Case – Robotic-assisted laparoscopic resection of gonadal vein for chronic post-varicocele embolization pain

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INTRODUCTION

Varicoceles represent a common venous abnormality of the pampiniform plexus, identified in roughly 15% of men.[1] While many remain asymptomatic, varicoceles can contribute to orchialgia, reduced fertility, and abnormal semen parameters. Management is typically reserved for symptomatic patients or those with infertility, with options including surgical ligation or, increasingly, endovascular embolization. The latter offers a minimally invasive alternative with comparable efficacy and reduced recovery time;[2] however, post-procedural complications, although uncommon, can include recurrence, coil migration, and new-onset pain (<1%).[3] The mechanism of persistent pain post-embolization is not well-understood and may relate to coil-related inflammation, nerve irritation, foreign body reaction, or venous thrombophlebitis along the embolized vein.[4]

In this report, we describe a case of chronic left-sided abdominal and inguinal pain arising after gonadal vein embolization for varicocele, with complete resolution following surgical resection of the embolized gonadal vein. This case highlights the potential role for surgical management in select patients with persistent post-varicocele embolization pain.

CASE REPORT

A 34-year-old male was referred for evaluation of left-sided abdominal pain radiating to the groin after coil embolization for a left-sided varicocele two years prior. Prior to embolization, he had several years of left scrotal enlargement with intermittent discomfort that worsened throughout the day and was diagnosed with a grade 3 left-sided varicocele. Venography demonstrated a dilated, incompetent left gonadal vein extending from the pampiniform complex to the left renal vein (Figure 1A). Embolization was performed using two 7 mm x 2.3 mm coils followed by numerous coils measuring 10–14 mm in diameter, with repeat post-procedure venography confirming occlusion of the gonadal vein (Figure 1B).

Although his testicular pain had resolved, he reported new left inguinal and abdominal pain. He was referred to our urology clinic for further workup and to discuss treatment options. On examination, the pain was primarily in the left inguinal region radiating into the left upper quadrant. He described the pain as constant, and at least 4/10, but with occasional bouts of pain to 7/10. After extensive counseling that surgical removal of the coils may not alleviate his pain, robotic-assisted laparoscopic gonadal vein resection was offered.

Under general anaesthesia, the patient was positioned supine. A 5F open-ended ureteric catheter was inserted. The patient was then moved to the right lateral oblique position, and a multi-port[5] transperitoneal robotic-assisted laparoscopic approach with the da Vinci Xi robot (Intuitive Surgical, CA, U.S.) was used. The descending colon was mobilized until the gonadal vein was identified. The gonadal vein was separated from the ureter, retroperitoneal components, and the mesentery without difficulty. The gonadal vein was dissected from the proximal end near the junction of the left renal vein to the distal end at the inguinal ring (Figures 2A–C).

The proximal and distal ends of the gonadal veins were ligated with 4.0 silk ties and the entire left gonadal vein was removed (Figure 3). The console time was less than 60 minutes, and the estimated blood loss was 50 ml. As the patient was pain-free, he was discharged home the same day. The gross specimen was a 16.0 cm x 1.0 cm vein with metal coils inserted along the entire length, with a short portion of the metal coil extending from the clipped ends (Figure 3).

The patient was seen in followup four weeks post-operatively and reported complete resolution of his preoperative pain.

DISCUSSION

Chung et al recently characterized post-varicocele embolization pain syndrome (PVEP) as a distinct clin-

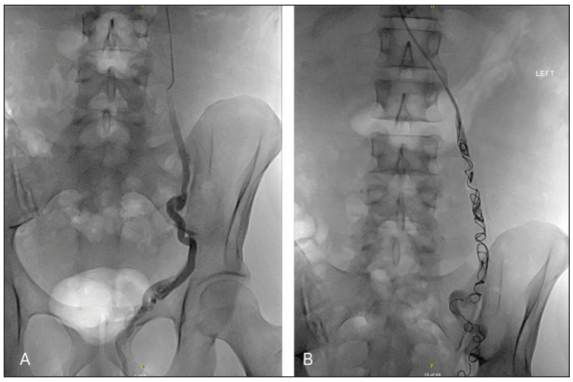

Figure 1. Left gonadal vein renograms. (A) Pre-embolization venogram of left gonadal vein demonstrating dilation and valvular incompetence. (B) Post-embolization venogram with showing occlusion of the left gonadal vein with multiple deployed coils (Original image, Department of Urology, Western University).

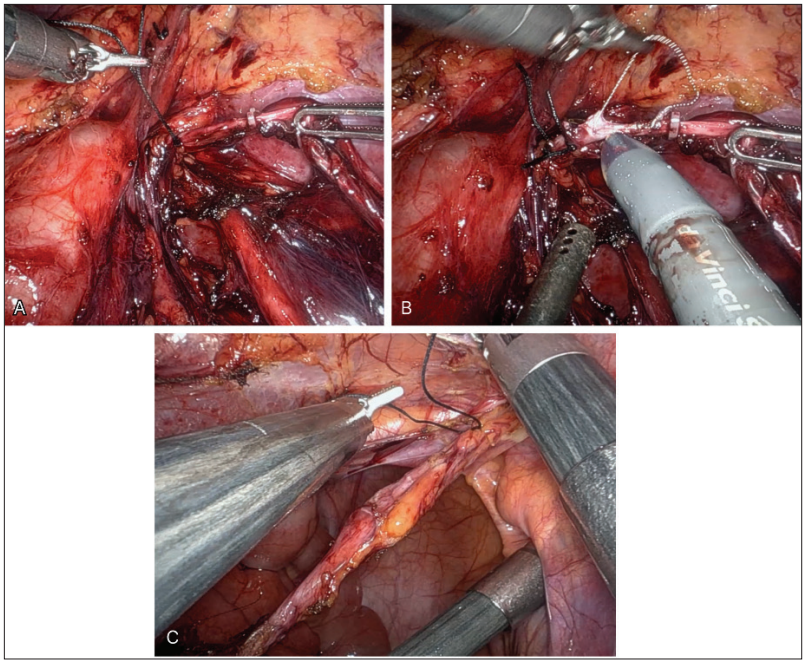

Figure 2. Intraoperative views during robotic gonadal vein resection. (A) Suture ligation and clipping the proximal gonadal vein to the level of the renal vein. (B, C) Ligation and removal of distal gonadal vein and coils (Original image, Department of Urology, Western University).

ical entity defined by chronic, anatomically localized pain following embolization.[3] In their case series, most patients had persistent testicular pain despite conservative therapy. Some patients were treated with microsurgical spermatic cord denervation, which led to partial or complete symptom relief in select cases, supporting a neuropathic component to PVEP; however, there have been few prior case reports documenting successful resolution of abdominal pain following resection of an embolized gonadal vein after varicocele embolization.[5,6] Our report represents one of the few documented cases of this approach and supports the role of targeted surgical excision in appropriately selected patients.

Figure 3. Gross specimen of the resected left gonadal vein, containing multiple metallic coils extending along its course (Original image, Department of Urology, Western University).

Currently, there are no standardized management guidelines for PVEP. Conservative measures, including analgesics, anti-inflammatory agents, and neuropathic pain medications, should be attempted prior to surgical resection. Further studies are needed to elucidate the mechanisms underlying PVEP to prevent this phenomenon.

CONCLUSIONS

This case highlights a rare but challenging pain syndrome following varicocele embolization. PVEP should be considered in patients with persistent, anatomically localized discomfort despite a technically successful embolization procedure. When the pain fails to respond to conservative measures, surgical excision may offer definitive symptom relief.

This paper has been peer reviewed.

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REFERENCES

1. Macleod R, Biyani CS, Cartledge J, Eardley I. Varicocele. *BMJ Clin Evid* 2015;2015:1806.
2. Sheehan M, Briody H, O'Neill DC, et al. Pain relief after varicocele embolization: the patient's perspective. *J Med Imaging Radiat Oncol* 2020;64:215-9. https://doi.org/10.1111/1754-9485.13001
3. Chung E. Postvaricocele embolization pain syndrome: a case series report and review of current treatment strategies. *J Endovasc Ther* 2023;30:534-9. https://doi.org/10.1177/15266028221086472
4. Gavrilov SG, Mishakina NY, Efremova OI, Kirsanov KV. Complications and adverse events of gonadal vein embolization with coils. *J Pers Med* 2022;12:1933. https://doi.org/10.3390/jpm12111933
5. Doolittle J, Maniar V, Dietrich P, et al. Resolution of abdominal pain after coil embolization of varicocele with robotic resection of gonadal vein. *J Endourol Case Rep* 2020;6:533-5. https://doi.org/10.1089/cren.2020.0171
6. Orzel B, McCarthy JP, Rent K. Case – laparoscopic excision of the right testicular vein post-varicocele embolization and coil erosion. *Can Urol Assoc J* 2022;16:E51-3. https://doi.org/10.5489/cuaj.7343

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