DEPARTMENT OF THE AIR FORCE
59TH MEDICAL WING (AETC)
JOINT BASE SAN ANTONIO - LACKLAND TEXAS

20 JUN 2017

MEMORANDUM FOR 959 CSPS
ATTN: CAPT PANSY UBEROI

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your paper, entitled **Delayed Diagnosis of Iliac Vein Injury: A Severe Complication After Retropubic Mid-Urethral Mesh Sling Placement** presented at/published to **American Urology Association South Central Section, Naples, FL, 4-7 October 2017 (Poster)** in accordance with MDWI 41-108, has been approved and assigned local file #**17267.**

2. Pertinent biographic information (name of author(s), title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.

3. Please know that if you are a Graduate Health Sciences Education student and your department has told you they cannot fund your publication, the 59th Clinical Research Division may pay for your basic journal publishing charges (to include costs for tables and black and white photos). We cannot pay for reprints. If you are a 59 MDW staff member, we can forward your request for funds to the designated Wing POC at the Chief Scientist's Office, Ms. Alice Houy, office phone: 210-292-8029; email address: alice.houy.civ@mail.mil.

4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

LINDA STEEL-GOODWIN, Col, USAF, BSC
Director, Clinical Investigations & Research Support

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS

INSTRUCTIONS

USE ONLY THE MOST CURRENT 59 MDW FORM 3039 LOCATED ON AF E-PUBLISHING

1. The author must complete page two of this form:
   a. In Section 2, add the funding source for your study [e.g., 59 MDW CRD Graduate Health Sciences Education (GHSE) (SG5 O&M); SG5 R&D; Tri-Service Nursing Research Program (TSNRP); Defense Medical Research & Development Program (DMRDP); NIH; Congressionally Directed Medical Research Program (CDMRP) ; Grants; etc.]

   b. In Section 2, there may be funding available for journal costs, if your department is not paying for figures, tables or photographs for your publication. Please state "YES" or "NO" in Section 2 of the form, if you need publication funding support.

2. Print your name, rank/grade, sign and date the form in the author's signature block or use an electronic signature.

3. Attach a copy of the 59 MDW IRB or IACUC approval letter for the research related study. If this is a technical publication/presentation, state the type (e.g. case report, QA/QI study, program evaluation study, informational report/briefing, etc.) in the "Protocol Title" box.

4. Attach a copy of your abstract, paper, poster and other supporting documentation.

5. Save and forward, via email, the processing form and all supporting documentation to your unit commander, program director or immediate supervisor for review/approval.

6. On page 2, have either your unit commander, program director or immediate supervisor:
   a. Print their name, rank/grade, title; sign and date the form in the approving authority's signature block or use an electronic signature.

7. Submit your completed form and all supporting documentation to the CRD for processing (59crdpubspres@us.af.mil). **This should be accomplished no later than 30 days before final clearance is required to publish/present your materials.** If you have any questions or concerns, please contact the 59 CRD/Publications and Presentations Section at 292-7141 for assistance.

8. The 59 CRD/Publications and Presentations Section will route the request form to clinical investigations, 502 ISG/JAC (Ethics Review) and Public Affairs (59 MDW/PA) for review and then forward you a final letter of approval or disapproval.

9. Once your manuscript, poster or presentation has been approved for a one-time public release, you may proceed with your publication or presentation submission activities, as stated on this form. **Note:** For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.

10. If your manuscript is accepted for scientific publication, please contact the 59 CRD/Publications and Presentations Section at 292-7141. This information is reported to the 59 MDW/CC. All medical research or technical information publications/presentations must be reported to the Defense Technical Information Center (DITC). See 59 MDWI 41-108, *Presentation and Publication of Medical and Technical Papers,* for additional information.

11. The Joint Ethics Regulation (JER) DoD 5500.07-R, *Standards of Conduct*, provides standards of ethical conduct for all DoD personnel and their interactions with other non-DoD entities, organizations, societies, conferences, etc. Part of the Form 3039 review and approval process includes a legal ethics review to address any potential conflicts related to DoD personnel participating in non-DoD sponsored conferences, professional meetings, publication/presentation disclosures to domestic and foreign audiences, DoD personnel accepting non-DoD contributions, awards, honoraria, gifts, etc. The specific circumstances for your presentation will determine whether a legal review is necessary. **If you (as the author) or your supervisor check "NO" in block 17 of the Form 3039, your research or technical documents will not be forwarded to the 502 ISG/JAC legal office for an ethics review.** To assist you in making this decision about whether to request a legal review, the following examples are provided as a guideline:

    For presentations before professional societies and like organizations, the 59 MDW Public Affairs Office (PAO) will provide the needed review to ensure proper disclaimers are included and the subject matter of the presentation does not create any cause for DoD concern.

    If the sponsor of a conference or meeting is a DoD entity, an ethics review of your presentation is not required, since the DoD entity is responsible to obtain all approvals for the event.

    If the sponsor of a conference or meeting is a non-DoD commercial entity or an entity seeking to do business with the government, then your presentation should have an ethics review.

    If your travel is being paid for (in whole or in part) by a non-Federal entity (someone other than the government), a legal ethics review is needed. These requests for legal review should come through the 59 MDW Gifts and Grants Office to 502 ISG/JAC.

    If you are receiving an honorarium or payment for speaking, a legal ethics review is required.

    If you (as the author) or your supervisor check "YES" in block 17 of the Form 3039, your research or technical documents will be forwarded simultaneously to the 502 ISG/JAC legal office and PAO for review to help reduce turn-around time. If you have any questions regarding legal reviews, please contact the legal office at (210) 671-5795/3365, DSN 473.

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement:
"The views expressed are those of the [author(s)] [presenter(s)] and do not reflect the official views or policy of the Department of Defense or its Components"

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement for research involving humans:
"The voluntary, fully informed consent of the subjects used in this research was obtained as required by 32 CFR 219 and DODI 3216.02_AFI 40-402."

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement for research involving animals, as required by AFMAN 40-401_IP :
"The experiments reported herein were conducted according to the principles set forth in the National Institute of Health Publication No. 80-23, Guide for the Care and Use of Laboratory Animals and the Animal Welfare Act of 1966, as amended."

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS

1. TO: CLINICAL RESEARCH	2. FROM: (Author's Name, Rank, Grade, Office Symbol)	3. GME/GHSE STUDENT:	4. PROTOCOL NUMBER:
	Pansy Uberoi, Capt, O-3	☒ YES ☐ NO	

5. PROTOCOL TITLE: (**NOTE:** For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.)

Delayed Diagnosis of Iliac Vein Injury: A Severe Complication After Retropubic Mid-Urethral Mesh Sling Placement

6. TITLE OF MATERIAL TO BE PUBLISHED OR PRESENTED:

Delayed Diagnosis of Iliac Vein Injury: A Severe Complication After Retropubic Mid-Urethral Mesh Sling Placement

7. FUNDING RECEIVED FOR THIS STUDY? ☐ YES ☒ NO FUNDING SOURCE:

8. DO YOU NEED FUNDING SUPPORT FOR PUBLICATION PURPOSES: ☐ YES ☒ NO

9. IS THIS MATERIAL CLASSIFIED? ☐ YES ☒ NO

10. IS THIS MATERIAL SUBJECT TO ANY LEGAL RESTRICTIONS FOR PUBLICATION OR PRESENTATION THROUGH A COLLABORATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA), MATERIAL TRANSFER AGREEMENT (MTA), INTELLECTUAL PROPERTY RIGHTS AGREEMENT ETC.?

☐ YES ☒ NO **NOTE:** If the answer is YES then attach a copy of the Agreement to the Publications/Presentations Request Form.

11. MATERIAL IS FOR: ☒ DOMESTIC RELEASE ☐ FOREIGN RELEASE

CHECK APPROPRIATE BOX OR BOXES FOR APPROVAL WITH THIS REQUEST. ATTACH COPY OF MATERIAL TO BE PUBLISHED/PRESENTED.

☐ 11a. PUBLICATION/JOURNAL (List intended publication/journal.)

☐ 11b. PUBLISHED ABSTRACT (List intended journal.)

☒ 11c. POSTER (To be demonstrated at meeting: name of meeting, city, state, and date of meeting.)

American Urology Association South Central Section, Naples, FL Oct 4-7, 2017

☐ 11d. PLATFORM PRESENTATION (At civilian institutions: name of meeting, state, and date of meting.)

☐ 11e. OTHER (Describe: name of meeting, city, state, and date of meeting.)

12. HAVE YOUR ATTACHED RESEARCH/TECHNICAL MATERIALS BEEN PREVIOUSLY APPROVED TO BE PUBLISHED/PRESENTED?

☒ YES ☐ NO ASSIGNED FILE # 16320 DATE 17 Oct 2016

13. EXPECTED DATE WHEN YOU WILL NEED THE CRD TO SUBMIT YOUR CLEARED PRESENTATION/PUBLICATION TO DTIC
NOTE: All publications/presentations are required to be placed in the Defense Technical Information Center (DTIC).

DATE	

14. 59 MDW PRIMARY POINT OF CONTACT (Last Name, First Name, M.I., email)	15. DUTY PHONE/PAGER NUMBER
Lilia Neaves, lilia.m.neaves.civ@mail.mil	210-916-6604

16. AUTHORSHIP AND CO-AUTHOR(S) List in the order they will appear in the manuscript.

LAST NAME, FIRST NAME AND M.I.	GRADE/RANK	SQUADRON/GROUP/OFFICE SYMBOL	INSTITUTION (If not 59 MDW)
a. Primary/Corresponding Author Pansy Uberoi	O-3	959th	
b. Forrest Jellison	O-4	959th	
c.			
d.			
e.			

17. IS A 502 ISG/JAC ETHICS REVIEW REQUIRED (JER DOD 5500.07-R)? ☐ YES ☒ NO

I CERTIFY ANY HUMAN OR ANIMAL RESEARCH RELATED STUDIES WERE APPROVED AND PERFORMED IN STRICT ACCORDANCE WITH 32 CFR 219, AFMAN 40-401_IP, AND 59 MDWI 41-108. I HAVE READ THE FINAL VERSION OF THE ATTACHED MATERIAL AND CERTIFY THAT IT IS AN ACCURATE MANUSCRIPT FOR PUBLICATION AND/OR PRESENTATION.

18. AUTHOR'S PRINTED NAME, RANK, GRADE	19. AUTHOR'S SIGNATURE	20. DATE
Pansy Uberoi, Capt, O-3	UBEROI.PANSY.1385167756	30 Mar 2017
21. APPROVING AUTHORITY'S PRINTED NAME, RANK, TITLE	**22. APPROVING AUTHORITY'S SIGNATURE**	**23. DATE**
Forrest Jellison, Maj, 0-4	JELLISON.FORREST.C.1246837607	31 Mar 2017

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS

1st ENDORSEMENT (59 MDW/SGVU Use Only)

TO: Clinical Research Division 59 MDW/CRD Contact 292-7141 for email instructions.	24. DATE RECEIVED June 20, 2017	25. ASSIGNED PROCESSING REQUEST FILE NUMBER 17267
26. DATE REVIEWED 20 Jun 2017		27. DATE FORWARDED TO 502 ISG/JAC

28. AUTHOR CONTACTED FOR RECOMMENDED OR NECESSARY CHANGES: ☐ NO ☐ YES If yes, give date. _____ ☒ N/A

29. COMMENTS ☒ APPROVED ☐ DISAPPROVED

Abstract and Poster of case study

30. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	31. REVIEWER SIGNATURE	32. DATE
COL LINDA STEEL-GOODWIN, USAF, BSC	STEEL.GOODWIN.LINDA.1186463583 c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USAF, cn=STEEL.GOODWIN.LINDA.1186463583	20 Jun 2017

2nd ENDORSEMENT (502 ISG/JAC Use Only)

33. DATE RECEIVED	34. DATE FORWARDED TO 59 MDW/PA

35. COMMENTS ☐ APPROVED (In compliance with security and policy review directives.) ☐ DISAPPROVED

36. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	37. REVIEWER SIGNATURE	38. DATE

3rd ENDORSEMENT (59 MDW/PA Use Only)

39. DATE RECEIVED	40. DATE FORWARDED TO 59 MDW/SGVU
June 20, 2017	June 20, 2017

41. COMMENTS ☒ APPROVED (In compliance with security and policy review directives.) ☐ DISAPPROVED

42. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	43. REVIEWER SIGNATURE	44. DATE
Kevin Iinuma, SSgt/E-5, 59 MDW Public Affairs	IINUMA.KEVIN.MITSUGU.1296227613 613	June 20, 2017

4th ENDORSEMENT (59 MDW/SGVU Use Only)

45. DATE RECEIVED	46. SENIOR AUTHOR NOTIFIED BY PHONE OF APPROVAL OR DISAPPROVAL ☐ YES ☐ NO ☐ COULD NOT BE REACHED ☐ LEFT MESSAGE

47. COMMENTS ☐ APPROVED ☐ DISAPPROVED

48. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	49. REVIEWER SIGNATURE	50. DATE

Delayed Diagnosis of Iliac Vein Injury: A Severe Complication After Retropubic Mid-Urethral Mesh Sling Placement

Pansy Uberoi MD, MPH, Forrest Jellison MD
SAUSHEC, Department of Urology, Fort Sam Houston, TX

ABSTRACT

Introduction: Tension-free synthetic mesh midurethral slings is the most common treatment for female stress urinary incontinence. Perioperative vascular injuries during placement of a retropubic mid-urethral sling are uncommon, but have been described.
The objective of this case report is to describe a complication of delayed presentation from vascular injury not previously documented in the literature.
Methods: Case Report
Results: A 69 year old woman with stress urinary incontinence underwent placement of a retropubic mesh mid-urethral sling and subsequently developed persistent left abdominal, groin, and leg pain postoperatively. The patient had no vascular symptoms related to her sling placement. Sling revision with partial removal of the suburethral portion was attempted at an outside hospital, but her symptoms failed to improve. After evaluation she underwent removal of the remaining suburethral portion and left arm of the retropubic sling. During her second revision surgery, she experienced catastrophic bleeding from the sling located in her left external iliac vein. The life-threating injury required saphenous vein patch repair by Vascular Surgery.
Conclusion: This is the first description of a delayed diagnosis of vascular injury without urologic symptoms following retropubic mid-urethral mesh sling. This life-threating complication should be considered and patients appropriately counseled prior retropubic sling revision.

BACKGROUND

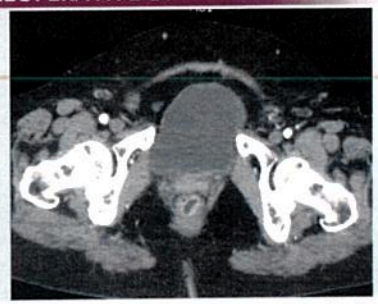
-Retropubic mid-urethral slings (RMUS) are a standard treatment for the management of stress urinary incontinence.
-The recent American Urologic Association guideline for surgical management of female SUI described synthetic mid-urethral sling surgery as having similar efficacy and less morbidity than nonmesh slings[1].

Common complications
-Intraoperative hemorrhage has been described with major vessel injury found less than 0.7% percent of the time
-Hematoma has been described in approximately 2% of patients[2]

CASE PRESENTATION

- A 69 year old female underwent RPMUS placement
- Developed de-novo pain
  - Left groin
  - Left inner thigh
  - Left vaginal wall
- Left suburethral portion of sling was removed
- SUI worsened
- Pain did not improve
- Patient was referred to our center
- Urologic evaluation was negative
  - Negative UA
  - Negative cystourethroscopy
  - Negative urodynamic testing for obstruction
- Vascular evaluation was negative
  - No CT evidence of hematoma
  - Normal ABIs
- The patient opted for urethrolysis and sling removal

PREOPERATIVE CT



No evidence of external iliac vein injury on preoperative imaging.

INTRAOPERATIVE

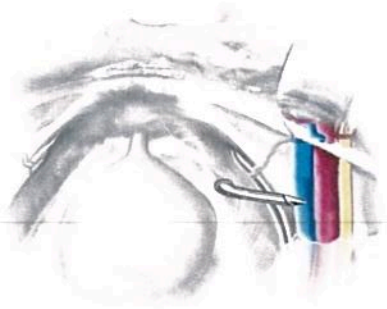


Illustration of trocar piercing the left external iliac vein.

INTERVENTIONS

- Patient was taken to the OR for excision of sling
- Procedure was begun transvaginally
  - Urethrotomy was created and repaired with a martius flap
  - Left retropubic arm of the sling was abnormally placed
    - 5cm superior to the pubic symphysis
    - 6cm lateral to the pubic symphysis
    - Traversed the obturator internus and iliococcygeus
- A mini-Gibson incision was created for adequate exposure
  - Sling was dissected free to the abdominal fascial
  - Careful attention was paid to not injure pelvic vessels and the sling was pulled superiorly and excised under direct visualization
  - Following excision 200 mL of blood loss was experienced
  - Bleeding was controlled with direct pressure to the area
- The incision was extended to a full Gibson
  - The source of bleeding was identified with the mesh sling creating a venotomy in the left external iliac vein
  - Vascular Surgery examined the repair lumen diameter and assessed for thrombus

DISCUSSION

Vascular injury with MUS placement is rare and most are identified intraoperatively as active extravasation of blood or hemodynamic instability

This case represents delayed recognition of vascular injury.

In our literature search, one case of delayed diagnosis of external iliac vein injury was noted. However, the patient described in that case sustained several complications to include trocar placement through the bladder at index surgery and, on reoperation, she was noted to have bladder mesh penetration, scar tissue surrounding the obturator nerve, and intraluminal mesh of the contralateral external iliac vein[3].

A comprehensive knowledge of the anatomy is necessary.
The distance between the lateral edge of the trocar needle to the medial aspect of various vessels has been examined in cadavers.

An average of 4.9cm with a range of 2.9-6.2cm to the external iliac vessels was reported.

Distance to other vessels in terms of average and range were noted to be – obturator 3.2cm (1.6-4.3), superior epigastric 3.9cm (0.9-6.7), and inferior epigastric 3.9cm (1.9-6.6)[4].

Our patient experienced a life-threatening complication during sling revision.

Given the possible proximity of sling arms to pelvic vessels, open/laparoscopic laparotomy should be considered by the operating surgeon when removing suprapubic sling arms to prevent vascular injury and to identify and such injuries if they occur.

An understanding of these delayed complications is important to the practicing urologist or urogynecologist when evaluating vague symptoms in the post-operative period following RMUS placement and intraoperatively.

REFERENCES

1. Dmochowski RR, Blaivas JM, Gormley EA, Juma S, Karram MM, Lightner DJ, et al. Update of AUA guideline on the surgical management of female stress urinary incontinence. J Urol 2010;183:1906-14.
2. Cetinel B, Tarcan T. Review Article: Management of Complications After Tension-Free Midurethral Slings. Korean J Urol 2013; 54:651-659.
3. Aslam MF, Denman MA. Case Report: Delayed Diagnosis of Vascular Injury with a Retropubic Midurethral Sling. Obstet Gynecol 2013 Aug; 122(1 Pt 2):444-6
4. Muir T, Tulikangas P, Paraiso M, and Walters M. The Relationship of Tension-Free Vaginal Tape Insertion and the Vascular Anatomy. Obstetrics and Gynecology: TVT and Vascular Anatomy. Vol 101, No 5, Part 1, May 2003.

DELAYED DIAGNOSIS OF ILIAC VEIN INJURY: A SEVERE COMPLICATION AFTER RETROPUBIC MID-URETHRAL MESH SLING PLACEMENT

Pansy Uberoi MD, MPH; Forrest Jellison MD, San Antonio Uniformed Services Health Education Consortium

Objectives: Tension-free synthetic mesh midurethral slings is the most common treatment for female stress urinary incontinence. Perioperative vascular injuries during placement of a retropubic mid-urethral sling are uncommon, but have been described.
The objective of this case report is to describe a complication of delayed presentation from vascular injury not previously documented in the literature.
Methods: Case Report
Results: A 69 year old woman with stress urinary incontinence underwent placement of a retropubic mesh mid-urethral sling and subsequently developed persistent left abdominal, groin, and leg pain postoperatively. The patient had no vascular symptoms related to her sling placement. Sling revision with partial removal of the suburethral portion was attempted at an outside hospital, but her symptoms failed to improve.
After evaluation she underwent removal of the remaining suburethral portion and left arm of the retropubic sling. During her second revision surgery, she experienced catastrophic bleeding from the sling located in her left external iliac vein. The life-threating injury required saphenous vein patch repair by Vascular Surgery.
Conclusion: This is the first description of a delayed diagnosis of vascular injury without urologic symptoms following retropubic mid-urethral mesh sling. This life-threating complication should be considered and patients appropriately counseled prior retropubic sling revision.

Financial Disclosure: None
Disclaimer: The views expressed are those of Drs Pansy Uberoi and Forrest Jellison and do not reflect the official views or policy of the Department of Defense or its Components.