



# A PROSPECTIVE ANALYSIS OF THE COMPARISON OF OUTCOMES BETWEEN LAPAROSCOPIC VARICOCECTOMY AND PALOMO'S CONVENTIONAL METHOD IN THE MANAGEMENT OF CHRONIC SCROTAL PAIN- A RURAL TERTIARY CARE CENTRE EXPERIENCE.

## Urology

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## ABSTRACT

**Background:** The scrotal temperature is 2 degrees Celsius lower than the body temperature, which helps men to maintain fertility. Varicocele disrupts the thermoregulatory mechanism of the scrotum, resulting in infertility. Patients do present with chronic scrotal pain, but the exact mechanism behind it is unknown. Various treatment options are available for its treatment, ranging from noninvasive to invasive **Aim and Objective:** To compare the outcomes in terms of age, body mass index, intraoperative difficulties, post-operative pain, requirement of analgesics, complications, duration of hospital stay, and recurrence between Palomo's varicocelectomy and laparoscopic varicocelectomy. **Material and Methods:** A prospective study has been conducted for 1 year, from October 2021–September 2022, on 20 patients clinically diagnosed as having primary varicocele and divided randomly into two groups. Group A is for the Palomo's and Group B is allocated for laparoscopic varicocelectomy. After receiving clearance from the Institutional Ethical Committee, this study is being conducted in the Department of General Surgery, MIMS, and Uttar Pradesh. **Result:** The preoperative mean duration of pain is 10.5 months, and the mean age of occurrence of varicocele is 38.33±3.3. Group B have more obese patients where easily the pampiniform plexus has been reached with minimum destruction of lymphatic and hence only 1 patient of this group has developed hydrocele. Surgeons in an Open approach i.e. Group A have faced difficulty while operating on post operated hernia patients with varicocele where dense adhesions have been encountered along with an increase in operating time. Pain is measured using a visual analogue scale, which in Group B is zero after 9 months of follow-up but one in Group A. The complication occurs more frequently in Group A than in Group B. In this study Palomo's varicocelectomy has a high recurrence rate. **Conclusion:** Laparoscopic varicocelectomy is the most effective technique as shown on visual analogue scale for pain in patients with bilateral varicocele, obese and those in whom dense adhesions can be expected, such as post-repair inguinal hernia patients. Further randomized controlled trials are needed to establish a consensus on the safest and most effective method of treatment of varicocele.

## KEYWORDS

## INTRODUCTION

The "bag of worms" is due to tortuosity, dilatation, and elongation of internal spermatic veins within the pampiniform plexus. It is a clinical diagnosis where palpable, soft scrotal masses are appreciated. Rarely, varicocele is the cause of chronic scrotal pain, and its incidence ranges from 10- 15% in the adult population.<sup>1</sup> Varicocele is the culprit behind male infertility which varies from 21% to 80%.<sup>2</sup> Treatment options for Varicocele available are as follows i) percutaneous occlusion via antegrade, retrograde and laparoscopic ii) open method with retroperitoneal high ligation approach, inguinal; sub inguinal, scrotal, and microsurgical methods. The pros of open /lap Varicocelectomy are to help in restoring the vascular supply to the scrotum as a result of which there is an increase in sperm count and testosterone production. Open varicocelectomy in comparison to laparoscopic varicocelectomy has cons associated with it - in terms of complication and restricted field of visualization.<sup>4</sup> The complications in an open method are more encountered during a post-operative period which are hematoma, seroma, hydrocele(7%), vascular compromise & testicular atrophy (0-2%) and recurrence.<sup>5</sup> Although in the laparoscopic method too there will be hydrocele (1%) and testicular atrophy (0-1%)<sup>5</sup> but in a minuscule percentage if compared with open varicocelectomy.

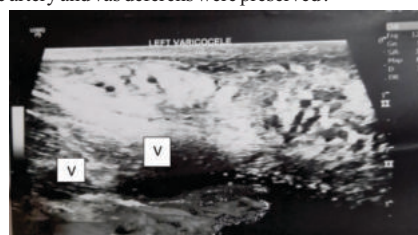
This study will provide a prospective analysis of the outcome of pain, the need for analgesia, the rate of recurrence and complication in two groups of open and laparoscopic varicocelectomy.

## MATERIAL AND METHODS

A prospective study has been carried out after obtaining clearance from the institutional ethical committee. Over a one-year period, 20 symptomatic male patients attending the Department of General Surgery OPD were studied. The Sample size is calculated by using a formula  $N = z^2 \times p \times (1-p) / e^2$  where 95% of confidence level and 22% of margin of error has been taken into an account. Patients of 18-60 years presented in an OPD with symptoms of scrotal pain for >8-10 weeks. Clinical examination was done where the dilated veins are palpable

without Valsalva maneuver (Grade II) and the bag of worms is visible (Grade III). After clinical diagnosis, the patients are sent for Color Doppler of the scrotum (Fig 1) where >3 veins of >2-3mm in diameter are reported. The diagnosed patients both on the clinical and radiological grounds are given a chance to pick a card from a lot of 20 and random allocations are done. Total of 20 patients are distributed into two groups A and B. Group A for open surgery, i.e., Palomo's, and Group B for laparoscopic varicocelectomy. This study includes consented patients with primary varicocele of Grade II and Grade III, having subfertility, scrotal pain for >8-10 weeks and on medical treatment, failure of medical treatment, and with co-morbidities - diabetes, hypertension, tuberculosis but excludes hepatitis B, C, and HIV-positive patients with disseminated intravascular coagulation.

Surgical approaches followed - In Group A – sub inguinal incision is given. Inguinal layers are opened up, spermatic cord is visualized and delivered with Babcock forcep. Spermatic fascia was opened, vas deferens and testicular arteries are secured. Dilated veins were isolated and ligated with 3-0 silk. After securing hemostasis, the layers are closed. In Group B (Fig 2) – laparoscopy approach via a Transperitoneal method is done. Veress needle pneumoperitoneum 3 ports (10mm supraumbilical, two port of 5mm, 1cm above and parallel to the level of umbilicus in the mid clavicular line). Deep inguinal ring identified, peritoneum dissected, dilated veins were identified, dissected and cauterized. Internal spermatic artery and vas deferens were preserved.



**Fig1-** Ultrasound of scrotum showing varicocele (V=Vein)



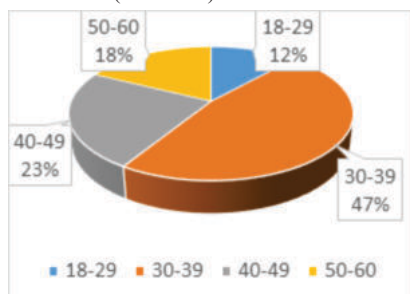
Fig 2- Port Placement

The measurement of pain is done by the Visual Analogue scale (VAS) where 0- No Pain, 5- Distressing pain, and 10- Unbearable pain. This scale is used for pain assessment in pre-operative, post-operative and follow-up period. Follow up period is taken as 3,6 and 9 months post-operatively.

## RESULT

A 20 patients reported to OPD with scrotal pain. Pre-operatively mean duration of the dull aching, dragging type of pain is 10.5 months.

1. Age distribution –Maximum patient are from age group-30-37 years. Mean age is 38.33±3.3. (Pie chart 1)



Pie chart 1- Age distribution

2. Body mass Index (BMI)– In Group A mean BMI-26±3, where 5 patients are within the normal BMI range (18.5-25) and 5 are in the overweight category (25-29.9) whereas in Group B mean BMI- 28±3 where 6 are in overweight and 4 in normal BMI category.

3. Among 20 patients 6 patients have been operated on for inguinal hernia – 4 left- sided and 2 right- sided. In group A- 2 patients with post-operative repair of hernia fall into it where dense adhesions have been encountered and the duration of surgery extended to 20-30min more than usual time (15-25min). In comparison, Group B has received 4 patients of post operated hernia where no extra time has been taken as laparoscopic easily adhesiolysis has been done with bipolar cautery. The mean surgical time taken was 45±10min.

4. Types of varicocele in each group –10 patients have been allocated in both the groups where In Group A -1 and in Group B-2 patient of right side varicocele was found (Table -1)

Table 1- Distribution of types of varicocele

| Groups                 | N  | Unilateral Varicocele | Bilateral Varicocele |
|------------------------|----|-----------------------|----------------------|
| Group A (Palomo's)     | 10 | 6 (50%)               | 4(40%)               |
| Group B (Laparoscopic) | 10 | 5(30%)                | 5(50%)               |

5. VAS pain score and requirement of analgesia – in 20 patients pre-operatively the VAS score varies from 5-7 and which in the immediate post-operative period there was not much improvement. In Group A-7 patients required opioid analgesic whereas in Group B only 5 patients needed it. Regular tabulation on VAS score is done. On post operative day 4 it has been observed that the severity of pain is reduced to 4- 5 in Group A and 3-4 in Group B. (Table 2)

Table 2- VAS core pre and post operatively

| Mean VAS pain score | Scale 0-10                                   |
|---------------------|----------------------------------------------|
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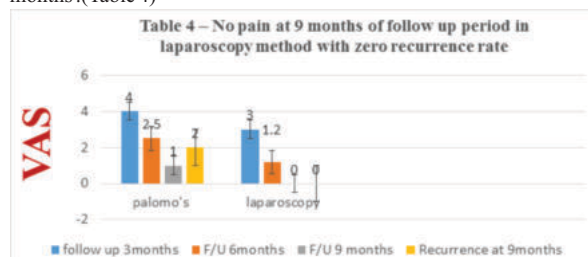
|                      |                                  |
|----------------------|----------------------------------|
| Pre-operative        | 5-7                              |
| Post-Operative Day 4 | 4-5(open )<br>3-4(laparoscopic ) |

6. Hospital stay and complications-(Table 3) Mean duration of hospital stay in Group A ranges from 4.5±2 and in group B 1.5±1. Group A patients have been operated on under spinal anaesthesia where Group B is under general anaesthesia. The Reason behind the mean duration of stay (1.5±1) is throat pain which was relieved by betadine gargle. 40% of Group A have been seen with complications where the most common was hydrocele followed by surgical site infection. In Group B only 10% of them have been seen with the pus discharge from the 5mm port site which was resolved by third-generation cephalosporin.

Table 3- Mean duration of hospital stay with complications

| Type of procedure | Mean duration of hospital stay | Complications | Most common complication |
|-------------------|--------------------------------|---------------|--------------------------|
| Palomo's          | 4.5 ± 2                        | 4             | Hydrocele 30%<br>SSI-10% |
| Laparoscopic      | 1.5 ± 1                        | 1             | Port site infection-10%  |

7. Follow-up outcome –Laparoscopy varicocelectomy had a good outcome as compared to Palomo's method. The Patient is followed up for 3 months, 6 months and 9 months where VAS decreases from 4 to 1 in Group A and In Group B it reaches 1.2 in 6 months and No pain at 9 months. (Table 4)



8. Recurrence rate- 2 patients of Group A have been reported with recurrence after 9 months which is demonstrated on a color Doppler ultrasound study. None of the patients from Group B after 9 months have been reported with recurrence or scrotal pain. (Table 4)

## DISCUSSION

The development of varicocele is due to incompetent valves in the internal spermatic vein. Even when varicocele remains asymptomatic, its treatment is essential in order to prevent future infertility.

The consensus is yet to develop on the single most effective and least invasive method of varicocele treatment. Therefore, this study was conducted in order to compare the effectiveness of the modality of treatment in terms of post-operative pain score, the requirement of analgesia, duration of hospital stay, complication rate, and recurrence rate.

A retrospective study found that varicocele ligation is an effective treatment for a specific group of scrotal pain patients. The quality of pain at the time of presentation is a predictor of the outcome in varicocelectomized patients. Many authors have suggested laparoscopic varicocelectomy as a daycare procedure, and this study too goes in favour of it where the mean duration of hospital stay is 1.5±1. The established common complications of varicocelectomy are hydrocele, testicular atrophy, and recurrence. The literature has reiterated that hydrocele formation is much more common in the laparoscopic method as compared to Palomo's technique. But in our study, no hydrocele formation has been reported in group B patients, whereas 40% of group A patients have developed it. Even meta-analysis by Cayan has shown less hydrocele formation (2.84%) in laparoscopic varicocelectomy and 8.24% in Palomo's technique. Even Cyan has stated that the recurrence rate is 14.97% in Palomo's technique and 4.3% in laparoscopic varicocelectomy, i.e., comparing this with our study, Group B has a lower recurrence rate as compared to Group A.

## CONCLUSION

Laparoscopic varicocelectomy is the most preferred technique on the basis of pain scoring, for patients who are obese and in whom dense adhesions can be expected, such as inguinal hernia post-repair patients.

Although laparoscopic varicocelectomy takes a little longer time to operate than Palomo's varicocelectomy. In the established literature, varicocelectomy is the preferred option for the treatment of chronic scrotal pain, which has been established in this study too. The difference in this study is that no laparoscopic varicocelectomy patients have reported hydrocele after 9 months of follow-up. This study has a smaller sample size, thus further randomized control trials are needed to establish a consensus on the safest and most effective method of treating varicocele.

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