

JEREMY GRUMMET

MBBS, MS, FRACS

CURRICULUM VITAE

Current positions/accreditation:

Visiting Medical Officer (Consultant Urologist), The Alfred Hospital, Melbourne, Australia

Adjunct Lecturer, Department of Surgery, Monash University

Member of Australian Urology Associates private urology practice

Accreditation at Epworth Healthcare Group (including robotic surgery), Cabrini Hospital, The Avenue Hospital, Bairnsdale Regional Health Service

EDUCATION

Tertiary:

University of Melbourne
Royal Melbourne Hospital Clinical School.
MB, BS 1996
Honours in final year Surgery

Post-graduate

Royal Australasian College of Surgeons (RACS) Part 1 Examination:
passed on first attempt in July 1999.

RACS Early Management of Severe Trauma (EMST): February 2000.

RACS Part 1: completion of Basic Surgical Training in September 2000.

RACS Care of the Critically Ill Surgical Patient (CCrISP): November 2000.

RACS Advanced Training Program in General Surgery: accepted in December 2000, with deferment granted until 2002 due to Master of Surgery enrolment in 2001.

RACS Critical Literature Evaluation And Research (CLEAR): October 2001.

RACS Advanced Training in Urology: accepted for commencement in 2004.

Master of Surgery: Novel Techniques for Vesicourethral Anastomosis in Radical Prostatectomy. Degree conferred at University of Melbourne 2004.

RACS Urology Fellowship Examination: passed on first attempt in June 2006.

FRACS: Urology training completed, Fellow of RACS effective from 6th February 2007.

Da Vinci Robotic Surgery Certification: Sunnyvale, California, November 2007.

Mini-Residency in Robot Assisted Laparoscopic Prostatectomy: University of California Irvine, Orange, California, November 2007.

Clinical Uro-Oncology Fellowship: The Prostate Centre at Vancouver General Hospital, University of British Columbia, Canada, completed June 2008.

AMS Travelling Fellowship in Prosthetic Urology: Awarded by USANZ 2009, visiting experts in prosthetic urology in U.S. cities of Nashville, Birmingham, Minneapolis, and Chicago.

Greenlight Laser Prostatectomy Workshop and Laser Safety Course: Sydney, July 2009.

CLINICAL

INTERNSHIP: 1997 at Royal Melbourne Hospital (RMH).

POST-GRADUATE YEAR (PGY) 2: 1998, Surgical Resident at RMH and Royal Children's Hospital.

PGY 3: 1999, no full-time hospital appointment due to position as **Senior Tutor in Anatomy** (see Teaching).

PGY 4: 2000, Surgical Resident at RMH.
First experience in Urology.

PGY 5: 2001, **Urology Research Registrar** at Royal Melbourne Hospital while enrolled in a Master of Surgery at University of Melbourne (see Research). **Accredited as elective year of Advanced Training in Urology by the Board of Urology, January 2005.**

PGY 6: 2002, **First Year Advanced Trainee in General Surgery:** Warrnambool Base Hospital, St Vincent's Hospital, Melbourne.

PGY 7: 2003, **Second Year Advanced Trainee in General Surgery:** Northern Hospital, Box Hill Hospital.

PGY 8: 2004, **First Year Advanced Trainee in Urology:** Albury, NSW.

PGY 9: 2005, **Second Year Advanced Trainee in Urology:** Alfred Hospital, Melbourne.

PGY 10: 2006, **Final Year Advanced Trainee in Urology:** Royal Melbourne Hospital.

Feb-May 2007:

Locum Consultant Urologist

Monash Medical Centre, Melbourne, Australia

Mildura Base and Mildura Private Hospitals, Victoria, Australia

Bairnsdale Regional Health Service, Victoria, Australia

Cabrini Hospital, Melbourne, Australia

July 2007-June 2008:

Clinical Uro-Oncology Fellow, The Prostate Centre at Vancouver General Hospital, University of British Columbia, Canada

RESEARCH

Master of Surgery Thesis

2001-4: Enrolled in a Master of Surgery. Conducted full-time animal laboratory research in the Department of Veterinary Medicine and Surgery of **University of Texas M.D. Anderson Cancer Center** in Houston, Texas in 2001. Twenty dogs underwent open prostatectomy to study alternative methods to suture for creating the vesico-urethral anastomosis in radical prostatectomy. The techniques of laser tissue welding and use of biological adhesives were investigated.

The longer-term follow-up project, using another adhesive material on nine dogs was conducted at University of Melbourne Department of Veterinary Science.

The thesis, entitled **Novel Techniques for Vesicourethral Anastomosis in Radical Prostatectomy**, was accepted and the degree of **Master of Surgery** conferred in 2004 (see [Appendix 1](#)).

Publications

“Laser Welded Vesico-Urethral Anastomosis in an In Vivo Canine Model: A Pilot Study”

JP Grummet, AJ Costello, DA Swanson, LC Stephens and DM Cromeens. **Journal of Urology**, **168 (1): 281-284, July 2002.**

(See [Appendix 2](#))

“Vesico-Urethral Anastomosis with 2-Octyl Cyanoacrylate in an In Vivo Canine Model”

JP Grummet, AJ Costello, DA Swanson, LC Stephens and DM Cromeens. **Urology**, **60: 935-938, November 2002.**

(See [Appendix 3](#))

Presentations

October 2001: Urological Society of Australasia Annual Victorian State Meeting, Rosebud - “Novel Techniques for a Watertight Anastomosis in Radical Prostatectomy”.

January 2002: SPIE Conference on Laser Welding and Soldering of Tissue, San Jose, California - “Laser Welded Urinary Tract Anastomosis in an In Vivo Canine Model”.

April 2002: Urological Society of Australasia ASM, Perth. - “Anastomosis in Radical Prostatectomy: A Better Way Using Glue?”

August 2002: 3rd National Prostate Cancer Symposium, Melbourne - “Non-sutured Vesico-urethral Anastomosis in Radical Prostatectomy”

March 2003: Urological Society of Australasia ASM, Queenstown, New Zealand - “Could BioGlue Replace Sutures for Anastomosis in Laparoscopic Radical Prostatectomy?”

March 2006: Urological Society of Australasia ASM, Brisbane – “Perks, Freebies and Incentives: Zero Ethical Responsibility?”

October 2006: USANZ Annual Victorian State Meeting, Shepparton – **Winner 3rd Prize Best Presentation** for “Laparoscopic Partial Nephrectomy – the Royal Melbourne Hospital Experience”

October 2007: Western Section AUA Annual Meeting, Scottsdale, Arizona – “Radical Prostatectomy for High Risk Prostate Cancer: the Vancouver Experience”

December 2007: North West Urological Society Annual Meeting, Vancouver, Canada – “Radical Prostatectomy for High Risk Prostate Cancer: the Vancouver Experience”; also presented on “Surgery for High Risk Prostate Cancer” at sponsored symposium session; moderated Bladder Cancer session

February 2008: Genitourinary Cancers Symposium, San Francisco, California – “Radical Prostatectomy for High Risk Prostate Cancer: the Vancouver Experience”; received **Merit Award** for abstract

June 2008: CUA Annual Meeting, Edmonton, Canada - “Radical Prostatectomy for High Risk Prostate Cancer: the Vancouver Experience”; received **Five Star Distinction** for abstract

March 2009: USANZ ASM, Gold Coast – “Surgery For High Risk Clinically Localised Prostate Cancer: Surgical Pathology and PSA Recurrence-Free Survival”

TEACHING

1998-9: Tutor to medical students at Trinity College, University of Melbourne.

1999: **Senior Tutor in Department of Anatomy and Cell Biology, University of Melbourne.**

Sep-Oct 2000: **Lecturer in the Division of Human Anatomy at Stanford University, California.**

1999-2005: **Contributing Editor** to “an@tomedia,” an interactive multimedia Anatomy teaching computer program, produced by the Department of Anatomy, University of Melbourne (see [Appendix 4](#)).

Feb 2007: Instructor in Minor Surgery for General Practitioners course at RACS Skills Lab, Melbourne.

2009: Clinical supervisor of Final Year Monash medical students on Urology Unit as Surgery rotation

2009: Coordinator of lecture programme in Urology for 3rd Year Monash medical students

HONORARY

2005: First registrar member of Victorian State Executive Committee of Urological Society of Australasia

2009: RACS Clinical Examination Committee member

2009: Adjunct Lecturer, Department of Surgery, Monash University

APPENDIX 1

MASTER OF SURGERY THESIS: NOVEL TECHNIQUES FOR VESICourethRAL ANASTOMOSIS IN RADICAL PROSTATECTOMY

ABSTRACT

The anastomosis between bladder neck and urethral stump is performed following excision of the prostate in radical prostatectomy. Problems with the anastomosis, causing clinical complications, continue to exist in traditional open radical prostatectomy. These problems, as well as additional issues, also arise in the newly-developed and increasingly popular operation of laparoscopic radical prostatectomy.

The vesico-urethral anastomosis in both open and laparoscopic radical prostatectomy is performed using sutures. Problems common to the anastomosis in both techniques are related to its extravasation of urine between the sutures. Large extravasation, forming a urinoma, can lead to prolonged post-operative catheterization, pelvic abscess, the need for percutaneous aspiration, or even re-operation. Lesser extravasation can also result in prolonged catheterization, and may lead to eventual stricture formation.

An additional problem of vesico-urethral anastomosis, unique to laparoscopic radical prostatectomy, is the technical difficulty involved in its formation. The intra-corporeal knot-tying required challenges the most experienced laparoscopists, resulting in excessive operating times and a slow learning curve.

Experiments were conducted to investigate alternative techniques that could minimize or eliminate sutures in the formation of the vesico-urethral anastomosis. The materials and techniques chosen for investigation were ones that might not only replace sutures, but also create immediate and ongoing hermetic sealing of the anastomosis.

In Experiment 1, alternatives to suture (2-octyl cyanoacrylate [OCA], fibrin glue, and laser welding) were tested for their ability to perform both an immediate and ongoing watertight anastomosis in an in vivo canine open surgery model, and for the effect the alternative technique had on the tissues involved. In Experiment 2, glutaraldehyde-

albumin adhesive (GAA) was assessed for the same features, as well as medium-term healing. An in vivo canine open surgery model was again used.

While OCA generally failed to create continuously watertight anastomoses, fibrin glue and laser welding appeared to be more successful. Although fibrin glue also had the advantage of resorbability, this was tempered by its negligible tensile strength, requiring the use of supportive sutures. Laser welding had the disadvantage of causing tissue necrosis, with unknown consequences for longer-term healing. GAA also appeared to be successful, generally creating immediate and ongoing watertight anastomoses without stricture formation, despite inciting a foreign body reaction greater than that caused by sutures.

The three successful alternative techniques are all deserving of further research. The author believes that, while these techniques may to some extent address the problem of extravasation of the vesico-urethral anastomosis, their major benefit will be found in simplifying the anastomosis formation in laparoscopic radical prostatectomy.

[APPENDIX 2](#)

LASER WELDED VESICourethRAL ANASTOMOSIS IN AN IN VIVO CANINE MODEL: A PILOT STUDY

JEREMY P. GRUMMET, ANTHONY J. COSTELLO, DAVID A. SWANSON,* L. CLIFTON STEPHENS
AND DOUGLAS M. CROMEENS

*From the Division of Urology, Department of Surgery, University of Melbourne, Melbourne, Australia, and Departments of Urology and
Veterinary Medicine and Surgery, University of Texas M. D. Anderson Cancer Center, Houston, Texas*

ABSTRACT

Purpose: We evaluated laser welding as an alternative method of forming the vesicourethral anastomosis.

Materials and Methods: Eight dogs underwent open total prostatectomy, including 4 in which the vesicourethral anastomosis was formed by 830 nm. diode laser welding using a chromophore doped albumin solder and 3 or 4 support sutures. The remaining 4 anastomoses were conventionally formed using 8 interrupted sutures. Acute leakage was tested intraoperatively. The anastomosis of 1 animal per group was assessed on postoperative days 3, 5, 7 and 14 by radiography before sacrifice. Each anastomotic specimen was then tested for leak pressure and examined histologically.

Results: There were no leaks during intraoperative testing of laser welded or sutured anastomoses. On radiography there were no leaks in the laser welded group. In 1 control there was slight localized leakage. All anastomoses achieved physiological leak pressures of 70 mm. Hg or greater with 3 of the 4 in the laser welded group recording suprphysiological pressures of greater than 200 mm. Hg. While 3 of the 4 laser welded specimens showed evidence of muscle necrosis, there were no other differences in healing in the 2 groups.

Conclusions: These short-term results suggest that diode laser welded vesicourethral anastomosis is feasible. This technique has the potential to simplify anastomotic formation in laparoscopic radical prostatectomy, shortening operative time. Diode laser welding in this small cohort created an immediate and ongoing watertight anastomosis and, therefore, it may also be an alternative in open radical prostatectomy cases. Further study is needed to assess long-term effects on healing.

KEY WORDS: urethra; bladder; lasers; anastomosis, surgical; dogs; prostatectomy

While laparoscopic radical prostatectomy was shown to be feasible in 1997 by Schuessler et al.,¹ it increased in popularity as an alternative to the standard open techniques after the recent reports by Guillonnet and Vallancien,² and Abbou et al.³ With experience operating times have decreased markedly. However, formation of the vesicourethral anastomosis has remained a technically difficult and time-consuming step. It prompted Hoznek et al to alter their technique from using 6 interrupted sutures to 2 hemi-circumferential running sutures.⁴ These groups reported anastomosis leakage that required reoperation.

To our knowledge no one has described the use of laser welding for vesicourethral anastomosis formation. It was hypothesized that this technique could greatly reduce technical difficulty in laparoscopic radical prostatectomy and form an immediate watertight seal. Therefore, the feasibility of laser welded vesicourethral anastomosis was evaluated in a canine model for future laparoscopic application. This technique was compared with the standard sutured anastomosis.

MATERIALS AND METHODS

Animal preparation and surgical technique. In 8 mature mongrel hounds weighing 24 to 38 kg. open total prostatectomy was performed. The institutional animal care and use committee approved all procedures. All animals received humane care in compliance with the 1996 Guide for the Care

and Use of Laboratory Animals prepared by the National Research Council. Each animal was fasted overnight and premedicated with acepromazine (0.05 mg/kg.), atropine (0.04 mg/kg.), buprenorphine (0.02 mg/kg.) and cefazolin (20 mg/kg.). General anesthesia was induced with intravenous sodium pentothal followed by endotracheal intubation and an 8 or 10Fr polypropylene plain urethral catheter was inserted into the urethra. Anesthesia was maintained with 1% to 3% isoflurane in 100% oxygen.

Via a caudal midline laparotomy the prostate was dissected free from the bladder neck and membranous urethra. In 4 animals the vesicourethral anastomosis was formed by laser welding. In the other 4 dogs the anastomosis was formed conventionally using 8 interrupted 2-zero chromic gut sutures. Anastomotic leakage was then tested by instilling methylene blue solution (20 ml.) into the bladder via the urethral catheter. The wound was closed without a drain. The catheter was sutured to the internal aspect of the prepuce and cut flush with its surface to reduce the risk of self-decatheterization. Postoperatively prophylactic antibiotics (cephalexin) were given for 5 days and analgesia (carprofen) was given for 4 as well as buprenorphine as required. Catheters remained in situ until sacrifice except in 14-day animals, in which they were removed after 7 days.

Solder preparation and laser welding. Lyophilized bovine serum albumin (Sigma Chemical Co., St. Louis, Missouri) was reconstituted with deionized water to make a 50% solution of liquid solder. Indocyanine green dye (Sigma Chemical Co.) (2.5 mg.) was added to each ml. of 50% solution. The

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* Financial interest and/or other relationship with AstraZeneca and Kidney Cancer Association.

VESICourethRAL ANASTOMOSIS WITH 2-OCTYL CYANOACRYLATE ADHESIVE IN AN IN VIVO CANINE MODEL

JEREMY P. GRUMMET, ANTHONY J. COSTELLO, DAVID A. SWANSON, L. CLIFTON STEPHENS,
AND DOUGLAS M. CROMEENS

ABSTRACT

Objectives. To evaluate the effectiveness of 2-octyl cyanoacrylate adhesive (OCA) in the formation of vesicourethral anastomoses.

Methods. Open total prostatectomy was performed on 12 mongrel hounds. Of these, 8 had a vesicourethral anastomosis formed using OCA (4 with suture support and 4 sutureless). The remaining four anastomoses were conventionally formed using eight interrupted sutures. Acute leakage was tested intraoperatively. Before killing the hounds, the anastomosis of 1 animal in each group was assessed on postoperative days 3, 5, 7, and 14 by radiography. Each anastomotic specimen was then tested for leak pressure and examined histologically.

Results. At intraoperative testing, one small leak was found in the sutureless OCA group. All other anastomoses were watertight intraoperatively. Radiographically, two leaks occurred in the OCA group with suture support, three leaks in the sutureless OCA group, and only one small localized leak in the control group. Only one of the eight anastomoses using OCA achieved a physiologic leak pressure greater than 70 mm Hg (one of these, however, could not be tested because of injury at the time the specimen was retrieved). The leak pressures of all four control-group anastomoses were 70 mm Hg or greater. Histologically, no significant differences were found in healing between the control and OCA anastomoses.

Conclusions. With or without suture support, OCA appears to be unsuitable for use in forming the large-diameter vesicourethral anastomosis required in radical prostatectomy. *UROLOGY* 60: 935–938, 2002. Crown Copyright © 2002. Published by Elsevier Science Inc.

Although it remains controversial, laparoscopic radical prostatectomy (LRP) as an alternative to standard open prostatectomy techniques has increased in popularity^{1–4} following recent reports by Guillonnet and colleagues^{5,6} and Abbou and colleagues.⁷ Since LRP was initially performed, the operating times have decreased markedly; however, formation of the vesicourethral (VU) anastomosis remains a technically difficult and time-consuming step. This problem prompted Hoznek *et al.*⁸ to alter their technique from using six inter-

rupted sutures to two hemi-circumferential running sutures. Both Guillonnet *et al.*⁶ and Abbou *et al.*⁷ have reported anastomotic leakage that required reoperation.

We hypothesized that the use of 2-octyl cyanoacrylate adhesive (OCA) could greatly reduce the technical difficulties associated with LRP and could immediately form a watertight seal. We evaluated the feasibility of forming the VU anastomosis using OCA in a canine model and compared the technique with the standard sutured anastomosis technique.

MATERIAL AND METHODS

Open total prostatectomies were performed in 12 mature mongrel hounds weighing 25 to 39 kg each. The Institutional Animal Care and Use Committee approved all procedures before the study. All animals received humane care in compliance with the Guide for the Care and Use of Laboratory Animals, published by the National Research Council in 1996.

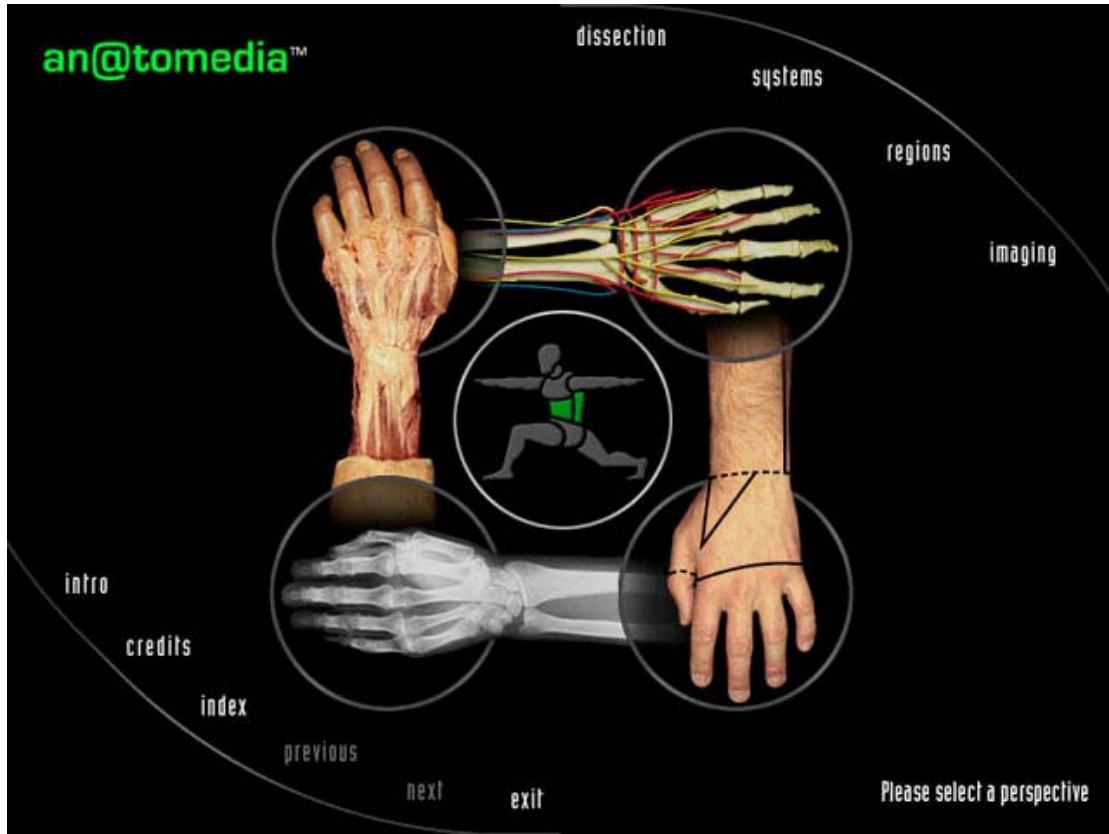
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Inguinal canal & scrotum

Testis and epididymis

The testis and epididymis are removed from the scrotal sac revealing the parietal layer of the tunica vaginalis (on the internal aspect of the lower part of the scrotum). The tunica vaginalis is much more extensive anteriorly than posteriorly (where the testis is supplied via its neurovascular hilus). The testis is displaced laterally to inspect its medial aspect.

Can you identify the neurovascular hilus of the testis?

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