AN UNUSUAL AND PREVENTABLE COMPLICATION OF VASCULAR INJURY FOLLOWING SUPRA-PUBIC CATHETER PLACEMENT IN A RESOURCE POOR SETTING: A CASE REPORT AND LITERATURE REVIEW

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ABSTRACT:

Background: Vascular injury though uncommon is a fatal complication of suprapubic catheter placement. This case report is novel in that it describes an iatrogenic injury to the vesical venous plexus caused by an inexperienced health personnel during suprapubic catheter insertion. Thus, the need to be mindful of such complication and the importance of training and retraining of health workers.

Case presentation: A 45year old male presented following a referral from another facility with features consistent with clot retention and anaemia secondary to post-suprapubic cystostomy and BPE. He subsequently had blood transfusion and bladder exploration with intraoperative findings of clots at the retropubic space and venous bleedings from the vesical plexus. He had clot evacuation and haemostasis of bleeding vessels by figure of 8 suturing technique with SPC catheter placement.

Conclusion: Vascular injury though less common is the most feared complication of SPC. Notable causes of intra-operative difficulties encountered include a small collapsed/contracted bladder, and surgical scarring of the lower abdominal wall. Younger and inexperienced Surgeons are advised to call for help when faced with intra-operative difficulties during the procedure.

Keywords: Suprapubic, Catheterization, Vascular injury

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Background: Suprapubic catheterization is a common emergency urological procedure done for patients with bladder outflow obstruction or voiding dysfunction secondary to a number of causes. Among the 10% rate of intra-operative complications in this population are injuries to the surrounding structures such as bowel and vessels. While bowel injury has been a well-documented and feared complication of suprapubic catheter placement, injury to abdominal/pelvic vessels has not been frequently reported. This case report describes an iatrogenic injury to the vesical venous plexus caused by wrong incision made on the bladder and to provide guidance for practicing Clinicians.

Case presentation:

A 45-year-old man referred from a peripheral health center with a 6-day history of peri-catheter urine leakage and hematuria following suprapubic catheter placement for acute urinary retention. There was a preceding history of lower urinary tract symptoms (LUTS), but no history of trauma to the genitals nor hematuria prior to the catheter placement. He was among other things transfused 3units of whole blood at the peripheral center prior to presentation. He was

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transfused two units of blood before surgery and a unit after surgery. At presentation, he was pale with an urgent hematocrit of 19% though not in any obvious distress. Abdominal examination revealed a distended, firm and mildly tender suprapubic region with associated scrotal swelling; a blocked suprapubic catheter in-situ that has initially drained bloody urine with obvious peri-catheter leakage of urine. Digital rectal exam findings were that of an enlarged prostate with benign features. A clinical assessment of clot retention following suprapubic catheter (SPC) placement in a patient with BPH was made. Several attempts at flushing the blocked 3-way catheter proved abortive, which necessitated a suprapubic catheter revision in the operating room with the following findings:

- A transverse skin incision measuring about 8cm about a finger breadth above the pubic symphysis was seen.
- Torn and distorted lower aspect of the right Rectus abdominis muscle.
- Clotted blood occupying the retropubic space, extending upwards to the suprapubic region over and below the recti muscles.
- The suprapubic catheter was seen lying outside the bladder, buried by clots of blood in the retropubic space.
- The incision on the bladder was seen lower down close to the bladder neck.
- Active bleeding from the vesical venous plexus was seen.

Hematoma evacuation was done following which the retropubic space was again slowly filled with venous blood. The previous bladder incision was closed, and another made superiorly into which the catheter was placed. A figure-8 suturing was done at the area of venous oozing in addition to urethral catheter balloon placed at the bladder neck, and the wound closed secondarily. He was placed on intravenous antibiotics and transfused 4 units of whole blood, and he did well subsequently. Post transfusion full blood count/differentials, urea, creatinine and PSA were within normal limit

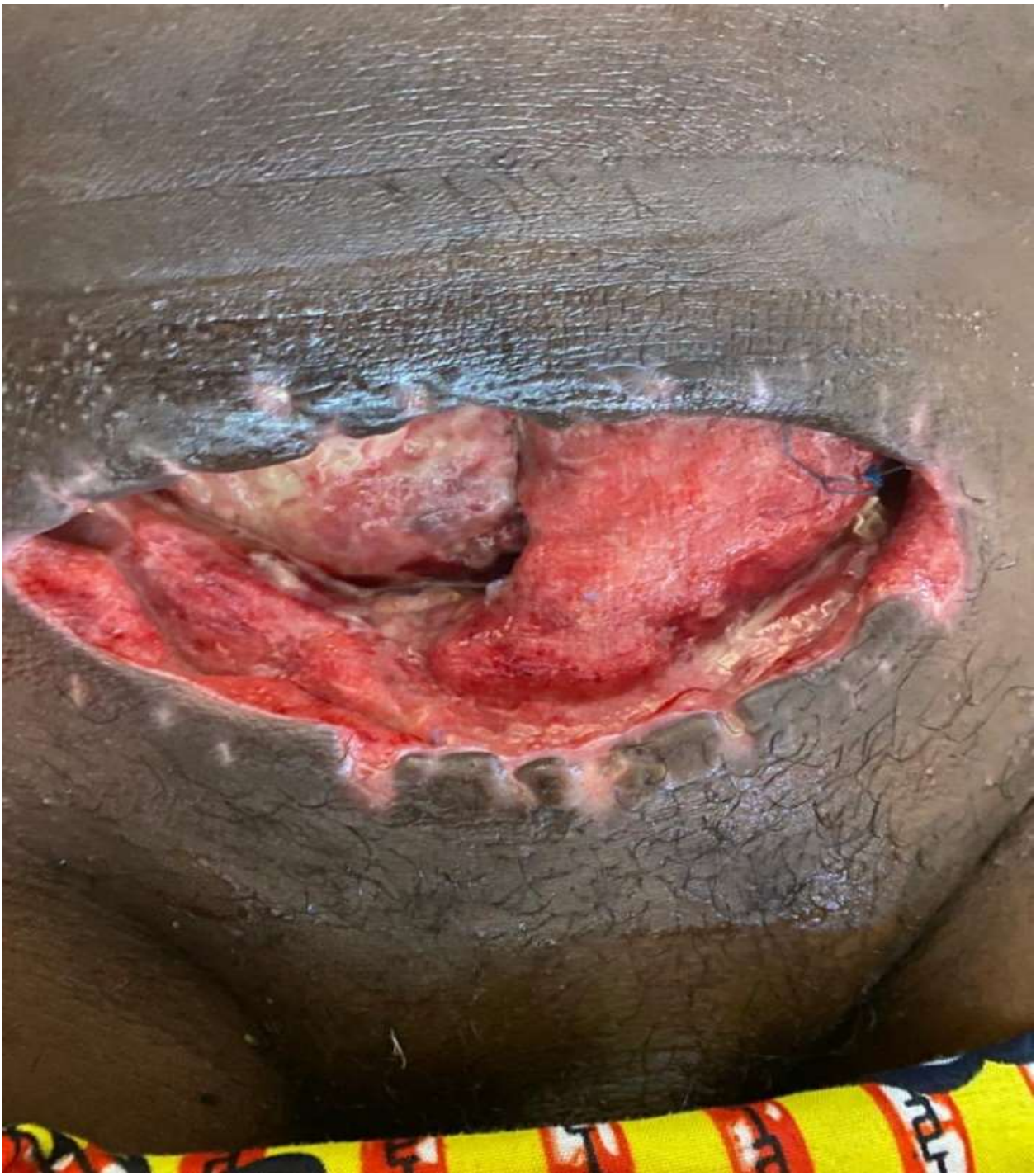

Figure 1: image showing the transverse skin incision (about 8cm) a finger breadth above the pubic symphysis, with the torn and distorted lower aspect of the right Rectus abdominis muscle revealed.

Discussion:

While several case reports attributed bowel injuries as the most feared complication of suprapubic catheter placement with an incidence of about 2.7%. [1-6] Vascular injury though less commonly reported is even a more feared complication.[7] Several retrospective studies of suprapubic catheter placement produced the 30-day mortality rate ranging from 0.8-1.8%, [1,2] emphasizing the need for careful optimization of patients and procedure performed by appropriate health personnel.

The index case is that of an open Suprapubic cystostomy done which was complicated by immediate, significant post-operative bleeding that led to massive hematuria and hematoma not amenable to bladder irrigation and subsequently leading to catheter blockage with associated peri-catheter leakage of urine but no bowel injury. The bleeding was so severe that the patient was transfused 3units of whole blood at the peripheral center where the initial procedure was done. With no improvement and on-going loss, he was referred to our center for expert management. We deduced from the level of tissue distortion and the incision site on the bladder during SPC revision, that the initial procedure was done by an inexperienced health personnel who probably lacks the pre-requisite skills and knowledge needed to carry-out such a procedure.

Demtchouk et al [7] showed that obesity may be the most significant comorbidity increasing the rate of complications including vascular injury, which were attributed to difficulty in properly positioning the patients and identifying anatomical landmarks. Ahluwalia et al [1] showed that despite the associated mortality (1.8%) and morbidity (intra-operative complication of 10%, and a 30-day complication rate of 19%), the satisfaction rate among patients is high (72%), and most patients (89%) prefer the suprapubic catheter over the urethral catheter.

Hall et al [8] have shown that while SPC insertion irrespective of the method used is generally considered a safe procedure, the risk of serious morbidity (significant post-operative bleeding, pain, infection, catheter blockages, calculi formation, bowel injury, persistent urethral incontinence amongst others) and death must always be considered and outlined to the patient.
They came up with revised guidelines that should assist in minimizing the morbidity associated with SPC usage. Stating that Clinicians must establish any history of contra-indication to SPC insertion including bleeding disorders or anticoagulation treatment, known or suspected bladder cancer, and vascular grafts.

Verwey et al [9] demonstrated that the risk of both vascular and bowel injuries during suprapubic cystostomy is increased in patients with previous abdominal or pelvic surgery, offering strong support for the use of ultrasound guidance in inserting SPC in patients at risk.
Yet, a recent study by Roberts et al [10] have shown that major complications (vascular injury inclusive) are rare with suprapubic cystostomy via trocar, in addition to its added advantage of faster procedure time, lower anxiolytic dose and less radiation. Catheter occlusion was reported as a common occurrence with trocar technique, confounded by Catheter-tract size discrepancy.

Conclusion:

This case throws light on iatrogenic vessel injury as the most feared complication of suprapubic catheterization, though less commonly published. The importance of patient selection cannot be over-emphasized. Notable causes of intra-operative difficulties encountered during suprapubic catheter placement include but not limited to a small collapsed/contracted bladder, and surgical scarring of the lower abdominal wall. Practicing Physicians specially the younger and inexperienced ones are advised to call for help when faced with intra-operative difficulties during the procedure, which increases the risk of the complication.

List of Abbreviations:

SPC - Suprapubic Catheter
BPE - Benign Prostatic Enlargement
PSA - Prostate Specific Antigen

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