MD[1], Daniel Nolte, MS[2], Stacey Kenfield, ScD[3], Andre Belarmino, MD[2,4], Daniel Civello, CLS[2], James F. Smith, MD[3], Katherine Rotker, MD[1]

[1]Yale University School of Medicine, New Haven, CT ; [2]Fellow Health, San Leandro, CA; [3]UCSF, San Francisco, CA
[4]UCLA Medical Center, Los Angeles, CA

Yale Medicine UROLOGY

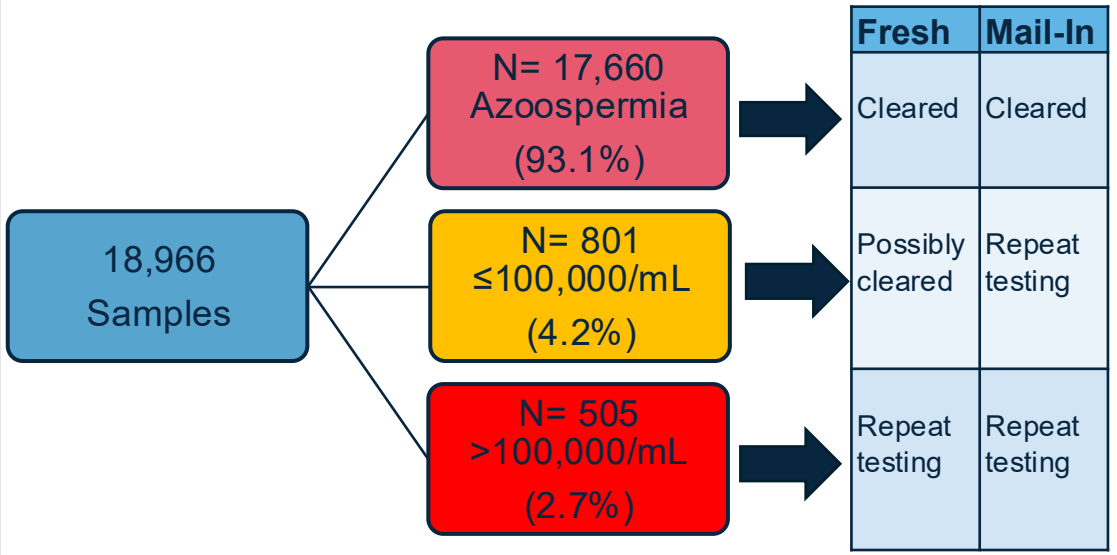
Introduction

- There has been a significant shift from standard fresh collection to mail-in collection for post-vasectomy semen analysis (PVSA)
- The 2015 AUA Vasectomy guidelines recommend that a fresh specimen be utilized and evaluated within 2 hours of collection, and that patients may be cleared based on azoospermia **OR** ≤100,000 rare non-motile sperm
- Limitations exist in measuring motility with a mail-in system
- Per AUA guidelines, mail-in testing may be utilized, though it is only adequate for clearing patients based on the presence or absence of sperm – the stricter of the two criteria
- **The objective of our study was to evaluate the % of patients that required repeat mail-in testing compared to a single, fresh PVSA sample**

Methods

- We evaluated all mail-in PVSA tests processed by Fellow Health, Inc. from April 2021 to March 2024
- We excluded samples collected within 8 weeks post-vasectomy, re-tests, samples collected where time from vasectomy was not recorded, and samples where clear inaccurate information was self-reported
- Samples were classified as azoospermic, ≤100,000 cells/mL, or >100,000 cells/mL

Results



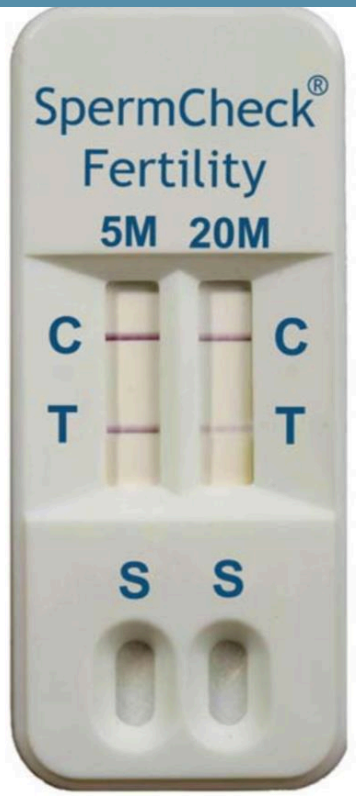
In 4.2% of cases a mail-in patient was required to re-test when they may have been cleared with a fresh sample based on concentration alone

Conclusion

- Only 4.2% of mail-in PVSA samples required additional testing based on concentration alone, which may have been cleared if those cells were non-motile on a fresh analysis
- **The Fellow system enables highly efficient PVSA clearance for patients and physicians with the added benefit of convenience with a mail-in approach**

Yale SCHOOL OF MEDICINE
Department of Urology

At Home Sperm Testing



Current Standing on Vasectomy?

NO !! For vasectomy

AUA-2
Washingt

ELSEVIER

Fertility and Sterility

Volume 115, Issue 4, April 2021, Page 882

Reflections

Clinical implications of home-based sperm testing

Thomas A. Masterson M.D. [a], Premal Patel M.D. [b] ✉

ASA-EAS

We **recommend** that **at-home** tests that measure sperm **concentration only** must be confirmed with a semen analysis by a laboratory to assess sperm

motility until more data become available, (1 ⊕⊕OO)

US Vasectony Guidelines say the same !

At Home Testing-Vasectomy

Table 2. *Proportion of post-vasectomy semen analyses with motile sperm according to sperm concentration*

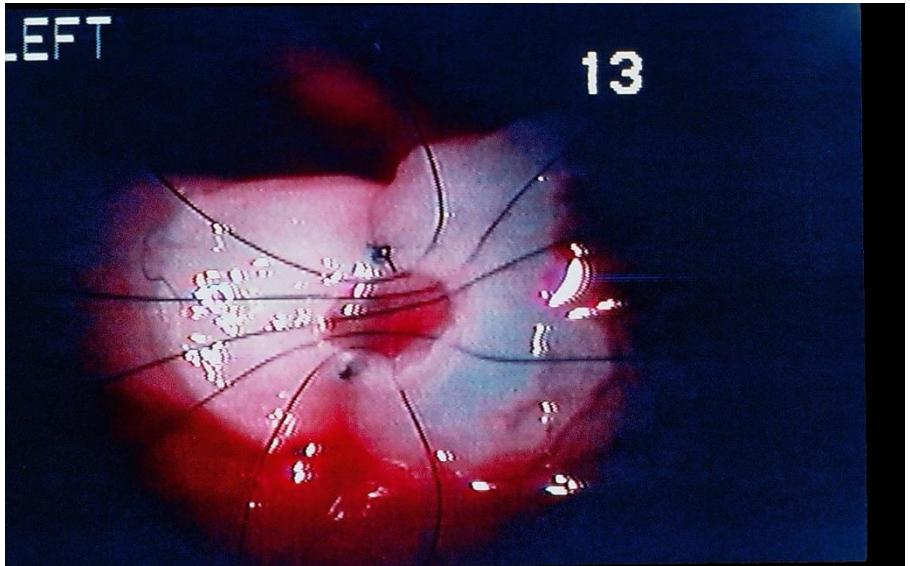
	Post-Vasectomy Semen Analyses with Motile Sperm					
	PVSAs Prescribed by any Physician (5,491)*			First PVSA Prescribed by Vasectomist (5,965) †		
Sperm Concentration per mL	No./Total No.	%	95% CI	No./Total No.	%	95% CI
None observed	0/4,069	0.0		0/3,808	0.0	-
100—999	4/1,313	0.3	0.1—0.8	3/1,249	0.2	0.05—0.7
1,000—9,999	16/594	2.7	1.6—4.3	10/520	1.9	0.9—3.5
10,000—99,999	9/193	4.7	2.2—8.7	4/148	2.7	0.7—6.8
100,000—249,999	3/52	[illegible]	1.2—16.0	2/35	5.7	0.7—19.2
250,000—499,999	4/54	7.4	2.1—17.9	3/41	7.3	1.5—19.9
500,000—999,999	7/54	13.0	5.4—24.9	5/41	12.2	4.1—26.2
1 million—9.9 million	45/95	47.4	37.0—57.9	36/78	46.2	34.8—57.8
10 million or more	62/67	92.5	83.4—97.5	40/45	88.9	76.0—96.3

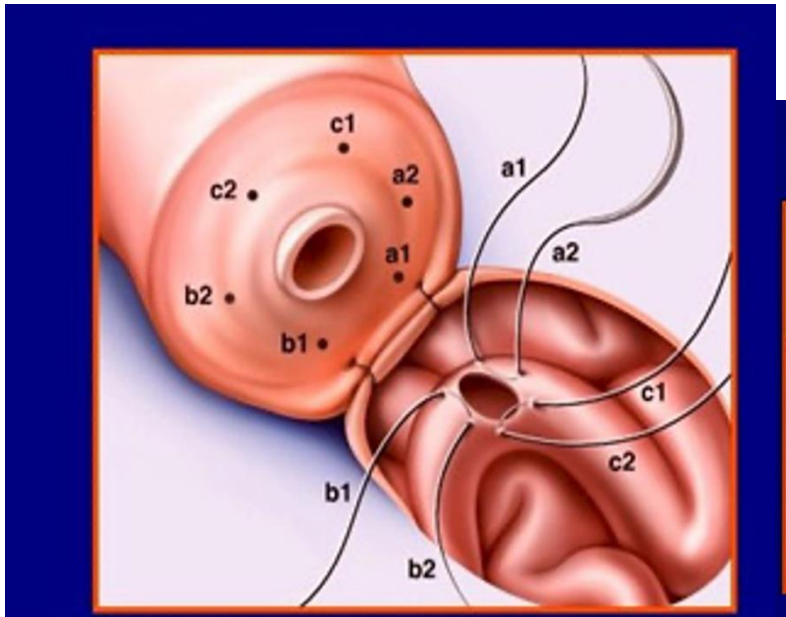
0.3% or 3/1000 would have a false negative
1/333 false negative

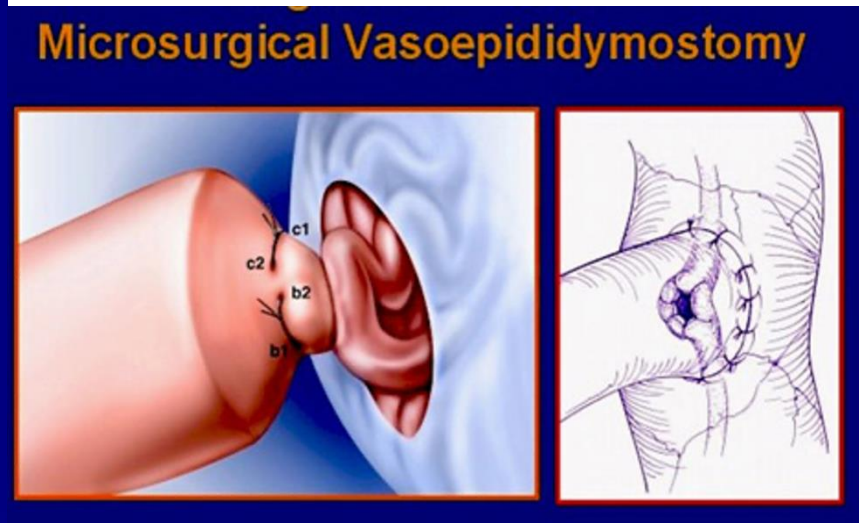
AUA 2026 Washington, DC MAY 15-18

Highlights and Important Changes Microsurgical Reconstruction

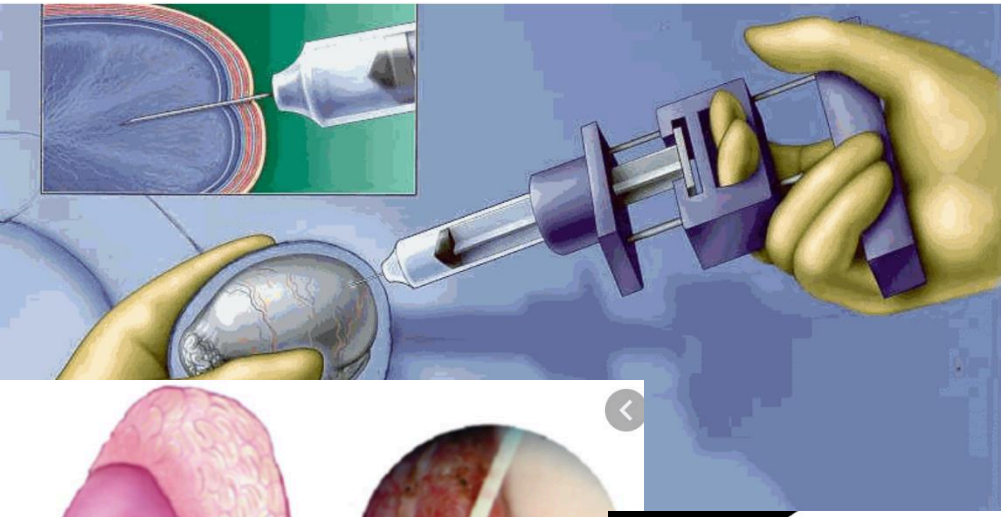
- ***Fertility after Vasectomy***
- **Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. *(Expert Opinion)***
- **Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. *(Expert Opinion)***

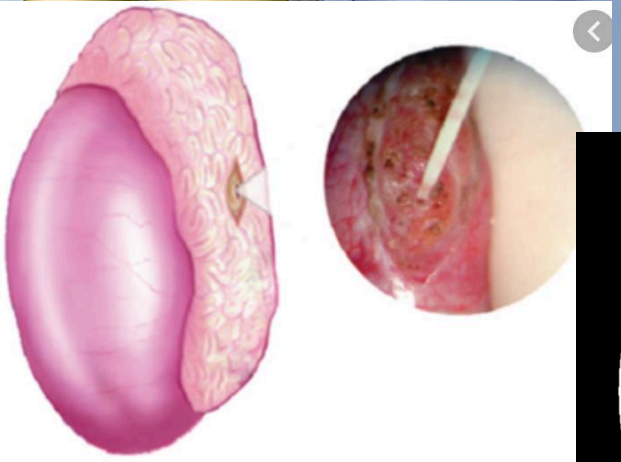


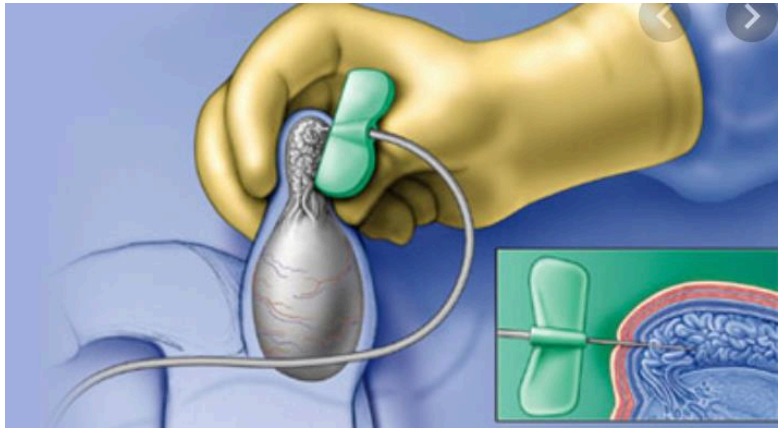


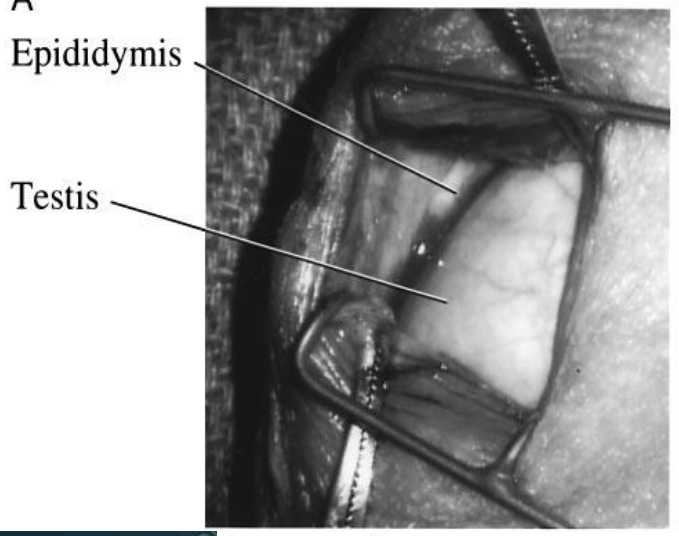


Sperm Extraction and ICSI









Major Changes and Highlights

- **Prostate Cancer**
- **Clinicians may inform patients that no causal link has been established between vasectomy and the development of prostate cancer. *(Conditional Recommendation; Evidence Level: Grade B)***

- **Clinicians may inform patients that no causal link has been established between vasectomy and development of high-grade prostate cancer or increased prostate cancer mortality. *(Conditional Recommendation; Evidence Level: Grade B)***

- **General:**
- **Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection. *(Expert Opinion)***

- **Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories) for post-operative pain control. *(Expert Opinion)***

Major Changes and Highlights

- **Surgical Technique**

- **Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)***

- **Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)***

Major Changes and Highlights

- **PVSA Testing**

- **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing. *(Conditional Recommendation; Evidence Level: Grade C)***

- **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 nonmotile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection; *(Conditional recommendation; Evidence Level: Grade B) A* sample evaluated >2 hours after collection should show azoospermia to stop contraception. *(Expert Opinion)***

Major Changes and Highlights

- ***Fertility after Vasectomy***

- **Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. *(Expert Opinion)***
- **Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. *(Expert Opinion)***

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Vasectomy Technique

Matt Coward, MD FACS

Guideline Panel Member, Vasectomy Guideline (2026)

Atlantic Fertility

Raleigh, NC, USA

University of North Carolina, Chapel Hill, NC, USA

Polling ARS Question

Your recently retired partner performed a vasectomy on a 37-year-old man using an incisional technique for isolation and excision of ~1 cm vasal segments and ligation with titanium clips for occlusion. His post-operative course was complicated by a moderate hematoma managed expectantly. He did not perform the recommended 12-week PVSA and called the office upset 5 months post-op because his wife was pregnant. A PVSA on a fresh sample at that time shows 2 million sperm per mL with some motile sperm.

What is the most likely cause of vasectomy <u>contraceptive</u> failure in this case?

A) Spontaneous late recanalization

B) Surgeon missed a duplicated vas on one side

C) Residual sperm in the vas after adequate vas occlusion

D) Incisional vas isolation approach with subsequent hematoma

E) Early recanalization

Why Did This Vasectomy Fail?

- **Early recanalization** is the most likely cause, with the ligation/excision occlusive technique being the most likely root cause of both occlusive and contraceptive failure
  - Simple ligation with suture or clips with excision of a short segment is associated with high occlusive failure rates
- Much less probable:
  - Late recanalization (failure after an occlusive success)
  - Surgical error to due to rare anatomical anomaly
  - Residual sperm at 5 months
  - Hematoma is unlikely to cause failure, although the incisional isolation technique carries significantly higher hematoma rates vs. less invasive approaches

Guideline: Vas Occlusion Technique

Guideline Statement 12:

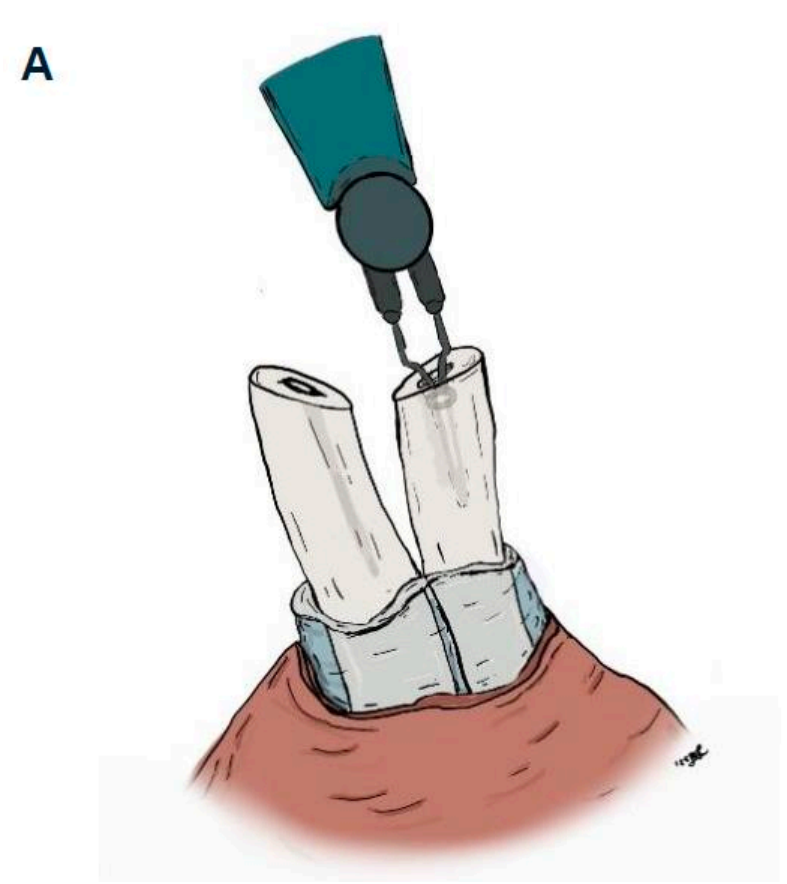
Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery (MC) and fascial interposition (FI). (Strong Recommendation; Evidence Level: Grade B)

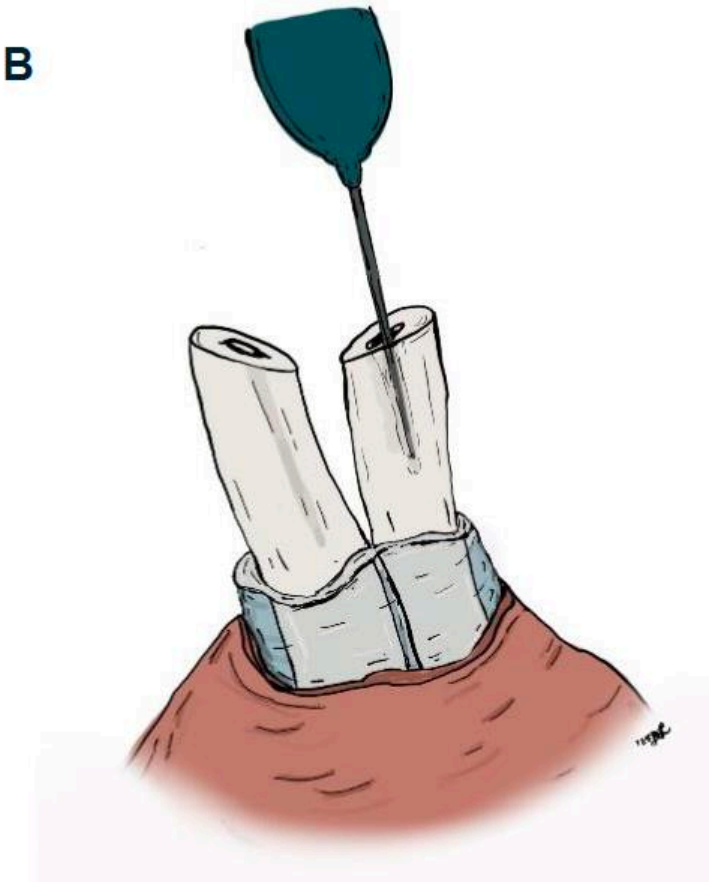
Guideline Statement 13:

Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment. (Strong Recommendation; Evidence Level: Grade A)

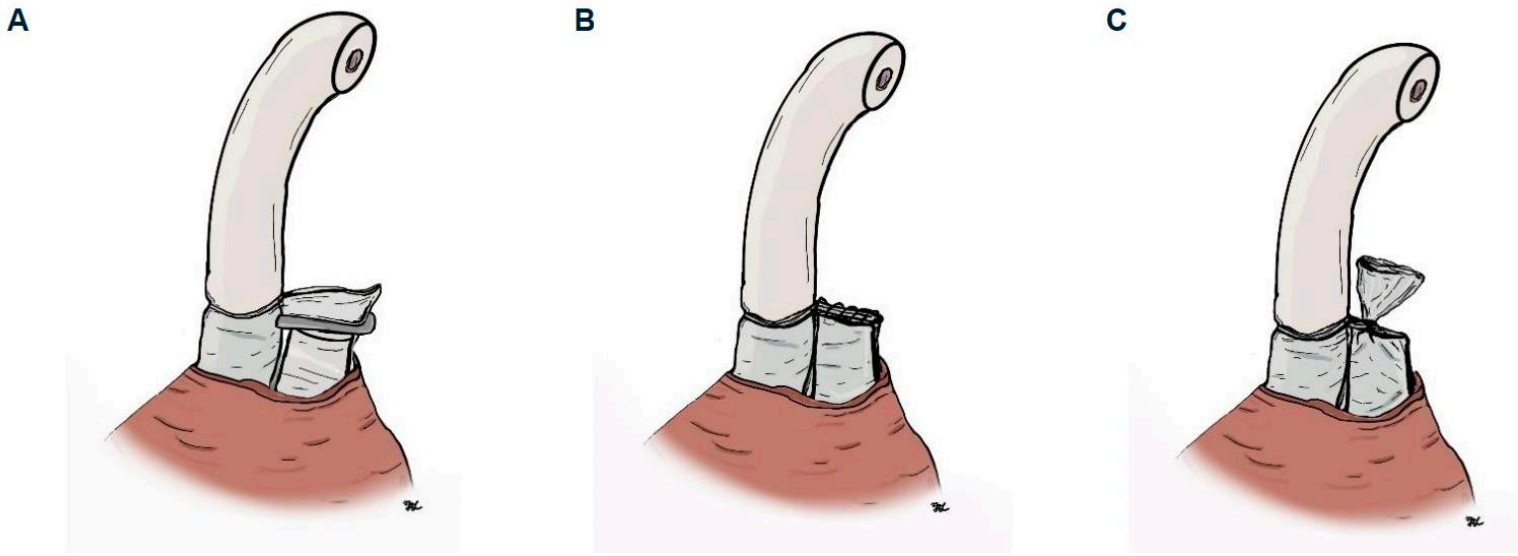
What Is Mucosal Cautery?

- Cautery applied to the vasal mucosa of each cut end
- Creates scar plug occluding the lumen while preserving the muscular wall
- Both electrical (monopolar) and thermal (battery-powered) devices acceptable





What Is Fascial Interposition?



- Vasal sheath is closed over one end of the divided vas with a clip, suture, or free tie
- Creates tissue barrier between the two cut ends that is critical for both open- and closed-ended vasectomies
- Most data for FI is for FI over the abdominal end

Occlusion Technique: Failure Rates

- **Occlusive failure rates by technique:**
  - Ligation + excision (~1 cm segment): 6-13%
  - Ligation + excision + fascial interposition: ~5%
  - Mucosal cautery alone: ~1%
  - Mucosal cautery + fascial interposition (MC + FI): 0.03-0.3%
- **Additional notes:**
  - Adding FI to MC nearly eliminates recanalization risk, whether testicular end is left open or closed
  - Applying suture or clip ligatures over cauterized segment may paradoxically increase failure risk by causing necrosis and leakage
  - MC + FI is only technique consistently with <1% occlusive failure

Polling ARS Question

The physical exam demonstrates palpable vasectomy sites bilaterally without granulomas, but with more scar tissue palpated at the vasectomy site on the right vas. You elect to proceed with repeat vasectomy on both sides.

For the repeat vasectomy, what is the most appropriate vas isolation technique?

A) Incisional vasectomy (conventional) technique

B) Midline incision with wide exposure through bilateral testicular delivery

C) No-scalpel vasectomy (NSV)

D) Minimally invasive vasectomy (MIV)

E) Depends on degree of scarring and surgeon comfort

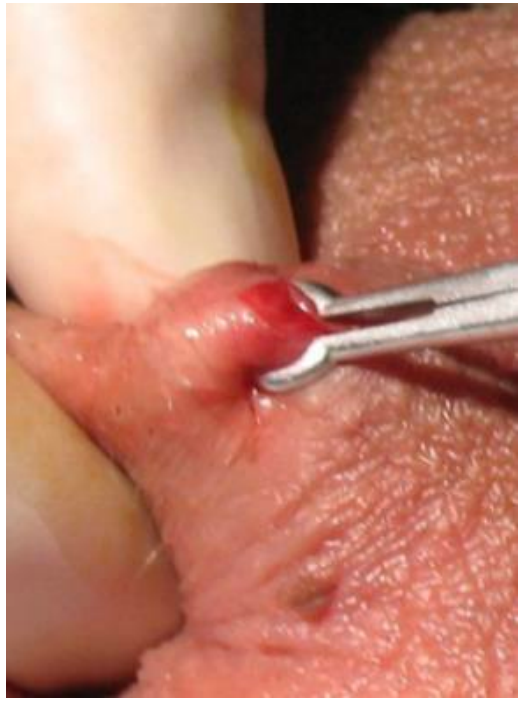
Guideline: Vas Isolation Technique

Guideline Statement 11:

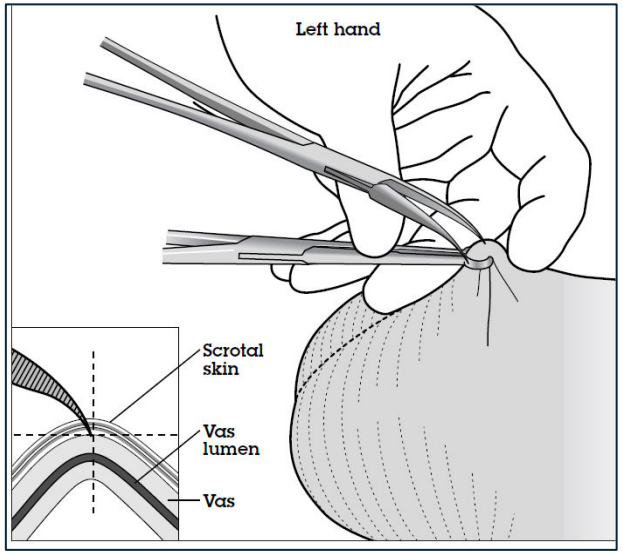
Surgeons should isolate and expose the vas deferens for vasectomy using a minimally invasive approach such as the no-scalpel vasectomy (NSV) technique. (Moderate Recommendation; Evidence Level: Grade A)

What is NSV?

- Vas ring clamp percutaneously grasps vas over intact skin
- Dissecting forceps deliver the vas through a small puncture for entry, and no skin sutures placed at end

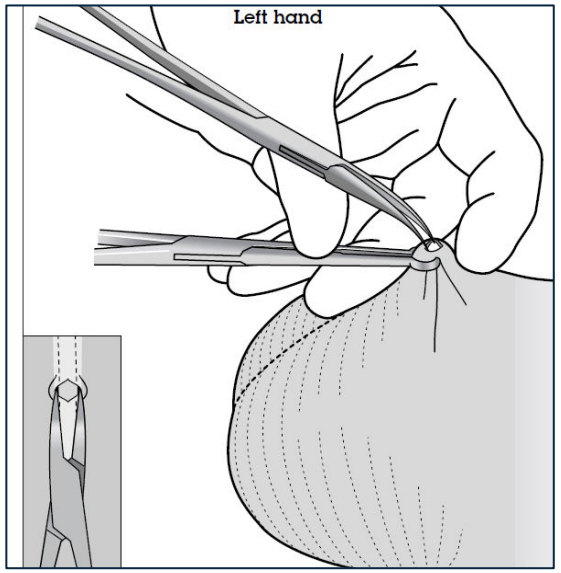


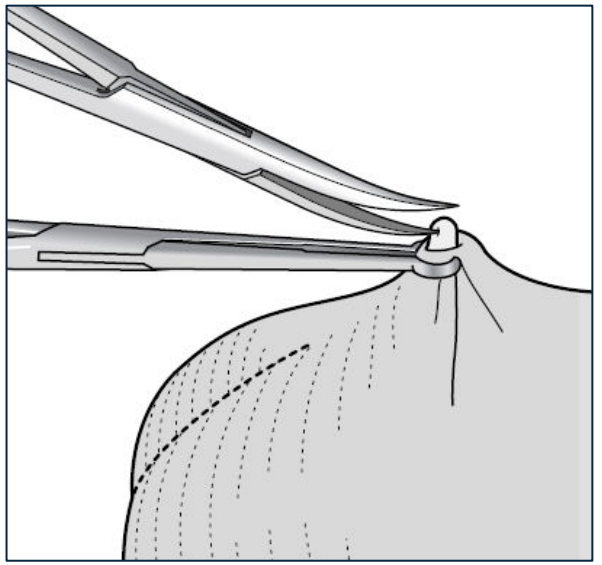
No Scalpel Isolation Technique



One Poke

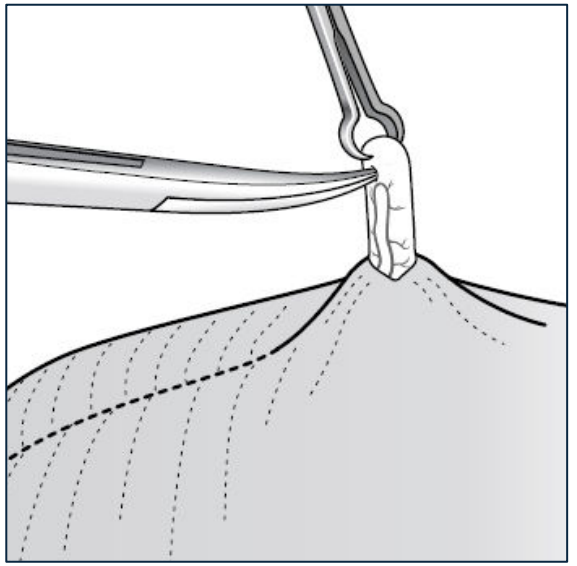
One Spread





One Hook

One Grasp



Outcomes: Incisional Isolation vs. NSV

	Hematoma (%)		Infection (%)	
	Inc	NSV	Inc	NSV
Nirapathpongporn 1990	1.7	0.3	1.3	0.2
Sandhu 1998*	11.9	1.1	14.3	3.3
Sokal 1999	**12.2**	**1.8**	**1.5**	**0.2**
Christensen 2002	15.9	9.5	11.4	7.1

* Modified NSV with adapted instruments

Key Points: Vasectomy Technique

- **Vas Isolation**
  - NSV/MIV recommended: Grade A evidence, moderate recommendation, lower hematoma and infection rate
  - Isolation technique does not determine occlusive effectiveness
- **Vas Occlusion**
  - MC + FI: only technique with consistently <1% failure, Strong Recommendation, Grade B evidence
  - Ligation + short segment excision alone: Strong Recommendation AGAINST, Grade A evidence
  - Not a matter of preference or experience: the evidence is clear

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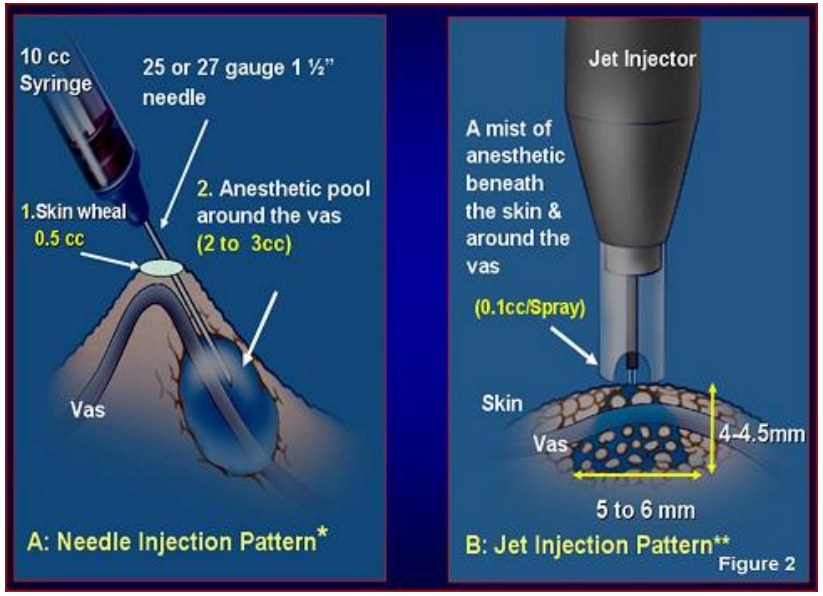
Case 1: Pain Control

Sarah Vij MD

Polling ARS Question: A 35 year old male calls your office a few hours after an uncomplicated vasectomy. He reported needle phobia in pre-procedural visit. He reports “throbbing” discomfort and significant anxiety that something “has been damaged”. He is hesitant to move. Denies swelling. He asks if you can send in a prescription for oxycodone. How do you counsel and manage this patient?

A. Reassurance only.
B. Suggest supportive underwear, ice, and OTC pain medications such as acetaminophen and ibuprofen.
C. Prescribe 3-5 oxycodone tablets.
D. Order a STAT scrotal ultrasound.

Guideline Statement 9: Clinicians should perform vasectomy with local anesthesia delivered by skin infiltration with a needle and/or jet injector. Topical anesthetic may lessen the pain of local anesthesia infiltration *(Moderate Recommendation, Evidence Grade C)*



White & Maatman 2007: "split-scrotum" study; MadaJet on one side vs traditional vasal block in 50 pts. Lower VAS scores with MadaJet.

Aggarwal 2009: RCT, pain lowest during local anesthesia compared to no-needle and local plus spermatic cord block

Consideration of **inhalation agent sedation** for high-anxiety patients or difficult anatomy – this patient may have benefited from this approach.

Fast Onset, Fast Clearance

"Adjunctive oral, intravenous, or inhalational agent sedation may be considered when the pre-operative scrotal exam identifies difficult vasal isolation or when patients have considerable anxiety related to the procedure"

Guideline Statement 10: Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories [NSAID]) for post-operative pain control *(Expert Opinion)*

Received: 6 July 2019 | Revised: 10 October 2019 | Accepted: 19 February 2020

DOI: 10.1111/and.13563

ORIGINAL ARTICLE

ANDROLOGIA WILEY

National opioid prescription patterns and patient usage after routine vasectomy

Kian Asanad[1] | David J. Nusbaum[2] | Mary K. Samplaski[1]

Asanad 2019: 136 urologists surveyed 51.5% reported prescribing opiates after vasectomy

Ambulatory, Office-based, and Geriatric Urology

Optimizing Opioid Pain Medication Use After Vasectomy—A Prospective Study

Benjamin H. Baker, Janelle A. Fox, Paul R. Womble, Ines H. Stromberg, Erik T. Grossgold, and R. Chanc Walters

76 patients prescribed 15 hydrocodone/acetaminophen tablets and ibuprofen 800 mg tablets

18.2% used no opiates
33.8% used 1-5 opiates
24.7% used all 15 opiates

11.7% reported needing more pain medication
Additional 648 narcotic tablets were prescribed

American Urological Association (AUA)

Rationale and Strategies for Reducing Urologic Post-Operative Opioid Prescribing

Jennifer Robles, MD, MPH (Chair), Nitya E. Abraham, MD, Chad Brummett, MD, Benjamin Davies, MD, Veena Graff, MD, MS, Rajnish Gupta, MD, Vernon M. Pais, Jr., MD, MS, Kevan Sternberg, MD, Ruchika Talwar, MD

Barham et al J Urol 2019: 102 patients received opiate prescriptions post-vasectomy

7.8% had persistent use of opiates between 90 and 180 days, no reduction in post procedural visits for scrotal pain

ORIGINAL ARTICLES: ANDROLOGY

Check for update

Perioperative opioid prescribing after male fertility procedures is associated with new persistent opioid use: retrospective analysis of a large claims database

Corey A. Able, B.S.,[a] Andrew T. Gabrielson, M.D.,[b] Chris Meilchen, B.S.,[a] Jaden R. Kohn, M.D., M.P.H.,[c] and Taylor P. Kohn, M.D., M.Phil.[b]

[a] University of Texas Medical Branch at Galveston School of Medicine, Galveston, Texas; and [b] The James Buchanan Brady Urological Institute, and [c] Department of Gynecology and Obstetrics, Johns Hopkins University School of Medicine, Baltimore, Maryland

387,565 men included
355,879 underwent vasectomy (91.8%)
24.6% of vasectomy patients prescribed opiates
4.7% developed new persistent opiate use (compared to 2.22% who were not prescribed opiates post procedure)

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Is Opioid-free Post-Vasectomy Analgesia a Pain? A Single Surgeon Experience

Johnathan Doolittle [c], Jagan Kansal [a], Peter Dietrich [a], Sarah Brink [b], Michael McNamara [a], Andrea Moyer [a], Robert Medairos [a], Jay Sandlow [a]

200 patients underwent vasectomy
Patients who were NOT prescribed opiates had no increase in phone calls, clinic visits, or ED visits

Guideline Statement 10: Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories [NSAID]) for post-operative pain control *(Expert Opinion)*

"Multimodal approach using analgesics with different mechanisms of action, such as acetaminophen in combination with an NSAID, may optimize post-operative pain management"

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Post Vasectomy Semen Analysis

Akanksha Mehta, MD MS
Professor of Urology
Emory University School of Medicine

Polling ARS Question

A 43-year-old male undergoes an uncomplicated office vasectomy. He completes a mail-in post-vasectomy semen analysis 6 weeks after the procedure. Results show 85,000 non-motile sperm. How do you counsel and manage this patient?

A. No additional testing
B. Repeat main-in semen analysis
C. Repeat in-office semen analysis
D. Re-do vasectomy

Key Considerations for Post-Vasectomy Semen Analysis

- Timing of test
- Type of test
- Definition of success

GS 16: Patients should provide at least one appropriately collected semen sample following vasectomy to confirm occlusive success.

Table 1 The results of semen analysis in the two groups of men

		Group 2	
Number (%)	*Group 1*	*Sample 1*	*Sample 2*
Total	961	360	
Withdrew	151 (16)	66 (18)	101 (28)
Sample	810 (84)	294 (82)	259 (72)
No sperm	783 (97)	287 (98)	252 (97)
Sperm	27 (3)	7 (2)	7 (3)

- Compliance was better using the one-test method vs the two-test method
- Rates of occlusive failure were similar across both groups

Badrakumar et al, BJUI 2000

Polling ARS Question

What is your preferred method for confirming vasectomy success?

A. Home-based test
B. Mail-in test
C. Office-based semen analysis (in your office)
D. Lab-based semen semen analysis (fertility clinic or commercial lab)
E. Hopes and prayers

GS 17: An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing.

- Compared to lab/office-based testing, compliance IS NOT HIGHER for home-based testing
- Compared to lab/office-based testing, compliance IS HIGHER for home-based testing

Trussler et al, Can J Urol 2020
Atkinson et al, BMJ Sex Reprod Health 2022

GS 17: An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing.

TABLE 2. *Number of semen samples with sperm present before centrifugation vs 100,000 or more sperm per ml after centrifugation*

Sperm Present Before Centrifugation	100,000 or More Sperm/ml After Centrifugation: Yes	100,000 or More Sperm/ml After Centrifugation: No	Totals		
Yes	594	507	1,101	% Pos predictive value (95% CI)	54.0 (53.4–54.2)*
No	4	2,100	2,104	% Neg predictive value (95% CI)	99.8 (99.5–99.9)
Totals	598	2,607	3,205	% Prevalence	18.7

Sensitivity 99.3% (98.3–99.7), specificity 80.6% (80.3–80.6), positive likelihood ratio 5.11 (5.00–5.15), negative likelihood ratio 0.008 (0.003–0.021).

- Microscopic examination of an uncentrifuged sample is highly reliable at identifying samples with >100,000 sperm per mL

Steward et al, J Urol 2008

GS 18: Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 rare non-motile sperm per mL.

- For fresh samples, use of special clearance parameters can avoid repeat testing in most patients with sperm identified on initial PVSA
- For mail-in testing, azoospermia is required for contraceptive clearance

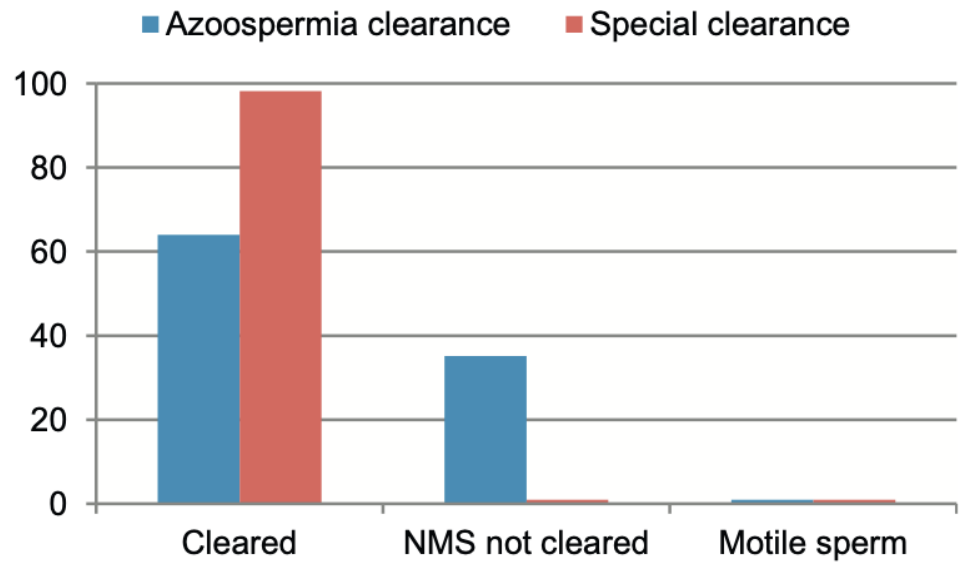
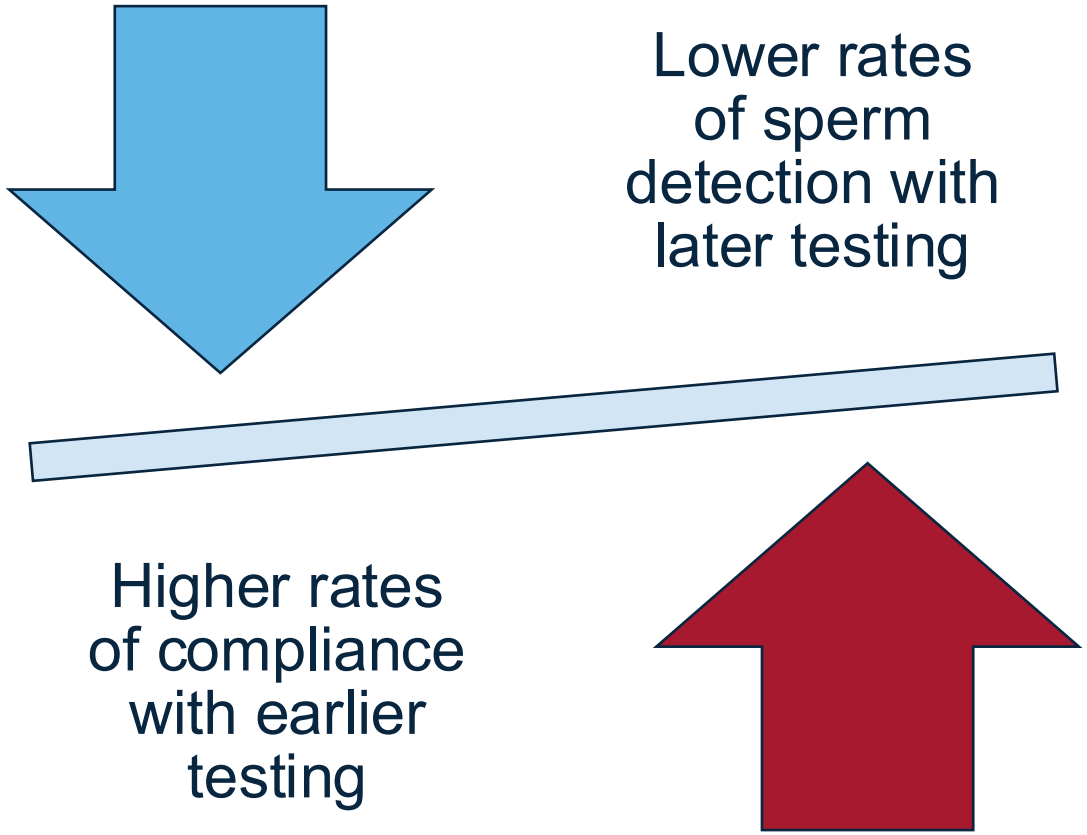


Figure 1. Postvasectomy clearance frequency as stratified by varying guidelines. (Color version available online.)

Bienek et al, Urology 2015

GS 19:
A post-vasectomy semen sample may be submitted as early as 8 weeks following vasectomy.



When is it time to consider a repeat vasectomy?

- The decision to repeat a vasectomy should not be based on a single PVSA
- Persistent motile sperm 6 months after vasectomy → offer counseling for repeat vasectomy
- Persistent >100,000 non-motile sperm/mL 6 months after vasectomy → shared decision-making (repeat vasectomy, or continue contraception and/or obtain repeat semen evaluations

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Vasectomy Guideline: Case #1

Peter N Schlegel, MD

New York Men's Health Medical
New York, NY

AUA Instructional Course
Vasectomy
May 18, 2026

Case discussion: Preop counsel

- AUA Guidelines have provided clear guidance on preoperative counseling before vasectomy

1. Clinicians should provide pre-operative consultation for the patient considering vasectomy. (Clinical Principle) Consultation may be accomplished virtually or in person. (Conditional Recommendation; Evidence Level: Grade C) -

Pre-vasectomy counselling

- (1) vasectomy is intended to be a permanent form of contraception
- (2) vasectomy does not produce immediate sterility
- (3) following vasectomy, another form of contraception is required until vas occlusion is confirmed by post-vasectomy semen analysis (PVSA)
- (4) even after vas occlusion is confirmed, vasectomy is not 100% reliable in-preventing pregnancy; the risk of pregnancy after vasectomy is approximately 1 in 2000 for men who have azoospermia on PVSA or rare non-motile sperm (RNMS),

Pre-vasectomy counselling

- (5) repeat vasectomy is necessary for failure of occlusion in up to 1% of vasectomies, provided that a technique for vas occlusion known to have a low occlusive failure rate has been used
- (6) options for fertility after vasectomy include vasectomy reversal and sperm retrieval with in vitro fertilization; however, these options are not always successful and may be expensive
- (7) rates of surgical complications such as symptomatic hematoma and infection are 1 to 2% or less
- (8) ongoing chronic scrotal pain associated with an ongoing negative impact on quality of life occurs in less than 1% of men after vasectomy
- (9) other permanent and non-permanent alternatives to vasectomy are available

Pre-vasectomy counselling

- Sperm banking does not have to be discussed
  - Important to consider for those under 30, esp those without children
- Partner assent not required
- Discussion of associated disease/conditions required
  - Prostate cancer, cardiovascular disease, urolithiasis
- No risk of sexual dysfunction from procedure
- Vasectomy is the safest and most effective method for providing permanent contraception
- Limitation of virtual consult: risk of abnormality on exam may preclude procedure

Case

- 35-year-old with family history of prostate cancer seen in consultation for vasectomy
  - Strong family history of prostate cancer; father dx at age 54

- In addition to standard counselling, how would you address this patient's concerns about prostate cancer risk after vasectomy?

- Adequate virtual counselling provided for elective vasectomy
- Patient concerns re: prostate cancer risk allayed
- Day of procedure
  - Bilateral hydroceles
  - Vas deferens cannot be distinguished from cord/hydrocele on right
- Next step(s)?

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Case #2: The Older Female Partner

Matt Coward, MD FACS

Guideline Panel Member, Vasectomy Guideline (2026)

Atlantic Fertility

Raleigh, NC, USA

University of North Carolina, Chapel Hill, NC, USA

Polling ARS Question

A 52-year-old man presents requesting vasectomy. He and his 48-year-old partner have 3 children (ages 18, 16, and 13). She has been experiencing irregular menstrual cycles over the past year. They currently use condoms.

How would you proceed?

A. Proceed with vasectomy as requested

B. Discuss alternative forms of birth control

C. Because partner is not fertile, do not perform vasectomy and allow unprotected intercourse

D. Recommend she pursue gynecologic evaluation for day 3 FSH and AMH levels

E. Offer continued observation with current contraception

Counseling Considerations

- **Key Clinical Points:**
  - Irregular cycles alone do not confirm infertility
  - Natural conception possible until 12 consecutive months of amenorrhea (menopause confirmed)
  - Age 48 with irregular cycles is likely perimenopausal, therefore pregnancy is exceedingly unlikely
- **Counseling:**
  - Discuss the decreasing and tiny (but real) possibility of natural conception
  - Withdrawal method, calendar/timing method, or both would likely be adequate
  - Chance of pregnancy is lower than the risk of surgical complication
  - Vasectomy still provides a definitive and permanent contraceptive solution

2026 AUA Vasectomy Guideline

Guideline Statement 1 (Strong Recommendation, Grade B):

- *"Partner assent to vasectomy is not required as contraceptive decisions are an individual choice."*

- Physicians should counsel patients about permanence, alternatives, and complication risk
- Partner's fertility status informs counseling but does not override patient autonomy

Open Discussion

For the Panel and Audience:

- How do you approach the partner's fertility status in your informed consent discussion?
- Does the irregular cycle pattern change your recommendation? Would you consider referral to ob-gyn?
- How would you document the conversation if decision for vasectomy was delayed or an alternative was chosen?

Clinical Decision

- Perimenopause is not a contraindication to vasectomy, but it is an opportunity for nuanced counseling
- Multiple, increasingly reasonable, lower risk alternatives exist at the end of a couple's reproductive years
- OK to proceed with vasectomy after appropriate counseling as patient autonomy is the guiding principle

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Case #2 :No Children

Sarah Vij MD

A 23 year-old male presents to your office for consultation for vasectomy. He has no children and does not desire children in the future. He is single. He reports a prior urologist would not proceed. He is otherwise healthy. How do you proceed?

A. I perform the procedure as he is a competent adult who can make his own medical decisions.
B. I require a mandatory waiting period of 3 months.
C. I decline and suggest alternative non-permanent forms of contraception such as condoms.
D. I require a mental health evaluation prior to proceeding.

What do the Guidelines Say?

- "Vasectomy should be considered a permanent form of contraception."
- The Guidelines do NOT set a minimum age or number of children

What do we know about Regret after Vasectomy?

Vasectomy Regret Among Childless Men

David K. Charles, Danyon J. Anderson, Sydney A. Newton, Peter N. Dietrich, and Jay I. Sandlow

Charles at al Urology 2023: 7.6% of childless men expressed regret at a mean f/u period of 5.5 years

Regret after Sterilization

- Regret is difficult to measure: Using vasectomy reversal as endpoint to demonstrate regret does not encompass all patients with regret
- Tubal Ligation Data:
  - “Post-sterilization union dissolution or post-sterilization union formation associated with increased regret” (Eeckhaut et al, J Marriage Fam 2019)
- Must consider the alternative – unintended pregnancy consequences
- Is it our role as Urologists to be the gatekeepers?

Questions for the Audience

- Do you have an age cut-off?
- Do you incorporate number of children? What if the patient is 23 years old but he has 4 children?
- Would you push this patient for semen cryopreservation?

AUA 2026 Washington, DC MAY 15-18

Post Vasectomy Pain Syndrome

Akanksha Mehta, MD MS
Professor of Urology
Emory University School of Medicine

Polling ARS Question

A 29-year-old male has had left scrotal pain since his vasectomy with you three months ago. PVSA demonstrates azoospermia. He describes the pain as dull and constant, worse with ejaculation, and adversely impacting his quality of life. He has no relief with NSAIDs. On exam, pain localizes to the epididymis. What would you offer him?

A. Short course of steroids
B. Course of antibiotics
C. Spermatic cord-block
D. Vasectomy reversal
E. Epididymectomy

Post-Vasectomy Pain Syndrome

- Prevalence: 1-2% of cases
- Persistence: >3 months after vasectomy
- Presentation: constant vs intermittent
- Inciting factors: ejaculation, intercourse
- Location: Testis vs epididymis vs vasectomy site/granuloma vs vas/spermatic cord

Etiology

- Obstructive?
- Immune-related?
- Infectious?
- Neuropathic?

Treatment Options

Medical treatments:

NSAIDs, steroids, gabapentin, PFPT

Procedures:

Spermatic cord block, acupuncture

Surgical treatments:

Excision of sperm granuloma, cord denervation (MDSC), epididymectomy, vasectomy reversal, orchiectomy

Open Discussion

Match the preferred technique to the presentation

1. Excision of sperm granuloma
2. Microsurgical denervation of the spermatic cord
3. Vasectomy reversal
4. Epididymectomy

A. Constant, radiating pain, improved with spermatic cord block
B. Focal pain, localizes to specific site
C. Pain associated with epididymis only
D. Intermittent pain associated with ejaculation

Open Discussion

Match the preferred technique to the presentation

1. Excision of sperm granuloma
2. Microsurgical denervation of the spermatic cord
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C. Pain associated with epididymis only
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Vasectomy Guideline: Case #2: Fertility after Vasectomy

AUA 2026 Washington, DC MAY 15-18

Peter N Schlegel, MD

New York Men's Health Medical

New York, NY

AUA Instructional Course
Vasectomy
May 18, 2026

Case: Fertility after vasectomy

- Ten years after vasectomy, a 45-yo male returns with his 30-yo female partner interested in having more children
  - No interval medical history for male
  - Had 2 children prior to vasectomy
  - Female partner – normal gyn/fertility evaluation
  - Exam shows 16 mL testes with obvious short vasal defect bilaterally
- Further evaluation/next steps?

Case: Fertility after vasectomy

- Sperm retrieval with IVF
  - Approach for retrieval
  - Timing of retrieval relative to IVF
  - Other considerations?
- Vasectomy reversal
  - Approach for reconstruction
  - Cryopreservation during sperm retrieval?

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Washington, DC

Additional Interesting Cases

Stanton Honig MD
Professor of Urology
Yale University School of Medicine

Polling ARS Question

A 43-year-old male undergoes an uncomplicated office vasectomy. He is on testosterone cypionate 200mg im q 2 weeks. He performs a fresh semen analysis at 12 weeks, which shows 50,000 non motile sperm. What do you tell him regarding clearance for unprotected sexual activity?

A. Repeat semen analysis in 2 months
B. You cannot be ever cleared 100% as long as you are taking testosterone, but your “relative risk” of pregnancy is very low.
C. Stop Testosterone and retest in 4 months
D. Start hcg and retest in 4 months

Polling ARS Question

A 26 year old autistic patient with minimal communication skills is brought in with his parents to consider a vasectomy. He is being moved to a group home where there are both men and women. Both parents are in agreement and they have power of attorney. What do you do next?

A. Bring to your ethics board for clarification
B. Have the parents get a court order from the state to proceed with vasectomy
C. Do the vasectomy
D. A and B

AUA 2026 Washington, DC MAY 15-18

Vasectomy Course: Take Home Messages

Stanton Honig MD

Faculty Chair

Guideline Panel Member, Vasectomy Guideline (2026), (2012)

Professor of Urology

Yale School of Medicine

New Haven CT

New AUA Vasectomy Guidelines 2026: Case Presentations and

Critical Information for Every Urologist

Take Home Messages !!

AUA 2026
MAY 15-18
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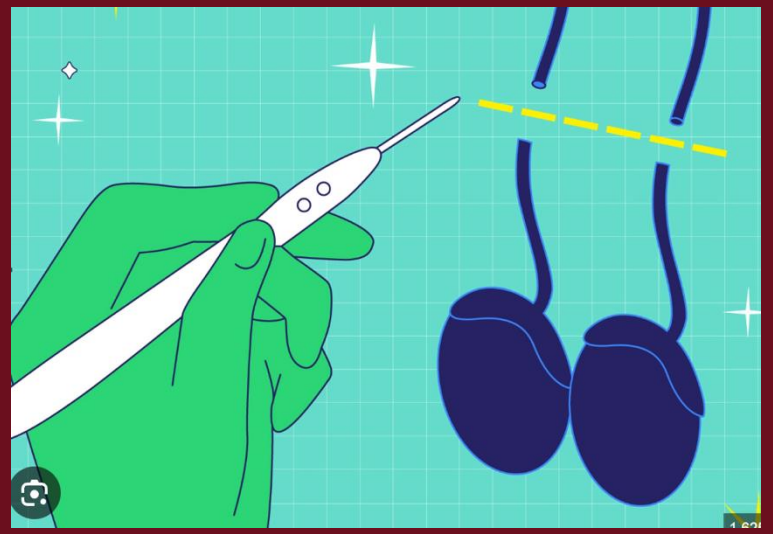


Old vs New

Old Guidelines

- Technique: Most are okay despite data
- No need to discuss Prostate cancer
- PVSA only fresh

New Guidelines

- Mucosal Cautery with and without Fascial interposition
- Need to review prostate cancer risk
- PVSA fresh or mail in
- Fertility after vasectomy
- Antibiotics
- Pain control

Highlights and Important Changes

Surgical Technique: Mucosal Cautery and Fascial Interposition

Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)*

Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)*

Antibiotics

- **Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection.** ***(Expert Opinion)***

- The AUA's Clinical Consensus Statement on Urologic Procedures and Antimicrobial Prophylaxis

- Clean Case – low risk of infection in healthy patient
- ***Can use in rare cases of the immunosuppressed, DM etc***

Highlights and Important Changes

- **Post Vasectomy Semen Analysis (PVSA) Testing**

- **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing. *(Conditional Recommendation; Evidence Level: Grade C)***

- **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 nonmotile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection; *(Conditional recommendation; Evidence Level: Grade B)* A sample evaluated >2 hours after collection should show azoospermia to stop contraception. *(Expert Opinion)***

Analgesics and Vasectomy

- **Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories) for post-operative pain control. *(Expert Opinion)***

Highlights and Important Changes

Fertility after Vasectomy

Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. ***(Expert Opinion)***

Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. ***(Expert Opinion)***

Highlights and Important Changes

Fertility after Vasectomy

Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. ***(Expert Opinion)***

Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. ***(Expert Opinion)***

Take Home Messages

Vasectomy pre op evaluation can be done as virtual or in person; is safe, effective and permanent

No causal link between vasectomy and the development of prostate cancer. Development of high grade prostate cancer or increased prostate cancer mortality

No link between vasectomy and CV disease and/or nephrolithiasis.

Clinicians should prepare skin with a sterilizing solution prior to vasectomy.

Clinicians should perform vasectomy with local anesthesia by skin infiltration with need and/or jet injector. Topical anesthetic may lessen the pain of local anesthetic infiltration during vasectomy

Surgeons should isolate and expose the vas using a MIV approach such as no-scalpel technique.

Surgeons may omit routine histological evaluation of excised tissues.

Take Home Messages

Surgeons who perform vasectomy should be able to recognize and treat complications after vasectomy, including bleeding, infection, epididymitis and chronic scrotal pain .

Patients should provide at least one appropriate collected semen sample following vasectomy to confirm occlusive success.

A post vasectomy semen sample may be submitted as early as 8 weeks following vasectomy

In patients with any persistent motile sperm in the ejaculate 6 months following vasectomy, counseling for repeat vasectomy should be offered.

In patients with >100,000 non-motile sperm per mL persisting after 6 months, shared decision-making should be utilized to determine whether to repeat vasectomy, continue contraception and/or obtain repeat semen evaluations.

Take Home Messages

Fertility Restoration

Surgeons should inform patients considering vasectomy reversal that duration of the obstructive interval, patient, age, and female partner age are the best preoperative predictors of post-operative reversal success. *(Moderate Recommendation; Evidence Level: Grade C)*

Surgeons should evaluate vasal fluid microscopically at the time of vasectomy reversal as the presence of sperm at the site of planned reconstruction is the best intraoperative predictor of patency after vasectomy reversal. *(Strong Recommendation; Evidence Level: Grade B)*

Take Home Messages

Fertility Restoration

Surgeons should perform a microsurgical vasovasostomy using a modified one-layer or a two-layer anastomosis based on surgeon preference. *(Moderate Recommendation; Evidence Level: Grade C)*

Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. *(Expert Opinion)*

Surgeons may perform vasoepididymostomy using longitudinal intussusception, triangulation intussusception, end-to-end anastomosis, or end-to-side anastomosis. *(Conditional Recommendation; Evidence Level: Grade C)*

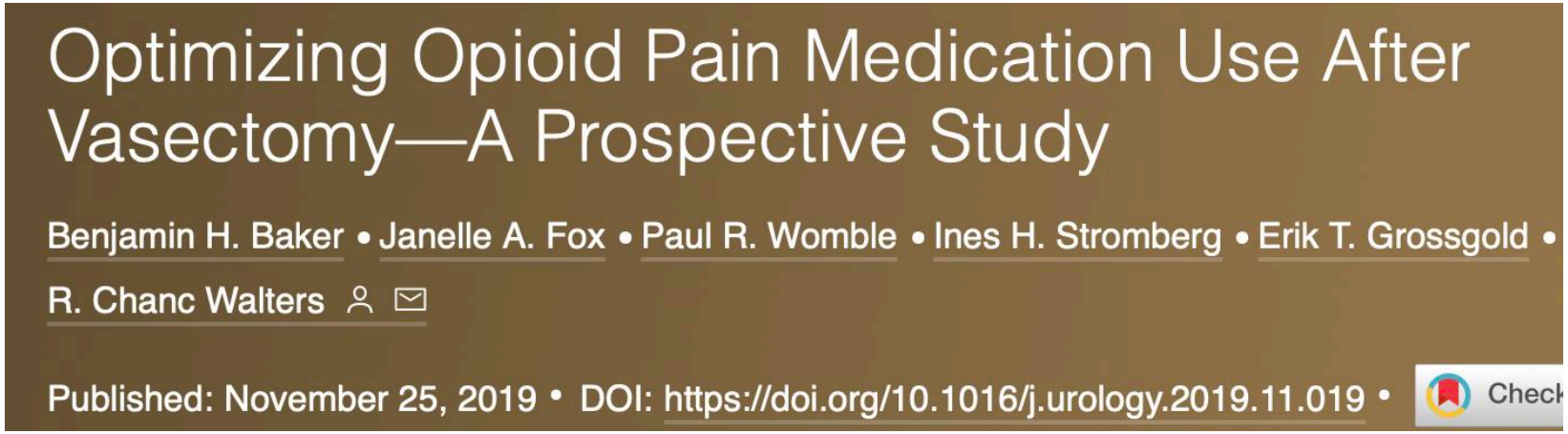
Antibiotics

- **Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection.** ***(Expert Opinion)***

- The AUA's Clinical Consensus Statement on Urologic Procedures and Antimicrobial Prophylaxis

- Clean Case – low risk of infection in healthy patient
- ***Can use in rare cases of the immunosuppressed, DM etc***

- **Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories) for post-operative pain control. *(Expert Opinion)***



- Prospective trial 76 patients: 88% had good pain control

- 18% only used nsaid's
- 34% used 1-5 oxycodone
- 25% used all 15 pills
- 9% needed more meds

Vasectomy and Post op Pain

ORIGINAL ARTICLE

ANDROLOGIA WILEY

National opioid prescription patterns and patient usage after routine vasectomy

Kian Asanad[1] | David J. Nusbaum[2] | Mary K. Samplaski[1]

51% of urologist prescribe opioids for post op vasectomy patients
despite the fact that they do not know if they use them

Pts that used opioids (prior) were more likely to use opioids in post vasectomy care. OR 11

Andrologia March 2020

Vasectomy and Post op Pain

Is Opioid-free Post-Vasectomy Analgesia a Pain? A Single Surgeon Experience

Johnathan Doolittle [c], Jagan Kansal [a], Peter Dietrich [a], Sarah Brink [b], Michael McNamara [a], Andrea Moyer [a], Robert Medairos [a], Jay Sandlow [a]

200 consecutive patients: opioid and then non –opioid

Patients that are not prescribed opioids after vasectomy **do not generate additional phone calls, clinic, or ED visits** compared to those that were routinely prescribed prior to our institutional change.

Vasectomy and Post op Pain

An Opioid Prescription for Men Undergoing Minor Urologic Surgery Is Associated with an Increased Risk of New Persistent Opioid Use

Blayne Welk [a, b, c], J. Andrew McClure [b], Collin Clarke [d], Kelly Vogt [a], Jeffrey Campbell [a]

Primary outcome: evidence of at least two opioid prescriptions filled 9–15 mo after urologic surgery.

Secondary outcome was admission for opioid overdose.
91, 000 men (78% vasectomy) at 1 year

OR 1.4 of long term opioid use if filled an opioid prescription
OR 3 for opioid overdose

Vasectomy and Post op Pain

Routine Prescription of Opioids for Post-Vasectomy Pain Control Associated with Persistent Use

David W. Barham,* Leah P. McMann, John E. Musser, John Q. Schisler, Ryan W. Speir, Seth P. Olcese, Joseph R. Sterbis, Timiyin M. E-Nunu and George B. Stackhouse

From the Division of Urology, Department of Surgery, Tripler Army Medical Center, Honolulu, Hawaii

J Urol 2019
228 pts
7.8% vs 1.5 % (Persistent opioid use)
in the opioid group vs. non opioid group
At 3-6 months
No difference in scrotal pain

Perioperative opioid prescribing after male fertility procedures is associated with new persistent opioid use: retrospective analysis of a large claims database

Corey A. Able, B.S.,[a] Andrew T. Gabrielson, M.D.,[b] Chris Meilchen, B.S.,[a] Jaden R. Kohn, M.D., M.P.H.,[c] and Taylor P. Kohn, M.D., M.Phil.[b]

[a] University of Texas Medical Branch at Galveston School of Medicine, Galveston, Texas; and [b] The James Buchanan Brady Urological Institute, and [c] Department of Gynecology and Obstetrics, Johns Hopkins University School of Medicine, Baltimore, Maryland

2024 study
Database of 387.,000 patients (355,000 were vasectomy)
25% received an opioid script
4.7% developed new persistent opioid use compared to 2.2% without
Men with new persistent opioid use were much more likely to go on and develop prolonged opioid use

Vasectomy: Opioid Use (ASA-EAS)

-
- We **suggest** that post vasectomy pain control should be managed with non-opioid medication unless complications arise.
- Clinicians should weigh the need for **pain control versus potential abuse** of opioids in their decision-making process for post operative pain control
- ⊕⊕OO low quality evidence

Highlights and Important Changes

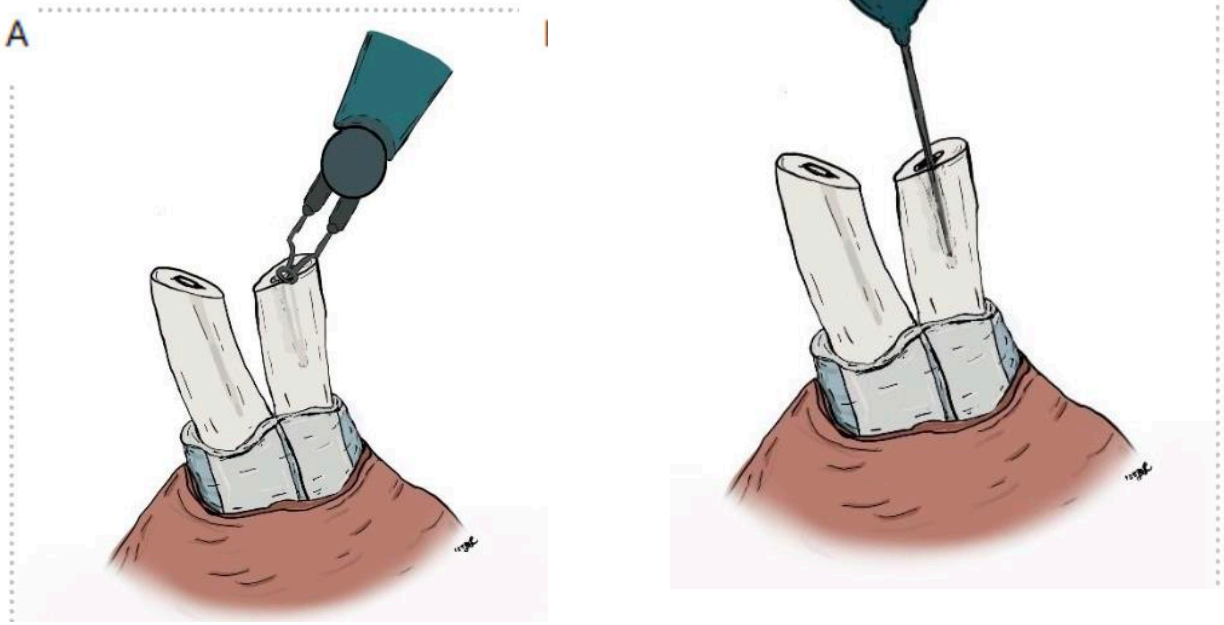
Surgical Technique: Mucosal Cautery and Fascial Interposition

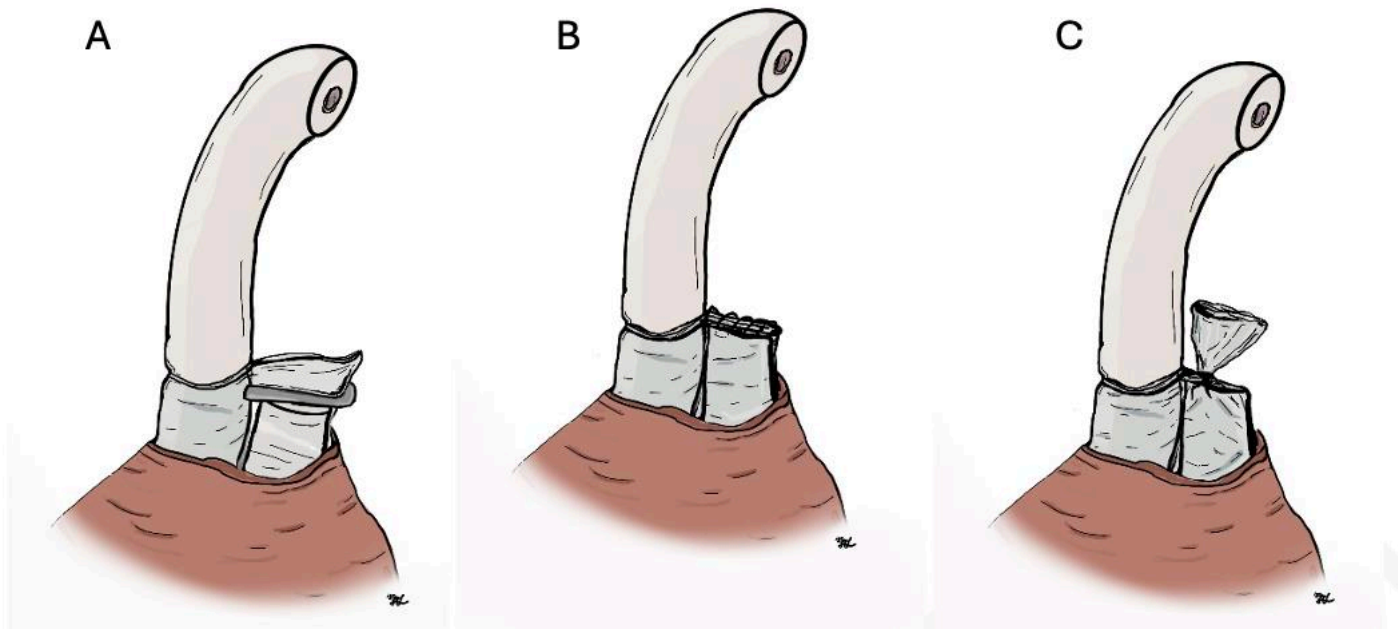
Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)*

Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)*

- **Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition. *(Strong Recommendation; Evidence Level: Grade B)***

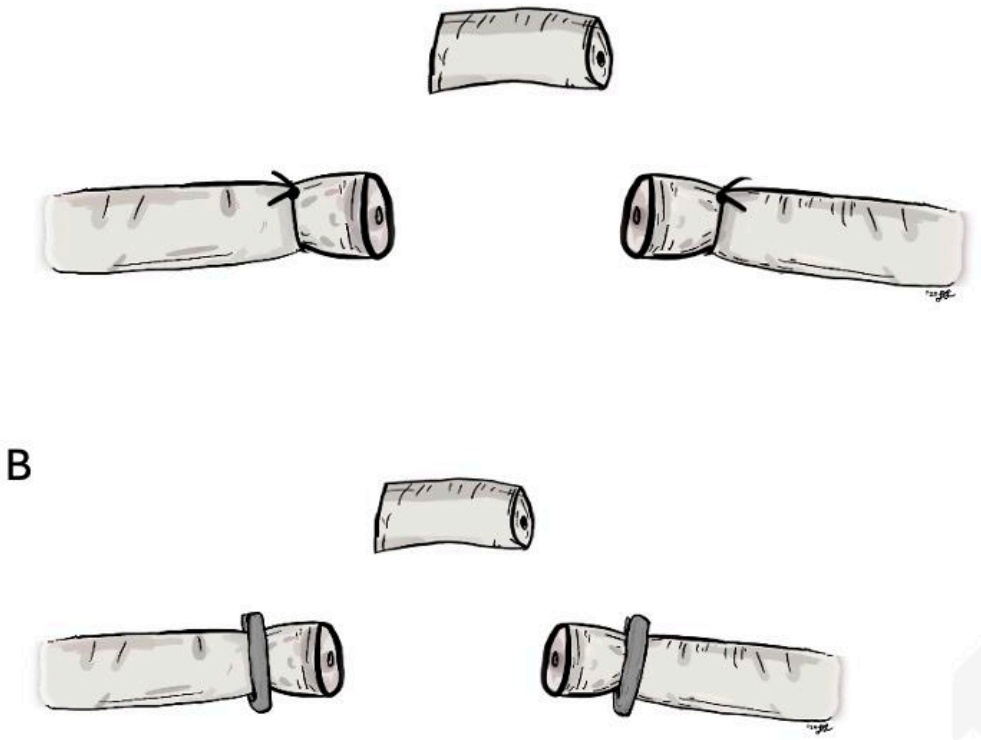
Figure 6. Mucosal Cautery*




A
B
C

- **Surgeons should NOT perform vas occlusion using only ligation and excision of a short vas segment *(Strong Recommendation; Evidence Level: Grade A)***

- ***NO!!***



1639 Table 1. Risk of occlusive failure in comparative studies published after 1990 according to
1640 occlusion techniques and risk of bias

Study	Occlusion technique n/N (%)							
	L+E	L+E+Fl-T1	EC+E+Fl-T1	L+E+Fl-T2	MC± E ± Fl-T2/A	A-C	A-O	Risk of bias
Altok[143]		5/66 (7.6)	4/59 (6.8)					
Labr que[83]	126/145 (8.7)						3/1165 (0.3)	Hig
Li*[8]	6/427 (1.4)	10/380 (2.6)			1/442 .8)			High
M s[84]						1/3081 (0.03)	1/3103 (0.03)	High
Sh keri[86]	13/228 (5.7)			0/954 (0)				High
Sol [80]	53/416 (12.7)	24/410 (5.9)						Lo
Soka		20/410 (4.9)			4/3 (1.0)			gh

Highlights and Important Changes: PVSA

- **PVSA Testing**

- **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing.** ***(Conditional Recommendation; Evidence Level: Grade C)***

- **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 nonmotile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection;** ***(Conditional recommendation; Evidence Level: Grade B)*** ***A*** **sample evaluated >2 hours after collection should show azoospermia to stop contraception.** ***(Expert Opinion)***

- ***This is new !***

- **Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy.** ***(Expert Opinion)***

Prior Guidelines: Mail-in Semen Analyses: Is this okay?

AUA Guidelines:
Body

- Some clinicians recommend for convenience and compliance reasons, that PVSA specimens can be sent by mail (following regulations regarding shipping biohazards). **This approach is adequate to assess only the presence or absence of sperm.** Motility cannot be evaluated reliably in a semen sample produced more than two hours before microscopic examination.

- So, this **IS** saying that Mail-in Testing is okay to identify sperm: yes or No **ONLY**.
- Does not check for motility !!!!!!

IP 18-28: Is A Fresh Semen Analysis Necessary For A Post Vasectomy Semen Analysis?

Assessment of Stability of Sperm Concentration over a 10-day Time Frame as a Model for Post Vasectomy Semen Analysis Using the Fellow System

Ellen M. Cahill, MD[1], Stanton C. Honig, MD[1], Sharath S. Reddy, MD[1], Andrew Fernandez, CLS[2], Terri Schroeder, CLS[2], Inderpreet Kaur, CLS[2], Elsa Chen, CLD[2], Andre Belarmino, MD[3], Akanksha Mehta, MD[4], Daniel Civello, CLS[2], Stacey Kenfield, ScD[5], Daniel Nolte, MS[2], James F. Smith, MD[5], Katherine Rotker, MD[1]

[1]Yale University School of Medicine, New Haven, CT ; [2]Fellow Health, San Leandro, CA; [3]UCLA Medical Center, Los Angeles, CA; [4]Emory University, Atlanta, GA; [5]UCSF, San Francisco, CA

Yale Medicine UROLOGY

Yale SCHOOL OF MEDICINE
Department of Urology

Introduction

- AUA guidelines recommend patients stop using other methods of contraception when examination of one uncentrifuged, fresh post-vasectomy semen specimen shows azoospermia or only rare non-motile sperm (RNMS)
- Guideline 11 states:

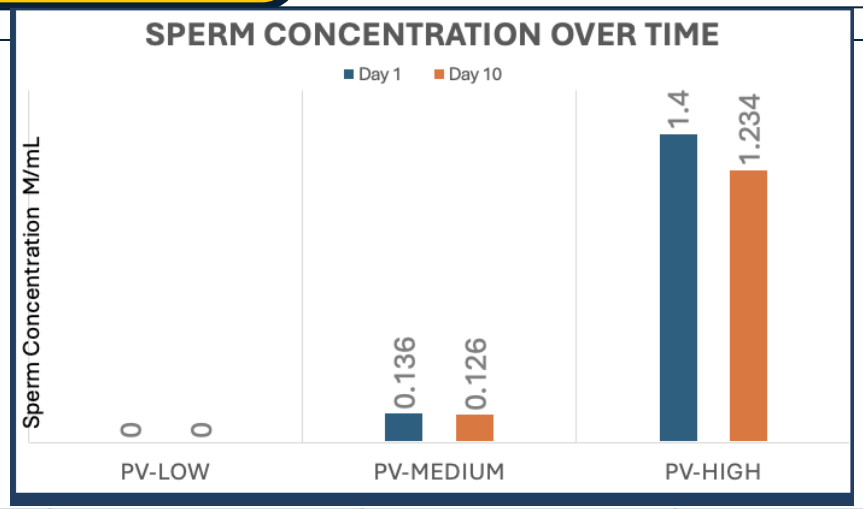
Some clinicians recommend for convenience and compliance reasons, that PVSA specimens can be sent by mail (following regulations regarding shipping biohazards). This approach is adequate to assess only the presence or absence of sperm.

- Fellow Post Vasectomy Semen Analysis (PVSA) is a mail-in semen analysis system in the United States
- While it is known that motility of sperm samples decreases with time, there is no published data on the stability of sperm sample concentration over time
- **We aimed to determine if any low concentration specimens reduced to zero when evaluated over a 10-**

Methods

- Fresh semen samples were diluted from higher concentrations to standard aliquots: 0 sperm (PV-low), 0.1M/mL (PV-medium), and 1M/mL (PV-high) and the Fellow PVSA preservation solution was added
- 20 replicates of each cellular concentration were created (total N=60) to accurately estimate concentration at each time point
- Sperm concentration was measured at 2 time points (Day 0 and Day 10)

Results



	PV-low	PV-medium	PV-high
Day 1	0	0.136 (SD: 0.026; min: 0.110; max: 0.161)	1.4 (SD: 0.250; min: 1.149; max: 1.650)
Day 10	0	0.126 (SD: 0.023; min: 0.103; max: 0.149)	1.234 (SD: 0.092; min: 0.142; max: 1.327)

No specimen went to concentration zero; p<0.001

Conclusion

- For men utilizing the Fellow PVSA preservation system, sperm concentration remains stable and none went down to ZERO from day 0 to at least day 10 after production
- **Urologists can feel confident that results from the Fellow PVSA accurately reflect their immediate fresh post-ejaculatory status regarding dropping to zero with delay in evaluation.**

IP 18-29: Mail-In Semen Analysis vs Fresh Sample for Post-Vasectomy Semen Analysis: Identifying an Efficient Approach to Achieving Post-Vasectomy Clearance

Ellen M. Cahill, MD[1], Stanton C. Honig, MD[1], Sharath S. Reddy, MD[1], Daniel Nolte, MS[2], Stacey Kenfield, ScD[3], Andre Belarmino, MD[2,4], Daniel Civello, CLS[2], James F. Smith, MD[3], Katherine Rotker, MD[1]

[1]Yale University School of Medicine, New Haven, CT ; [2]Fellow Health, San Leandro, CA; [3]UCSF, San Francisco, CA
[4]UCLA Medical Center, Los Angeles, CA

Yale Medicine UROLOGY

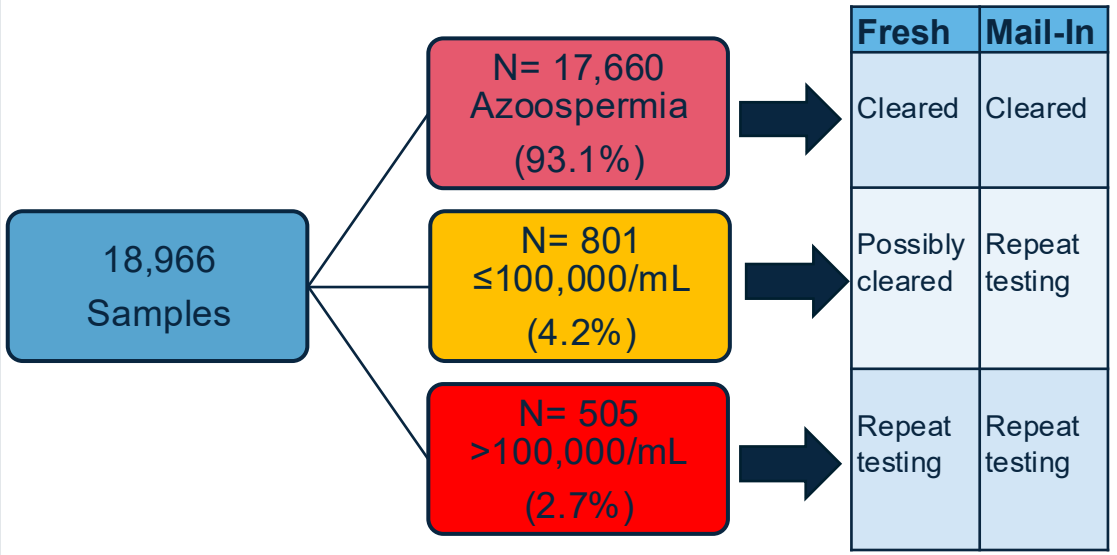
Introduction

- There has been a significant shift from standard fresh collection to mail-in collection for post-vasectomy semen analysis (PVSA)
- The 2015 AUA Vasectomy guidelines recommend that a fresh specimen be utilized and evaluated within 2 hours of collection, and that patients may be cleared based on azoospermia **OR** ≤100,000 rare non-motile sperm
- Limitations exist in measuring motility with a mail-in system
- Per AUA guidelines, mail-in testing may be utilized, though it is only adequate for clearing patients based on the presence or absence of sperm – the stricter of the two criteria
- **The objective of our study was to evaluate the % of patients that required repeat mail-in testing compared to a single, fresh PVSA sample**

Methods

- We evaluated all mail-in PVSA tests processed by Fellow Health, Inc. from April 2021 to March 2024
- We excluded samples collected within 8 weeks post-vasectomy, re-tests, samples collected where time from vasectomy was not recorded, and samples where clear inaccurate information was self-reported
- Samples were classified as azoospermic, ≤100,000 cells/mL, or >100,000 cells/mL

Results



In 4.2% of cases a mail-in patient was required to re-test when they may have been cleared with a fresh sample based on concentration alone

Conclusion

- Only 4.2% of mail-in PVSA samples required additional testing based on concentration alone, which may have been cleared if those cells were non-motile on a fresh analysis
- **The Fellow system enables highly efficient PVSA clearance for patients and physicians with the added benefit of convenience with a mail-in approach**

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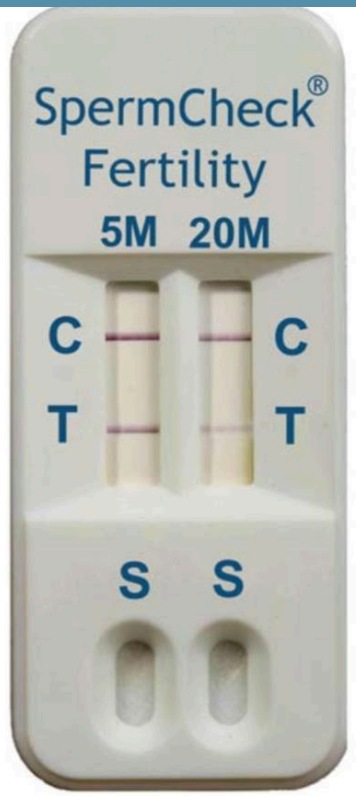
At Home Sperm Testing



Current Standing on Vasectomy?

NO !! For vasectomy

AUA-2
Washingt

ELSEVIER

Fertility and Sterility

Volume 115, Issue 4, April 2021, Page 882

Reflections

Clinical implications of home-based sperm testing

Thomas A. Masterson M.D. [a], Premal Patel M.D. [b] ✉

ASA-EAS

We **recommend** that **at-home** tests that measure sperm **concentration only** must be confirmed with a semen analysis by a laboratory to assess sperm

motility until more data become available, (1 ⊕⊕OO)

NEW Guidelines will say the same !

At Home Testing-Vasectomy

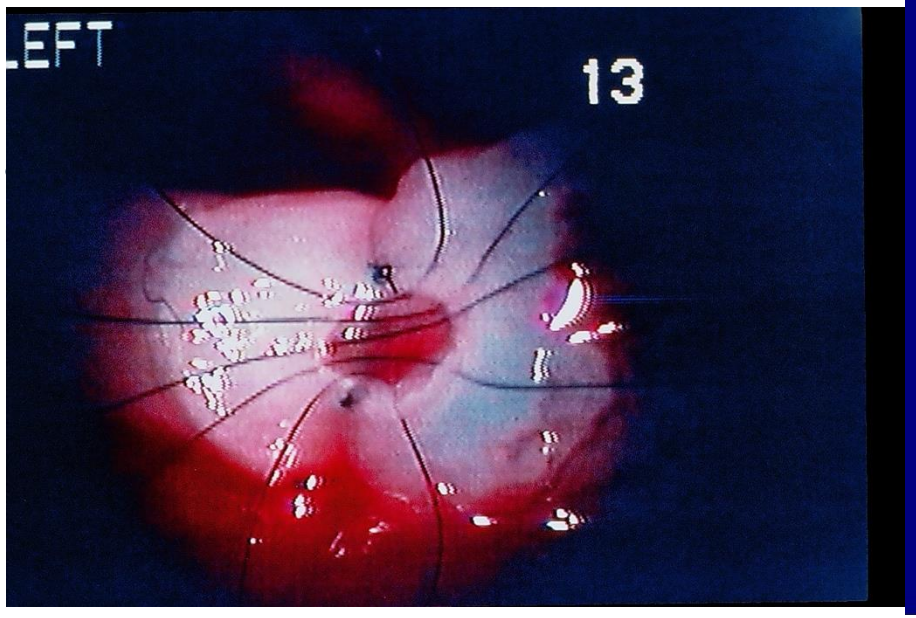
Table 2. *Proportion of post-vasectomy semen analyses with motile sperm according to sperm concentration*

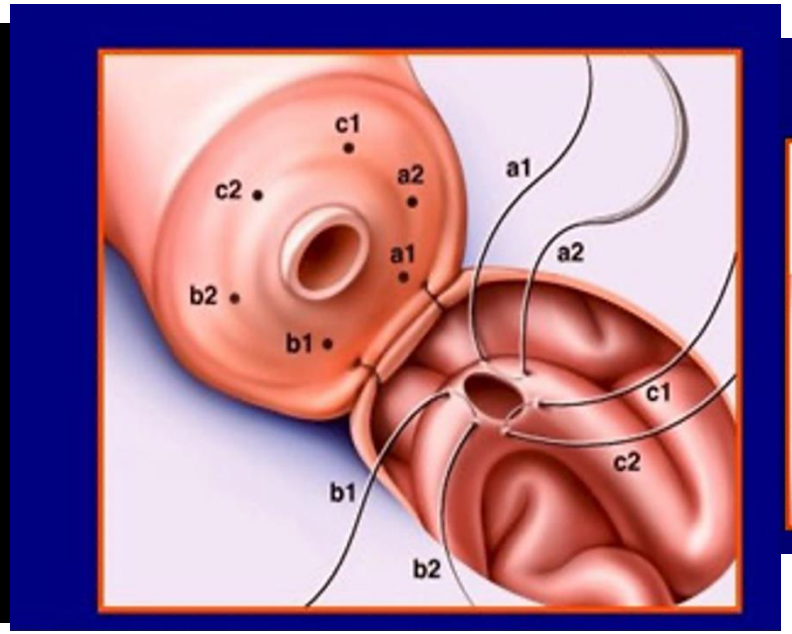
	Post-Vasectomy Semen Analyses with Motile Sperm					
	PVSAs Prescribed by any Physician (5,491)*			First PVSA Prescribed by Vasectomist (5,965) †		
Sperm Concentration per mL	No./Total No.	%	95% CI	No./Total No.	%	95% CI
None observed	0/4,069	0.0		0/3,808	0.0	-
100—999	4/1,313	0.3	0.1—0.8	3/1,249	0.2	0.05—0.7
1,000—9,999	16/594	2.7	1.6—4.3	10/520	1.9	0.9—3.5
10,000—99,999	9/193	4.7	2.2—8.7	4/148	2.7	0.7—6.8
100,000—249,999	3/52	[illegible]	1.2—16.0	2/35	5.7	0.7—19.2
250,000—499,999	4/54	7.4	2.1—17.9	3/41	7.3	1.5—19.9
500,000—999,999	7/54	13.0	5.4—24.9	5/41	12.2	4.1—26.2
1 million—9.9 million	45/95	47.4	37.0—57.9	36/78	46.2	34.8—57.8
10 million or more	62/67	92.5	83.4—97.5	40/45	88.9	76.0—96.3

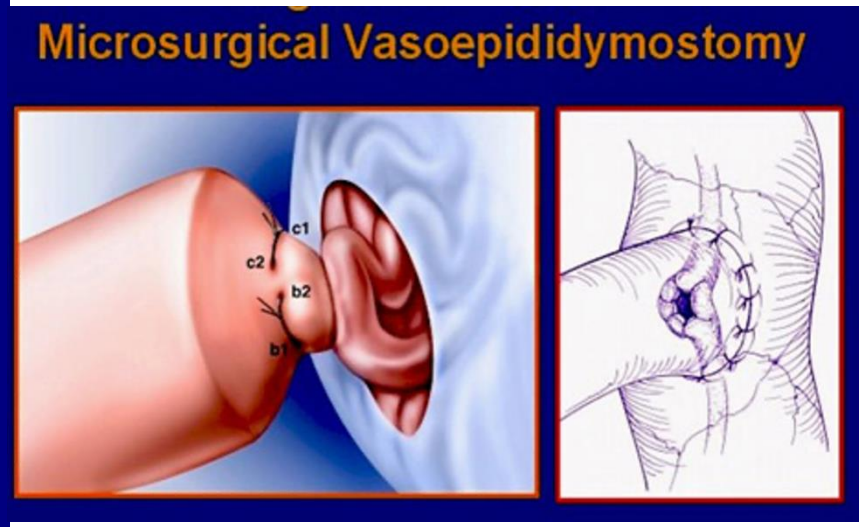
0.3% or 3/1000 would have a false negative
1/333 false negative

Highlights and Important Changes Microsurgical Reconstruction

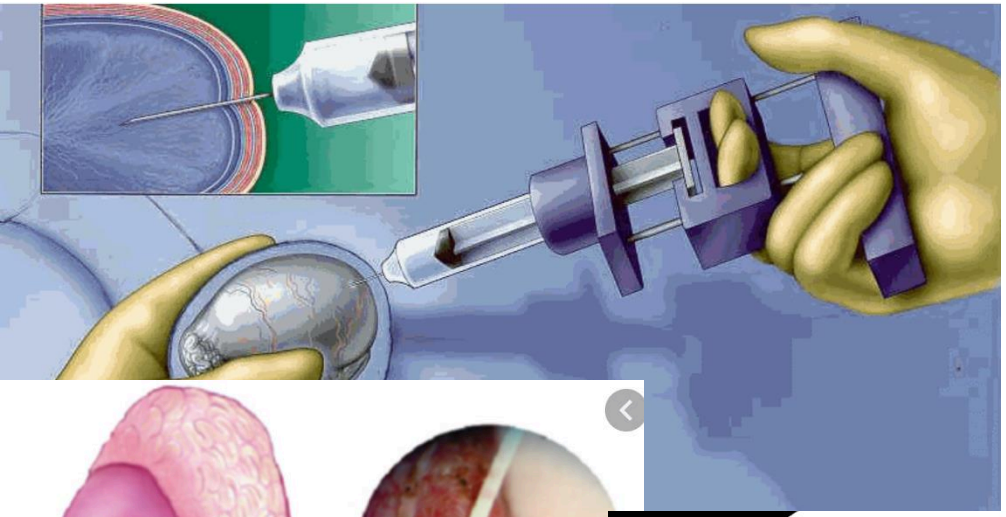
- ***Fertility after Vasectomy***
- **Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. *(Expert Opinion)***

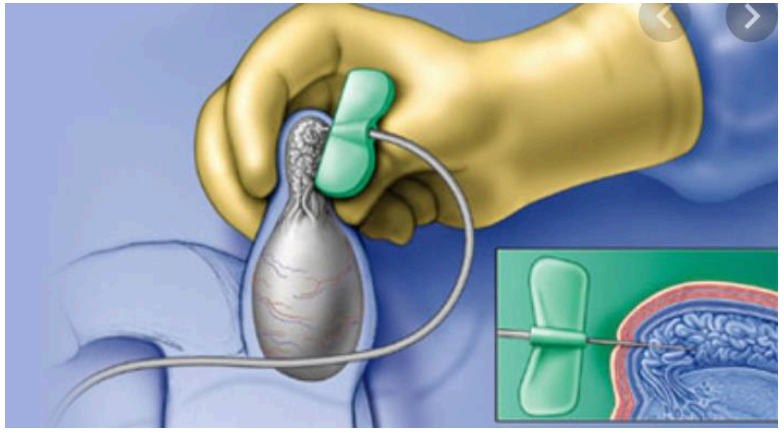


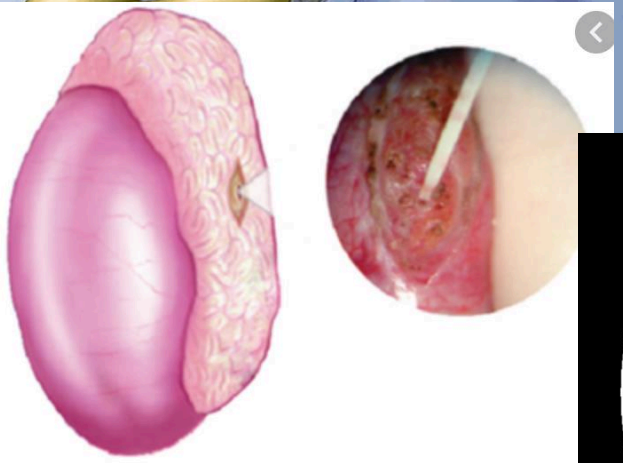


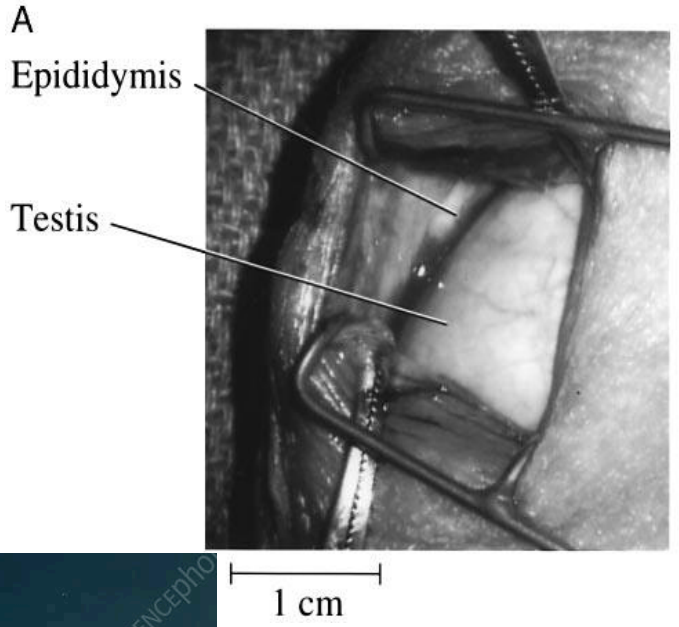


Sperm Extraction and ICSI









Major Changes and Highlights

- **Prostate Cancer**
- **Clinicians may inform patients that no causal link has been established between vasectomy and the development of prostate cancer. *(Conditional Recommendation; Evidence Level: Grade B)***

- **Clinicians may inform patients that no causal link has been established between vasectomy and development of high-grade prostate cancer or increased prostate cancer mortality. *(Conditional Recommendation; Evidence Level: Grade B)***

- **General:**
- **Clinicians may forego peri-procedural antibiotics for patients undergoing vasectomy unless the patient is at high risk of infection. *(Expert Opinion)***

- **Clinicians should recommend non-opioid oral analgesics (acetaminophen or non-steroidal anti-inflammatories) for post-operative pain control. *(Expert Opinion)***

Major Changes and Highlights

- **Surgical Technique**

- **Surgeons should perform vasectomy with an occlusive technique that combines mucosal cautery and fascial interposition.** ***(Strong Recommendation; Evidence Level: Grade B)***

- **Surgeons should not perform vas occlusion using only ligation and excision of a short vas segment** ***(Strong Recommendation; Evidence Level: Grade A)***

Major Changes and Highlights

- **PVSA Testing**

- **An uncentrifuged semen sample following vasectomy may be evaluated in a lab/office setting or by mail-in testing. *(Conditional Recommendation; Evidence Level: Grade C)***

- **Patients may discontinue contraception following confirmation of complete azoospermia or ≤100,000 nonmotile sperm per mL (RNMS) from a single uncentrifuged semen sample evaluated within 2 hours of collection; *(Conditional recommendation; Evidence Level: Grade B) A* sample evaluated >2 hours after collection should show azoospermia to stop contraception. *(Expert Opinion)***

Major Changes and Highlights

- ***Fertility after Vasectomy***

- **Clinicians should inform patients who desire restoration of fertility after vasectomy that surgical reconstruction or surgical sperm retrieval with ICSI are both options. Counseling should be provided to couples based on their clinical presentation to support shared decision-making regarding options for family building. *(Expert Opinion)***
- **Surgeons offering vasectomy reversal should have microsurgical expertise to provide vasoepididymostomy as well as vasovasostomy. *(Expert Opinion)***