

ORIGINAL ARTICLE**Varicocele Surgery: Retroperitoneous High ligation VS Inguinal ligation****outcome**

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ABSTRACT

Objective: Objective of this study was to compare outcomes between two procedures while focusing on cause and effect association.

Methodology: Prospective comparative study was conducted to evaluate outcomes of inguinal ligation versus high ligation in patient undergone surgical treatment for varicocele at Bashir Hospital Sialkot from January, 2026 to March, 2026.

Result: There were 30 patients who underwent varicocele surgery. Retroperitoneal high ligation was performed on 15 patients, and inguinal ligation was performed on 15 patients. Recurrence was more common in patients who underwent the inguinal ligation procedure. The 2 patients reported recurrence in inguinal ligation and 1 in high ligation. The complication of pain was present in 33.33% of 15 patients who had undergone high ligation and 10% who had undergone inguinal ligation. The complication of infection was present in 3 patients, of whom 1 patient had undergone high ligation and 2 patients had undergone inguinal ligation.

Conclusion: This concludes that retroperitoneal high ligation is slightly better option except complain of pain.

Key words: Varicocele Surgery, Retroperitoneous High ligation, Inguinal ligatio

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Introduction

A varicocele is defined as the abnormal painful dilation of the pampiniform venous plexus in the scrotum in males. It is mostly known as 'pelvic compression syndrome'. Although varicocele is treated with many different modalities, however, it is accepted that surgical treatment is the most effective method. Various surgical approaches have been used. The high retroperitoneal approach and laparoscopic approach can be performed for internal spermatic vein ligation. The inguinal approach and subinguinal approach can be used to ligate the external spermatic veins. The best treatment modality for varicocele can be chosen only after comparing the laparoscopic high ligation vs inguinal ligation^{1,2}.

The laparoscopic high ligation is done retroperitoneally; involving an incision above the inguinal canal. Inguinal ligation is performed by incision within inguinal canal. Approxi-

mately 15% of adult males are believed to have clinical or subclinical varicoceles but prevalence in infertile males is as high as 40%.^{1,2}

A comparative analysis of the clinical outcomes and complication profiles between laparoscopic high ligation surgery and laparoscopic high inguinal varicocelectomy (laparoscopic high inguinal varicocelectomy) indicates distinct advantages for the laparoscopic approach^{1,2}.

Twelve months post-intervention, significant improvements in seminal parameters were observed. Specifically, 46.61% of patients in the laparoscopic high inguinal varicocelectomy cohort experienced an increase in total motile sperm count exceeding 50%, compared to 34.05% in the laparoscopic high ligation group. The data suggests that laparoscopic high inguinal varicocelectomy correlates with superior sperm motility and higher overall pregnancy rates^{1,2}.

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The study identified a statistically significant difference in the incidence of postoperative hydrocele. The rates were recorded as follows:

- High Ligation Group: 9.09%
- laparoscopic high inguinal varicocelectomy Group: 0.69%

In addition to a lower incidence of hydrocele formation, laparoscopic high inguinal varicocelectomy demonstrated reduced recurrence rates compared to traditional laparoscopic high ligation. Given its superior efficacy in improving fertility markers and its favorable safety profile, laparoscopic high inguinal varicocelectomy is recommended as the preferred surgical technique for the treatment of varicocele.^{1,2}

A comparative study assessing retroperitoneal laparoscopic high ligation against subinguinal varicocelectomy investigated the therapeutic impact of these techniques on patients suffering from painful varicoceles. Diagnostic consistency was maintained across the cohort through the dual application of physical examinations and color Doppler ultrasonography^{1,2}.

Regarding the alleviation of chronic scrotal pain, the retroperitoneal varicocelectomy group achieved a complete success rate of 80%, while the subinguinal varicocelectomy group reported a success rate of 71%. Furthermore, partial symptomatic relief was observed in 11% of the retroperitoneal subjects compared to 18% in the subinguinal ligation group².

The objective of this study is to delineate the various surgical approaches to varicocele treatment and to synthesize contemporary literature regarding the outcomes of these two specific operative methods.

Objectives

Objective of this study is to compare outcomes between two procedures while focusing on cause and effect association.

Methodology

Prospective comparative study was conducted to evaluate outcomes of inguinal ligation

versus laparoscopic high ligation in patient undergone surgical treatment for varicocele at Bashir Hospital Sialkot from January, 2026 to March, 2026.

Results

There were 30 patients who underwent varicocele surgery. Laparoscopic high ligation was performed on 15 patients, and inguinal ligation was performed on 15 patients. Recurrence was more common in patients who underwent inguinal ligation procedure. The 2 patients reported recurrence in inguinal ligation and 01 in laparoscopic high ligation. The complication of pain was present in 33.33% of 15 patients who had undergone laparoscopic high ligation and 10% who had undergone the inguinal ligation. The complication of infection was present in 3 patients, of whom 1 patient had undergone laparoscopic high ligation and 2 patients had undergone inguinal ligation.

Discussion

The following is a rephrased synthesis of the provided research, presented in a formal, descriptive, and academic tone:

Evaluation of Non-Laparoscopic Techniques Research by Gulino et al. investigated whether the integration of laparoscopic techniques is essential for inguinal or subinguinal varicocele repairs. Their findings indicated no statistically significant difference in outcomes when comparing their data to laparoscopic series. The study reported favorable clinical results utilizing sub-inguinal surgical ligature without the aid of laparoscopic magnification or specialized instrumentation, suggesting that positive outcomes are achievable through standard surgical approaches³.

In a study assessing the treatment of painful varicoceles, Akkoç et al. concluded that retroperitoneal laparoscopic high ligation (the Palomo technique) and subinguinal varicocelectomy yielded comparable results regarding pain resolution and complication rates. Notably, the Palomo group demonstrated a significantly shorter operative dura-

tion. The authors noted that while laparoscopic subinguinal varicocelectomy remains the current standard, retroperitoneal laparoscopic high ligation serves as an efficient alternative, offering similar symptomatic relief with reduced surgical time compared to loupe-assisted methods⁴.

A comparative study by Sangrasi et al. determined that the open inguinal (Ivanissevich) procedure and laparoscopic varicocelectomy provide nearly equivalent postoperative improvements in semen parameters and similar complication profiles. Key distinctions were found in perioperative factors:

- Open Inguinal Procedure: Noted for shorter operating times and cost effectiveness in settings where specialized equipment is limited.
- Laparoscopic Varicocelectomy: Offered the advantages of reduced analgesic requirements and shorter hospital stays.

The study concluded that loupe-magnified open inguinal varicocelectomy remains a highly effective intervention, particularly when laparoscopic resources or costs are prohibitive⁵.

Orhan et al. examined the nuances between two laparoscopic approaches, noting that neither method resulted in postoperative hydrocele. However, minor differences in recurrence were observed, with one relapse in the retroperitoneal laparoscopic high inguinal varicocelectomy (laparoscopic high inguinal varicocelectomy) group compared to two in the MSIV group. While both techniques are effective, the study highlighted that the complex venous anatomy inherent to the subinguinal approach; Laparoscopic high inguinal varicocelectomy (laparoscopic high inguinal varicocelectomy) increases technical difficulty and the potential for relapse, suggesting that the high inguinal approach may offer a more streamlined surgical experience⁶.

Conclusion:

This concludes that retroperitoneal laparoscopic high ligation is better option than inguinal ligation.

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Limitations

A large sample size is required to give more accurate conclusion.

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Conflict of Interest: None

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Reference

1. Cayan S, Kadioglu TC, Tefekli A, Kadioglu A, Tellaloglu S. Comparison of results and complications of laparoscopic high ligation surgery and laparoscopic high inguinal varicocelectomy in the treatment of varicocele. *Urology*. 2000 May 1;55(5):750-4.
2. Akkoç A, Aydın C, Topaktaş R, Altın S, Uçar M, Topçuoğlu M, Buğra Şentürk A. Retroperitoneal laparoscopic high ligation versus subinguinal varicocelectomy: Effectiveness of two different varicocelectomy techniques on the treatment of painful varicocele. *Andrologia*. 2019 Aug;51(7):e13293.
3. Gulino G, D'Onofrio A, Palermo G, Antonucci M, Presicce F, Racioppi M, Bassi PF. Is laparoscopic technique really necessary in inguinal or subinguinal surgical treatment of varicocele?. *Archivio Italiano di Urologia, Andrologia: Organo Ufficiale [di] Societa Italiana di Ecografia Urologica e Nefrologica*. 2011 Jun 1;83(2):69-74.
4. Akkoç A, Aydın C, Topaktaş R, Altın S, Uçar M, Topçuoğlu M, Buğra Şentürk A. Retroperitoneal laparoscopic high ligation versus subinguinal varicocelectomy: Effectiveness of two different varicocelectomy techniques on the treatment of painful varicocele. *Andrologia*. 2019 Aug;51(7):e13293.
5. Sangrasi AK, Leghari AA, Memon A, Talpur KA, Memon AI, Memon JM. Laparoscopic versus inguinal (Ivanissevich) varicocelectomy. *J Coll*

Physicians Surg Pak. 2010 Feb
1;20(2):106-11.

6. Orhan I, Onur R, Semerciöz A, Firdolas F, Ardicoglu A, Köksal IT. Comparison of two different laparoscopic methods in the treatment of varicocele. Archives of andrology. 2005 Jan 1;51(3):213-20.