

Laparoscopic Varicocelectomy in the Management of Chronic Scrotal Pain

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ABSTRACT

Background and Objectives: To evaluate the usefulness of laparoscopic varicocelectomy in the management of chronic scrotal pain.

Methods: Between 2009 and 2011, 48 patients in total were treated with laparoscopic varicocelectomy for dull scrotal pain that worsened with physical activity and was attributed to varicoceles. All patients were followed up at 3 and 6 months and biannually thereafter with a physical examination, visual analog scale score, and ultrasonographic scan in selected cases.

Results: The mean age was 38.2 years (range, 23–54 years). The mean follow-up period was 19.6 months (range, 6–26 months). Bilateral varicoceles were present in 7 patients (14.6%), and a unilateral varicocele was present in 41 (85.4%). The varicocele was grade 3 in 27 patients (56.3%), grade 2 in 20 (41.6%), and grade 1 in 1 (2.1%). The mean preoperative visual analog scale score was 4.8 on a scale from 0 to 10. The mean postoperative visual analog scale score at 3 months was 0.8. After the procedure, 42 patients (87.5%) had a significant improvement in the visual analog scale score ($P < .001$); 5 (10.4%) had symptom improvement, although it was not statistically significant; and 1 (2.1%) remained unchanged. During follow-up, we observed 5 recurrences (10.4%) whereas de novo hydrocele formation was identified in 4 individuals (8.3%).

Conclusion: Laparoscopic varicocelectomy is efficient in the treatment of symptomatic varicoceles with a low com-

plication rate. However, careful patient selection is necessary because it appears that individuals presenting with sharp, radiating testicular pain and/or a low-grade varicocele are less likely to benefit from this procedure.

Key Words: Varicocele, Laparoscopy, Scrotal pain, Visual analog scale score.

INTRODUCTION

Idiopathic varicocele is defined as varicosity and tortuosity of the pampiniform plexus around the testis and funiculus spermaticus, caused by retrograde blood flow through the internal spermatic vein due to incompetent valves. It is one of the main correctable causes of male infertility. The indications for treatment include infertility, testicular growth impairment in adolescents, and chronic scrotal pain. Surgical ligation of varicoceles is widely used, mostly as a treatment modality for male infertility. Although numerous studies have confirmed beneficial effects on seminal parameters in patients treated for such an indication, only a few reports are available that have examined varicocelectomy as an option for the treatment of chronic scrotal pain.^{1,2} Pain is the predominant complaint in 2% to 10% of patients with varicoceles. Patients describe pain as heaviness or a dull ache, generally after prolonged ambulation, worsening with physical activity and straining.^{3–5} The optimal technique for varicocelectomy is still a matter of controversy. Techniques include open surgical ligation of the spermatic vein, retrograde or anterograde sclerotherapy, microsurgery, and laparoscopy. Each technique has its own advantages and disadvantages, with contradictory results reported in the literature.^{6–15}

MATERIALS AND METHODS

Between 2009 and 2011, 48 patients in total presented with dull scrotal pain that worsened with physical activity and was attributed to varicoceles, after exclusion of other causes of chronic scrotal pain. Varicoceles were classified into 3 grades during physical examination with the patient in a standing position¹⁶ and verified by ultrasonography.

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In equivocal cases, color Doppler ultrasonographic criteria to assess venous reflux were used.¹⁷ The laparoscopic transperitoneal modified Palomo procedure was offered as a treatment modality to all patients who presented to the clinic over this 2-year period. Patients with sharp radiating scrotal pain, any other pathologic condition of the male reproductive system, a history of sexually transmitted disease, or previous infections of the lower genitourinary tract were excluded from the study. The initial approach was conservative management, which included scrotal support, lifestyle changes, and/or nonsteroidal anti-inflammatory drugs, with no clinical symptomatic relief. None of the patients had fertility issues (ie, they had normal semen parameters and/or had fathered a child).

Laparoscopic varicocelectomy (bilateral where indicated) was performed in all patients. Access was obtained in a paraumbilical manner with a 12-mm port using the Hassan open technique. One additional 5-mm port was used on each side of the abdomen. Dilated veins on the internal inguinal ring were identified, dissected, and clipped. Care was taken to spare the internal spermatic artery. At the end of the procedure, local anesthetic was injected into the wound bed under direct vision, as well as into the ports. All patients were followed up at 3 and 6 months and biannually thereafter with a physical examination, visual analog scale (VAS) score, and ultrasonographic scan. The VAS tool uses a progressive numerical scale between 1 and 10 that corresponds to different pain thresholds. A score of 1 to 3 indicates mild pain; 4 to 7, moderate pain; and 8 to 10, severe pain.¹⁸

RESULTS

The mean age was 38.2 years (range, 23–54 years). The mean follow-up period was 19.6 months (range, 6–26 months). No patient presented to the emergency department as a result of immediate postoperative complications between discharge and the first follow-up visit. Bilateral varicoceles were present in 7 patients (14.6%), and a unilateral varicocele was present in 41 (85.4%). Among the latter group, the varicocele was on the right side in 1 patient (2%). The varicocele was grade 3 in 27 patients (56.3%), grade 2 in 20 (41.6%), and grade 1 in 1 (2.1%). The mean preoperative VAS score was 4.8 on a scale from 0 to 10. The mean postoperative VAS score at 3 months was 0.8 (–83.3%). After the operation, 42 patients (87.5%) had a significant improvement in the VAS score ($P < .001$); 5 (10.4%) had symptom improvement, although it was not statistically significant; and 1 (2.1%) remained unchanged. There was no symptom deterioration (**Table 1**).

	Grade 1	Grade 2	Grade 3	All
No. of patients	1	20	27	48
Mean VAS pain score				
Preoperative	4	4.73	4.87	4.8
Postoperative	0	0.94	0.76	0.8
<i>P</i> value	NA ^a	< .001	< .001	< .001

^aNA = ??.

During follow-up, we observed 5 recurrences (10.4%), albeit 4 still had a significant improvement in pain and 1 remained unchanged even after a repeat procedure. In addition, de novo hydrocele formation was identified in 4 individuals (8.3%). Among the 42 patients who had a significant improvement postoperatively, there were no recurrences of pain for the duration of the follow-up period. The patient who did not have improvement was subsequently referred for chronic pain management.

DISCUSSION

Successful treatment of painful varicoceles demands careful patient selection. The pain should be dull, aching, or throbbing and not sharp or radiating.¹ Exclusion of patients with other pathologic conditions of the male reproductive system and/or a history of sexually transmitted disease or inflammatory disease may have contributed to the success rate in our series (87.5%), as may have the inclusion of mostly grade 2 and 3 varicoceles, which are clinically more apparent and symptomatic. Yaman et al¹⁹ originally reported an 88% rate of complete resolution of pain among 82 patients at 3 months' follow-up after subinguinal microsurgical varicocele ligation. Park et al²⁰ reported complete postoperative resolution of pain in 28 patients (52.8%) and partial resolution in 22 patients (41.5%) among 53 patients who underwent inguinal and subinguinal varicocelectomy.

The ideal technique for varicocele repair is still a matter of controversy. The following criteria for the optimal procedure have been postulated: preservation and improvement of testicular function, elimination of the varicocele with a low recurrence rate and minimal intraoperative and postoperative complications and morbidity, and cost-effectiveness.

The laparoscopic transperitoneal Palomo varicocelectomy was introduced in the early 1990s.²¹ Since then, it has

gained wide acceptance as a safe, simple, and minimally invasive procedure in both adults and children. Its most common postoperative complication is the occurrence of hydrocele, reported in up to 25% of patients.²² The technique has several advantages in comparison with the more commonly used nonmicrosurgical inguinal approach. It offers excellent visualization of the spermatic vessels via a transperitoneal approach, which is especially helpful in obese patients. The number of veins to be ligated and the number of arteries to be preserved are smaller compared with the inguinal exposure, and their caliber is larger. Spermatic artery preservation is possible in 89% to 100% of cases.^{5,23} Communicating venous branches from the kidney, iliac veins, or sigmoid colon can be easily identified and ligated. If left untreated, they may lead to recurrence or persistence of the varicocele. In cases of bilateral varicoceles, the laparoscopic approach allows for both sides to be treated during the same session without any additional intervention required. The rate of recurrent or persistent varicoceles is low after laparoscopic ligation compared with the traditional inguinal or retroperitoneal techniques.¹¹ We observed recurrence in 5 patients (10.4%). In 3 of these (6.25%), clinically detectable varicoceles of a lower degree than the initial varicoceles were present. Two recurrences (4.16%) were sub-clinical varicoceles diagnosed with ultrasonography only. In 4 of these recurrences, the improvement in pain symptoms was significant, and in 1 case, the level of pain remained unchanged even after a repeat varicocelectomy. This shows a good effect of the initial procedure on the pain symptoms even in patients with a usually small recurrence.

Percutaneous transfemoral retrograde sclerotherapy of the testicular vein is a radiologic interventional technique and has become an established alternative to surgical varicocelectomy. It is, however, hampered by a high incidence of technical failure in up to 21% of cases. The main drawback of this technique is the radiation exposure in male patients with fertility problems and potential complications of retrograde phlebography.²⁴

The classical Palomo procedure has a relatively high rate of hydrocele formation compared with a microsurgical subinguinal open approach on long-term follow-up.^{22,25,26} Sparing of the testicular artery, as with the modified (laparoscopic) Palomo procedure, decreases the rate of hydrocele.²⁷ This is confirmed in our series with a postoperative hydrocele rate of 8.6% (n = 4), of which two thirds were small and did not require any intervention.

The recovery time after laparoscopic varicocelectomy is decreased when compared with the standard open inguinal approach, especially in bilateral cases. Our patients were treated as day-cases and were able to return to work after a mean of 3.1 days (range, 2–5 days). The mean operative times of 32.1 minutes (range, 22–49 minutes) for unilateral laparoscopic varicocelectomy and 49.6 minutes (range, 38–74 minutes) for bilateral laparoscopic varicocelectomy are significantly lower than the operative time for microsurgical subinguinal varicocelectomy.¹⁰

Our study is not without limitations. Our cohort is small with a medium-term follow-up. The use of the VAS as an assessment tool might be subject to observational bias and contains a subjective element of interpretation. In future studies, additional questionnaires about the influence on quality of life might be useful to obtain a more objective determination of the impact of testicular pain due to varicoceles. The duration of discomfort was not followed up and could be useful in further supporting our findings.

CONCLUSION

Laparoscopic varicocelectomy is an effective means of treatment with significant symptomatic improvement and a low complication rate. Careful patient selection is necessary because this indication has to be made on the grounds of exclusion of other causes of scrotal pain. Low-grade varicoceles are less likely to benefit from this procedure. It is also important to make patients aware of the uncommon yet potential risk of postoperative de novo hydrocele formation, albeit small.

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