

Original Research Article

Prophylaxis of Hydrocele after Varicocelectomy

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Abstract

Hydrocele comes on the top of complications after surgical repair of varicocele. To evaluate the efficacy of selective vein ligation procedure by the aid of loupe optical magnification with creation of a window in tunica vaginalis to prevent the formation of hydrocele after varicocelectomy.

Two hundred patients with varicocele treated were analyzed. A study is applied on two patient groups, of each one hundred patient. Group 1: Conventional procedures for varicocele, without use of optical magnification including: Paloma, inguinal mass ligation and subinguinal selective ligation, and a group 2; underwent subinguinal selective varicocelectomy with the aid of optical magnifications and completed by creation of a window in tunica vaginalis. Hydrocele, as a complication following varicocelectomy, is reduced from 15% in group 1 to 3% in group 2.

By the aid of optical magnification with creation of a window in tunica vaginalis, a significant decrease in incidence of post varicocelectomy hydrocele in group 2 was found. So this procedure seems effective and we recommend its addition to the standard procedures of varicocelectomy.

Key words: hydrocele; varicocelectomy; optical magnification; window in tunica vaginalis.

الخلاصة

القيح المائي هي أكثر المضاعفات التي تحدث بعد العلاج الجراحي لدوالي الخصية. في هذه الدراسة تم تقييم فعالية طريقة عقد الوريد الانتقائي للدوالي بمساعدة التكبير البصري مع فتح شبك في الغلالة المهبولية للخصية لتجنب حدوث القيلة المائية بعد عملية دوالي الخصية. تمت دراسة حالة ٢٠٠ مريض وتم تقسيمهم الى مجموعتين: المجموعة الاولى ١٠٠ مريض اجريت لهم العملية بالطرق التقليدية وهي بالوما والعقد الكلي والعقد المغبني الانتقائي بينما تم اجراء العمليات للمجموعة الثانية باضافة التحوير المذكور. وجد من تحليل النتائج حدوث قلة كبيرة في نسبة حدوث القيلة المائية في المجموعة الثانية. لذلك تبدو هذه الطريقة مفيدة وننصح باضافة هذا التحوير عند اجراء العمليات التقليدية لدوالي الخصية.

Introduction

Varicocele is a dilatation of the spermatic cord veins. Varicocele may lead to infertility, pain, and atrophy of testes. It is estimated to be present in 40% of males with primary infertility [1] and up to 80 % of patients with secondary infertility [2]. Pain and infertility are the main indications of varicocelectomy [3].

Varicocelectomy can be done by different surgical approaches as Paloma (retroperitoneal), inguinal, and subinguinal or by laparoscopy. No one of the above

approaches has been found to be the best [4]. The most common complications of the surgical varico-celectomy are hydrocele formation, scrotal edema, epididymo-orchitis, testicular atrophy and recurrence. Hydrocele as a complication shows a higher rate after retroperitoneal methods. However, no significant difference in recurrence outcome was noticed in comparing the two main surgical methods of inguinal and subinguinal [5].

Following different surgical repair procedures on spermatic venous plexus dilatation, hydrocele comes on the top of

complications. The incidence of this complication varies from 3% to 33% (average about 7%) [6]. Lymphatic obstruction during surgery claimed to be the cause of post varicocelectomy hydrocele, due to iatrogenic injury of spermatic cord lymphatic vessels [7]. To avoid this complication, preservation of lymphatics is advised with no place for total spermatic cord ligation in any surgical repair of varicocele. If acute swelling of the scrotum occurred after surgery we usually believe that this is edema, but in this case it could be a true hydrocele [8]. Identification and preserving lymphatic, hydrodissections, [9] preemptive hydrocelectomy in subinguinal varicocelectomy, [10] using methylene blue as technique to preserve lymphatics [11], and using microscope, [12] are different attempts to decrease incidence of hydrocele formation after these surgical procedures.

The aim of this study is to assist the value of using optical magnifications of 3X (30 times power lens) for optimal identification of spermatic veins, arteries, vas and lymphatics, and creating a window in tunica vaginalis to avoid postoperative formation of hydrocele.

Patients and Methods

In Babylon, a 200 patients presented to Private Hospitals and Hilla Teaching General Hospital from a period between* 2005-2014*. The patients ages were between 16-55 years and presented with scrotal swelling associated with infertility and/or pain. Diagnosis of varicocele confirmed by clinical and sonography study. Seminal analysis done to all patients, and indications for surgical treatments established. We divided the patients into 2 groups.

For group 1:(100) patients; the standard operative procedures including Paloma, inguinal mass ligation, selective subinguinal ligation was performed (table 2), for group 2: (100) patients; we used a modification to prevent hydrocele formation by the aids of loupe optical

magnification, of 3X, to identify veins from surrounding tissues. The veins are ligated and divided separately then a creation of a window in tunica vaginalis in a round or elliptical shape 2 cm by knife incision and resection of a tunica with diathermy of its edges.

All 200 patients included in this study were responsive to contact and follow up after 6 months and 12 months to evaluate and analyze surgical results.

Results

The patient characteristics are listed in Table 1, no intergroup differences were observed in terms of age, presentation and laterality. Mean age was 26.50 in group 1 and 25.40 in group 2. Infertility was in 85 patients (85%) in group 1 and in 12 patients (12%) in group 2. Left sided varicocele was the common presentation in the two groups.

In group 1: conventional surgical approach was done in 100 patients, hydrocele as a complication occurred in a Paloma (20%), mass ligation (20%) and selective subinguinal vein ligation (14%) and the overall incidence was 15 cases (15%), (Table 2).

In group 2: Surgery was done by selective subinguinal vein ligation with the aid of optical magnification with creation of a window in tunica vaginalis. In this group postoperative hydrocele occurred in only 3 patients (3%).

Discussion

The different therapeutic methods in treating varicocele associated with high rate of complications and recurrence, so none regarded as the best [10]. Studies found that the protein concentration of the hydrocele fluid of post varicocele-ectomy fluid was consistent with lymphatic obstruction, [6] this may explain the belief that lymphatic obstruction rather than venous obstruction is the cause of this complication, so lymphatic vessels preservation regarded as important factor to prevent this sequel.

To compare our modification with other surgical procedures, firstly the high retroperitoneal ligation as per the Paloma's technic [13] is prone to a higher recurrence rate if high ligations were above the 4th lumbar vertebra. The anatomical reason is that the communications between the medial vascular trunk and ureteric vessels were demonstrated, as well as anastomoses between the two medial trunks across the midline in more than 50% of cases [14].

Secondly, in mass ligation there is increase in the chances of damage to the testicular artery (which may reduce the chances of improvement), while lymphatic vessels injury mostly the cause of post-operative hydrocele [15].

Lastly, in laparoscopic ligation of varicocele like high retroperitoneal ligation: 1- there is association of high recurrence rates of up to 45%; in addition to the high possibility of trauma to testicular artery [16]. 2- not as in using microscope, in laparoscopy there is little degree of magnification, so lymphatics may be ligated with veins, leading to the same sequel[17]. 3-the procedure is also associated with the possible complications of transperitoneal laparoscopy such as injury to the bowel vessels and ileus.

Most surgeons now perform inguinal and subinguinal procedures employing loupes or microscope for optical magnifications. By magnifications they can minimize trauma to lymphatic and

testicular artery obtaining decrease the recurrence of varicocele [16].

The advantage of magnifications using optics and the clear field which give us, we can decrease atrophy of the testis which may follow testicular artery trauma. [18] In addition to that by the aid of magnification we can do the repair if testicular artery injured. [19]

In the present study optical magnification help us in ligating spermatic veins selectively, avoid testicular artery injury by identifying it and to preserve lymphatic vessels. Hydrocele formation decreased significantly to 3 cases (3%) comparing with 15 patients (15%) in group 1 in which we used the traditional methods without magnification or creation of a window. There is no difference from the reported procedures to avoid hydrocele formation. The other advantage of this approach is its low-cost, easy applicability and with no need of microscope or laparoscope.

Conclusions

Subinguinal approach in doing repair of varicocele by the aid of optical magnification with a creation of a window in tunica vaginalis significantly avoid postoperative formation of hydrocele and we recommend the addition of this modification to the standards operative procedures of varicocelectomy.

Table 1: Patients Characteristics.

Patients details	Group 1 (100)	Group 2 (100)
Mean age (years)	26.50	25.40 2
Presentation with Infertility	85 (85%)	88 (88%)
Presentation with pain	15 (15%)	12 (12%)
Side involved with varicocele	Left: 90 (90%) Right: 6 (6%) Bilateral: 4 (4%)	Left: 87 (87%) Right: 8(8%) Bilateral: 5(5%)

Table2: Postoperative complications according to the type of surgical procedure.

Surgical procedure	No. of operated cases	No. of postoperative hydrocele.	%
Group 1: Paloma	10	2	20%
mass ligation	5	1	20% [15%]
selective subinguinal	85	12	14%
Group2: Selective subinguinal with window + optical magnification	100	3	3% [3%]

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