

Success Rate of Left Varicocele Embolization in Management Recurrent Varicocele after Surgery

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Abstract

Background: Varicoceles dilation of veins are present in 15% of men. Varicocele can be asymptomatic or symptomatic. Symptoms include pain and/or infertility. Varicocele recurrence depend mainly on the used technique for repair. The recurrence rate ranges from 1.05-14.97%.

Aim of Study: The purpose of this study is to measure the success rate of the embolization technique in patients with recurrent left symptomatic varicocele after surgery.

Patients and Methods: This cross sectional study included 15 patients with symptomatic (pain or infertility) recurrent left varicocele after surgery. Embolization was done at Ain Shams University hospitals from October 2017 to December 2018.

Results: Varicocele embolization for recurrent varicocele after surgery has technical success of 93.3%.

Conclusion: Embolization is an effective way to treat recurrent varicocele after surgery.

Key Words: *Varicocele (VC) – Gonadal Vein (GV) – Butyl Cyanoacrylate (BC) – Primary Infertility (PI) – Percutaneous Embolization (PE).*

Introduction

A **VARICOCELE** is composed of dilated veins within the spermatic cord [1]. Both surgical and nonsurgical methods are used to treat varicocele. Varicocele recurrence depends mainly on the technique used with recurrence rate ranging from 1.05-14.97% [2]. Recurrence of varicocele could cause recurrent symptoms including scrotal pain and/or infertility.

Surgical failure rate may be due to pre-existing venous collaterals causing recurrence. Surgery or percutaneous varicocele embolization are different options to treat recurrence. However, percutaneous embolization is superior to surgery as it can identify gonadal vein variants. The use of venography is

crucial to identify these collaterals and successfully eliminate them [3-4].

Percutaneous varicocele embolization is a minimally invasive technique with much lower complications compared to surgery and with the advantage of local anaesthesia instead of general anaesthesia [5].

Aim of work:

The aim of this study is to measure the success rate of the embolization technique in recurrent symptomatic left sided varicocele after surgery.

Patients and Methods

Patients:

This study included 15 patients. All patients have symptomatic left sided recurrent varicocele after surgery within a period of 6 months to 24 months. Diagnosis is confirmed using U/S and duplex to confirm reflux. 8 patient complained from recurrent scrotal pain and 7 patients complained of infertility. Semen analysis in those 7 patients, in which 3 patients with low number only, 4 patients with low motility.

All patients underwent left sided varicocele embolization using Histoacryl, we failed to catheterize one patient to do venography or embolization likely due to venous anatomy variation.

Inclusion criteria:

- Patients with left recurrent varicocele after surgery diagnosed by U/S and confirmed during the operation with venography.
- No age predilection.

Exclusion criteria:

- Bleeding tendency.
- Any contraindication to the injection of contrast: High serum creatinine or allergy.

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Ethical consideration:

An informed consent is obtained from the patient concerning the complication of the procedure, the complication of the glue and the acceptance to be enrolled in the study.

Statistical analysis:

Data were coded and entered using the statistical package SPSS (Statistical Package for the Social Sciences) version 23.

The 15 patients enrolled in this study were ranging from 20 to 42 years with mean age of 35.6 years.

Table (1): Representing the statistical data analysis for different ages enrolled at our study.

Age (years)	No.=15
Mean ± SD	35.60±4.61
Range	20–42
Age <30	10 (66.7%)
Age >30	5 (33.3%)

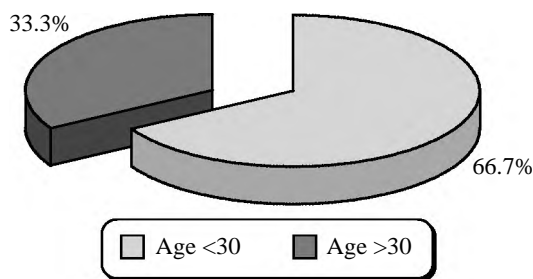


Diagram (1): Showing that in our study 10 patients were less than 30 years (66.7%), and 5 patients were 30 years and above (33.3 %).

Presenting complain:

7 patients presented with recurrent infertility and 8 patients presented with recurrent scrotal pain.

Table (2): Demonstrating statistical analysis as regard the clinical indication for varicocele embolization.

Presenting complain	No.	%
Pain	8	53.3
Recurrent Infertility	7	46.7

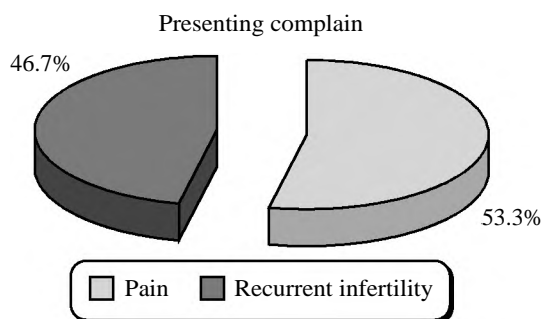


Diagram (2): Representing the percentage of patient with recurrent pain (53.3%), and recurrent infertility (46.7%).

By imaging aassessment:

All patients were examined by U/S, the examination revealed, all of them had left recurrent varicocele.

Semen analysis:

3 patients showed decreased number and 4 patients had decreased motility.

Table (3): Demonstrating the statistical data for patients presented with recurrent infertility, 3 had low number (20%) and 4 had low motility (26.7%).

	No.=7
Low number	3 (20.0%)
Low motility	4 (26.7%)

Table (4): Concerning the complications occurred.

Complications:	No.	%
No	10	66.7
Yes	5	33.3
Pain	5	33.3

It occurred in 5 case (33.3%) in the form of self limited hypochondrial pain after the procedure for one week that resolved over analgesics.

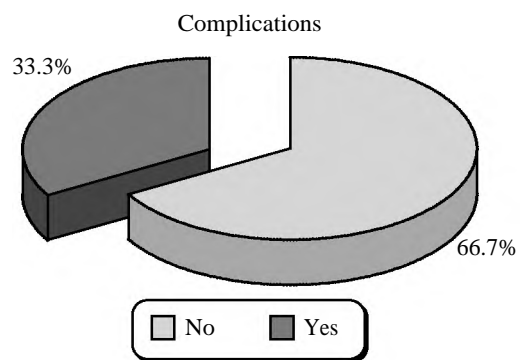


Diagram (3): Showing patients' percentage with and without complications.

Table (5): Causes of recurrence after surgery in our study according to Bähren classification of left varicoceles.

Causes of recurrence as identified by venography	No.	%
Type III duplication	10	66.7
Type II	2	13.3
Type IV	1	6.7
Type V	1	6.7

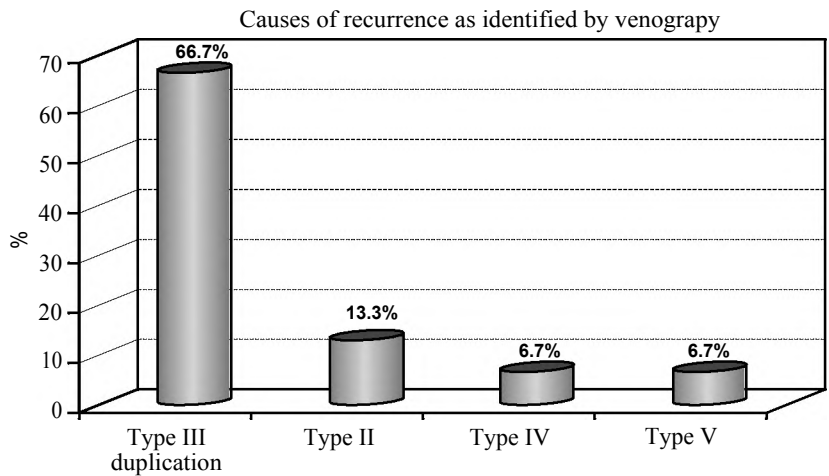


Diagram (4): Causes of varicocele recurrence.

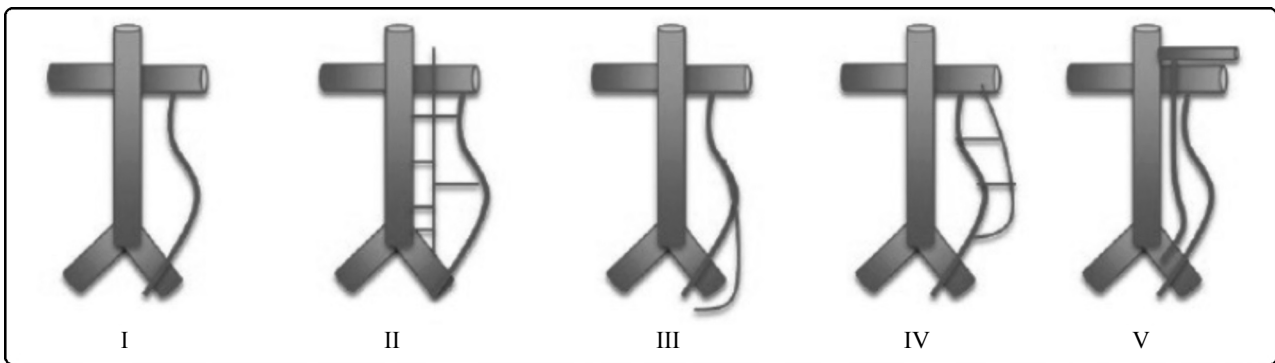


Diagram (5): Schematic of Bähren et al. [6] classification of types of varicocele, published in 1983.

Bähren classification of left varicoceles [6]:

- Type 0: No evidence of venous reflux in internal spermatic vein (ISV)
- Type I: Single ISV with insufficient or absent valve
- Type II: Single ISV with ≥ 2 ostia to renal vein; may be branches to ascending lumbar / retroperitoneal veins:
 - IIa: Insufficient confluence valve function
 - IIb: Sufficient confluence valve function
- Type III: Single incompetent ISV at renal vein junction, with caudal duplication
- Type IV: Valveless collaterals between ISV and segmental renal/retroperitoneal veins:
 - IVa: Insufficient confluence valve.
 - IVb: sufficient confluence valve function.
- Type V: IVC or renal vein anomaly; ISV may enter IVC/renal/ascending lumbar veins.



Image (1): Showing histiocrystal cast in duplicated caudal left ISV type III Bähren most common type of recurrence in our study.

Table (6): Shows technical success rate.

Technical success of the embolization procedure	
Succeeded	14 (93.33%)
Failed	1 (6.67%)

Discussion

Varicocele treatment options continue to evolve over time, one of the main choices now is percutaneous varicocele embolization which is a minimally invasive technique requiring only local anaesthesia and interventional radiology expertise with minimum complications [7].

In our study, 15 patients had left varicocele recurrence after surgery within a period of 6-24 months after the surgery. By ultrasound examination, left sided varicocele with reflux was identified.

Although varicocele embolization may be equivalent to surgery in primary varicocele patients, but varicocele embolization after surgical failure is the most appropriate option. During varicocele embolization, venography is done to confirm reflux as well as to identify the cause of failure by precisely identifying collateral veins causing reflux [8].

In our study, 15 patients were enrolled with varicocele recurrence after surgical failure, our left side embolization technical success was 93.3%. this is comparable with Badar et al., when he mentioned that varicocele embolization technical success rate after surgical failure is extremely high ranging from 93% to 100% [9].

Jargiello et al., 2015 also agreed with us when he mentioned that when varicocele recurs, endovascular treatment is still performed via a retrograde way by accessing the left gonadal vein via the left renal vein, either from a right internal jugular or right femoral vein approach with 100% technical success [3].

In our study, according to venography 66.7% are identified to have Type III collateral according to Bähren classification, 13.3 had type II and IV and 6.7% had type V. Jargiello et al., 2015, agreed with us when he mentioned that 66% of his patients had Type III venography [3].

In our study, as regard post procedural complications: 5 of our 15 patients had hypochondrial pain related to the site of gonadal vein embolization that last from 5 days to week that was controlled with analgesics.

Nabi et al., 2004 agreed with our rates of complications as he mentioned that the complications of percutaneous therapy are infrequent and typically mild. Complication rates in recent literature have been reported from 0%, to 5% and 11% [10].

Limitations of the study:

A limitation of this study is relative small sample size. We recommend larger multicenter comparative study with larger sample size.

Conclusion:

Embolization is an effective way to treat recurrent varicocele after surgery where venography done during varicocele embolization is crucial to identify and embolize collaterals which is the cause of recurrence.

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معدل نجاح حقن دوالي الخصية الجهة اليسرى المرتجعة بعد الجراحة من خلال القسطرة

خلفية: تمدد الأوردة داخل الضفيرة الببينيفورم، تصيب حوالي ١٥٪ من السكان الذكور. كما أنها واحدة من أكثر أسباب العقم عند الذكور شيوعاً، مع انتشارها في حوالي ٣٠٪ إلى ٤٠٪ بين الرجال الذين لديهم العقم الأولي وما يصل إلى في العقم الثانوي. تستخدم كل من الأساليب الجراحية وغير الجراحية لعلاج دوالي الخصية.

يعتمد ارتجاع دوالي الخصية بشكل أساسي على التقنية المستخدمة في العلاج مع معدل تكرار يتراوح من ١٠.٥ إلى ١٤.٩٧٪ قد يتسبب ارتجاع دوالي الخصية في ظهور أعراض متكررة بما في ذلك الألم أو العقم.

أحد أسباب الفشل الجراحي وجود وصلات وريدية مع وريد الخصية والتي تسبب تكرار دوالي الخصية وعودتها مرة أخرى.

الجراحة أو حقن الدوالي من خلال القسطرة هي خيارات متاحة ومختلفة لعلاج الارتجاع. ومع ذلك، فإن حقن الدوالي من خلال الجلد متفوق على الجراحة لأنه يمكن تحديد متغيرات وأشكال الأوردة المختلفة بالإضافة إلى تحديد أى وصلات وريدية أخرى.

يعد تصوير الأوردة أثناء حقن دوالي الخصية من خلال القسطرة أمراً ضرورياً لتحديد هذه الوصلات الوريدية وغلقتها بنجاح.

الهدف من العمل: الغرض من هذه الدراسة هو قياس معدل نجاح علاج دوالي الخصية بالجهة اليسرى المرتجعة بعد الجراحة باستخدام الحقن من خلال القسطرة.

المرضى والطرق: شملت هذه الدراسة ١٥ مريضاً يعانون من ارتجاع أعراض دوالي الخصية اليسرى (ألم أو العقم) بعد الجراحة.

النتائج: نسبة نجاح حقن دوالي الخصية اليسرى المرتجعة بعد الجراحة باستخدام الحقن من خلال القسطرة يصل إلى ٩٣.٣٪.

الخلاصة: حقن دوالي الخصية اليسرى هي وسيلة فعالة لعلاج دوالي الخصية المرتجعة بعد الجراحة. وهي تقنية طفيفة التوغل تحتوى على مضاعفات أقل بكثير من الجراحة كما أنها تحتاج فقط إلى مخدر موضعي بدلاً من تخدير العام الذي تحتاجه الجراحة.