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Laparoscopic versus open varicocelectomy comparative study for early post-operative complications among patients in Basrah, Iraq

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ABSTRACT

Background: Varicocele is considered a major cause of male infertility. The target of varicocele surgery is to remove the progressive harmful effect of the varicocele on the testes. The aim of this study was to evaluate post-operative complications of laparoscopic versus open varicocelectomy.

Methods: This prospective study involved 60 patients who presented to Al-Basra general hospital, or Al-Sader teaching hospital complaining of pain, infertility, or both and diagnosed to have testicular varicocele. Patients were split into 2 groups relative to the type of operation. Group 1 comprised 25 patients who had undergone laparoscopic varicelectomy, and group 2 comprised 35 patients who had undergone open subinguinal varicelectomy.

Results: The mean age of the patients was 25.3±2.1 years in group 1 and 24.4±3.4 years in group 2. Wound infection, hematoma formation, and scrotal edema occurred in the study groups but were higher for open technique.

Conclusions: Author concluded in this study that it seems to be laparoscopic varicocelectomy technique has less early post-operative complication in term of wound infection, hematoma and edema.

Keywords: Laparoscopic, Open, Varicocelectomy

INTRODUCTION

Varicocele is a dilatation of the pampiniform venous plexus and it is encountered in 10-15% of the male population, while the rate is 20-41% for males with primary infertility and may rises up to 70-80% in males with secondary infertility.^{1,2}

It presents as scrotal asymmetry, scrotal heaviness and rarely with testicular pain. Many times, adults are unaware to varicocele, and it is usually discovered accidentally during a regular physical examination.³

Historically, celsus, in the first century, found that varicocele makes testicular atrophy and suggested orchiectomy for testicular atrophy due to varicocele through scrotal incision parallel to the penis.⁴

Varicocele is considered a major cause of male infertility, it has been generally accepted that men with palpable varicocele are at increased risk of progressive decline in fertility and varicelectomy has been shown to improve the seminal parameters.⁵⁻¹¹ Toullouch published a paper in 1952 about an infertile man with bilateral varicocele, he operated on him and the patient became.¹²

The target of varicocele surgery is to remove the progressive harmful effect of the varicocele on the testes, during the surgery, arterial structures, the vas deferens, and lymphatics should be preserved. 13,14

Different surgical procedures have been applied for treatment of varicocele including open surgery, microscopic varicelectomy, sclerotherapy, and laparoscopy. 15,16

Laparoscopic approach introduced at 1991 by Aaberg and colleagues as least invasive surgical method for the treatment of varicocele.¹⁷

In previous reports, laparoscopic varicocelectomy has been shown to be as effective as open surgery. Recently, many studies comparing classic and modified palomo techniques (retroperitoneal ligation of the internal spermatic vein (vena testicularis) between anterior superior iliac spine and renal vein) with laparoscopic varicelectomy have been published as the laparoscopic procedures gained wider recognition. However, those studies generally preferred to focus on late postoperative complications. ¹⁸⁻²⁰

This study focused on early postoperative complications in two different varicocelectomy techniques; open subinguinal and laparoscopic techniques which are the most commonly adopted procedures in our hospitals in Basra.

METHODS

This prospective study involved 60 patients who presented to Al-Basra general hospital, or Al-Sader teaching hospital complaining of pain, infertility, or both and diagnosed to have testicular varicocele preoperatively by examination, U/S, and/or color Doppler during the period between April 2014 to March 2015.

All patients were admitted the day before surgery; thorough careful history, clinical examination. Operations are performed after acquisition of their written informed consents.

According to the Patients choice and surgeon preference, they were split into 2 groups relative to the type of operation. Group 1 comprised 25 patients who had undergone laparoscopic varicelectomy, and group 2 comprised 35 patients who had undergone open subinguinal varicelectomy.

In group 1, patients are under general anesthesia supine with mild trendelenburg position, bladder catheterization or preoperative voiding, 3 trocars [10, 5, 5 (or 10) mm].

The peritoneal leaf was elevated over the spermatic cord from point proximal to the inguinal ring, the dilated spermatic veins were severed or clipped while sparing the testicular artery and lymphatics, after confirmation of hemostasis, trocars were removed, and peritoneal cavity deflated, and the skin was sutured by one mattress stitch.

In group 2, patients are under general anesthesia, supine position, subinguinal 3-4cm incision at the level of external inguinal ring, wound is deepened, scarpa's fascia opened, spermatic cord identified and brought out, spermatic fascia opened, dilated testicular veins are isolated and ligated with silk sutures then divided fascia

closed, subcutaneous tissues approximated, the skin incision was closed and the procedure was ended.

All patients received antibiotic perioperatively and followed up for pain, surgical site infection (SSI), scrotal hematoma, bleeding and other expected early complications, at the zero, and 1st post-operative in the hospital and after the discharge during private clinic visits for follow up.

Postoperative pain was assessed by the Visual Analogue Scale (VAS) and requirement for analgesia. VAS is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured, for pain VAS ranges from no pain (0) to the most severe pain (10).

Inclusion criteria

- Male
- Adult above 18 years old
- Iraqi, (accept to participate in the study).

Patients with conditions which may increase the risk for postoperative complications like diabetes, inguinal hernia, and spermatocele were excluded from the study.

SPSS version 19.0 program was used for statistical analysis. Data are presented as Mean±standard deviation. P <0.05 was recognized as statistically significant.

RESULTS

The mean age of the patients was 25.3 ± 2.1 years in group 1 and 24.4 ± 3.4 years in group 2.

Nineteen patients in group 1 had presented because of infertility and six due to pain. In group 2 the presenting complain was infertility in 26 patient and pain in 9 patients (Table 1).

Table 1: General characteristics.

	Group 1	Group 2 P value
Number	25	35
Mean±SD (age)	25.3±2.1	24.4±3.4 0.593
Complaint		
Infertility	19 (76%)	26 (74.3%)
Pain	6 (24%)	9 (25.7%)

Wound infection, hematoma formation, scrotal edema, orchitis, and scrotal emphysema occurred in both groups. Subinguinal varicelectomy was associated with higher complication rate. Author noticed a significant difference in incidence of surgical site infection in each group, in the laparoscopic group no patient (0%) developed infection while in the open group 4 patients (11.4%) suffered of surgical site infection (SSI), one of them

necessitates readmission to the surgical ward for parenteral antibiotic and frequent dressing. Scrotal hematoma formation is also noticed early complication in group 2 in tow patients (5.7%), managed by bed rest, elevation, and observation, while in group 1 no one developed hematoma (0%). One patient in group 1(n=1, 4%) and 5 patients in group 2 (n=5, 14.2%) developed scrotal swelling, all of the respond well on outpatient treatment; p value <0.05 (significant difference), (Table 2).

Table 2: Frequency of complications in the study samples.

	Laparoscopic varicelectomy N (%)	Subinguinal varicelectomy N (%
Wound infection	0 (0%)	4 (11.4%)
Hematoma	0 (0%)	2 (5.7%)
Scrotal swelling	1 (4%)	5 (14.2%)
Scrotal emphysema	0 (0%)	0 (0%)

Postoperative pain and analgesia were shown to be different between the two types of procedures. VAS scores were significantly lower in the laparoscopic group at postoperative days 0, and day 1, compared with the other group (P <0.002). Also, there is a significant difference in duration of postoperative analgesia requirement in the two groups (p <0.05), (Table 3).

Table 3: Differences in analgesia requirement and VAS in both study groups.

	Group 1	Group 2	P value
Requirement of analgesia	1.8±1.0 (days)	3.6±1.8	0.034
0 day pain score (VAS)	1.70±0.82	5.30±1.15	< 0.002
1 st day pain score (VAS)	1.30±0.84	4.70±0.97	< 0.002

DISCUSSION

There are different surgical methods for varicocele treatment. The first surgical method for varicocele was explained by Celsus in the first century (ipsilateral orchiectomy of an atrophic testis). Currently, popular varicelectomy methods include: the Ivanissevich method, Palomo method, subinguinal method, laparoscopic method, and sclerotherapy. The most effective and least invasive method is yet unknown and many studies conclude that microscopic one is of less complications as SSI, pain and analgesia requirement and shorter hospital stay other in favor the open varicelectomy for shorter operation time specially in unilateral varicose.

When laparoscopic varicelectomy introduced it was thought to have cosmetically better out but nowadays this is the least advantage, laparoscopy improves diagnosis because more magnification, more visual interpretation especially with 3-chip camera, using long cylindrical instruments able to enter to recesses of the body like diaphragmatic recess, Morison pouch anterior and posterior Culde sacs. Laparoscopy also provides less tissue dissection and disruption compared to open surgery.

Some studies focusing on varicelectomy methods have determined various complications; Bebars et al, compared open microscopic varicelectomy and laparoscopic varicelectomy methods. Among 65 open varicelectomy patients, there was wound erythema and infection in 7 (10.6), which is close to our study result (11.4%).²¹

In current study it is found that the laparoscopic group has less wound infection, hematoma formation postoperative pain, analgesia requirement scrotal edema and orchitis

Some surgeons mention that laparoscopic varicelectomy takes more time however with expert hands that's not the fact especially in bilateral cases in addition to the advantage of intraoperative diagnosis of contralateral varicocele.

This study needs to be expanded in the future to include other possible complications related to laparoscopy and pneumoperitonium such as shoulder pain, port site hernia and the possibility bowel injury. It is hoped to include the possible outcome of both techniques in term of getting conception or improvement in seminal fluid analysis of patients.

CONCLUSION

Author concluded in this study that it seems to be laparoscopic varicocelectomy technique has less early post-operative complication in term of pain, SSI, hematoma etc. hence it is recommended to be the favorable technique; however, the extension of the study should be conducted in near future including the outcome of each procedure and possible early and late complications of both.

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Institutional Ethics Committee

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