Med. J. Cairo Univ., Vol. 62, No. 2, June : 401-407, 1994

Laparoscopic Management of Idiopathic Varicocele

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Abstract

Twenty patients with idiopathic varicoceles were managed by laparoscopic endoclipping of the testicular vein on outpatient basis. In three patients the varicoceles were bilateral. Clinical as well as pre and postoperative Doppler Ultrasound confirmed the complete cure of the varicocele. Laparoscopy proved to be of special value in the management of bilateral varicoceles and the clipping of the unusually branching testicular vein. A manoeuvre of clipping the testicular vein while the varicocele is firmly squeezed, was used. It helps to distend the vein under vision decongesting the testis and encouraging venous collateral circulation.

Introduction

THE ADVENT of laparoscopic surgery has opened new approaches to well established methods of surgical treatment. Among the myriad procedures already available for treating a varicocele, laparoscopic management stands as the most up-to-date. The present report presents our initial clinical experience with laparoscopic testicular vein ligation for varicocele. The role of pre-, intra-and post-operative doppler ultrasound is discussed.

The procedure is done on outpatient basis and the patients are followed-up with clinical examination and doppler ultrasound one month after the operation.

Materials and Methods

Three ports were used for performing laparoscopic clipping of the testicular vein; an 11.00mm umbilical port for the telescope, 5.5mm port between the umbilicus and the left anterior superior iliac spine and a third 11.00 m.m. port between the umbilicus and the symphysis pubis. In bilateral cases, an additional 5.5 mm port between the umbilicus and the right anterior superior iliac spine is used.

The left testicular vein is easily identified as it emerges from the internal inguinal ring looping of the vas deferens and gentle traction on the spermatic cord moving the vein are of additional help the parietal peritoneum over the vein is incised and the vein is dissected free of the testicular artery. A doppler flow probe was placed over the ipsilateral neck of the scrotum and the testicular artery pulsations are auscultated. Intra-abdominally, the presumed testicular artery is temporarily occluded with an atraumatic grasper and disappearance of the auscultated arterial signals at the scrotum denotes that such temporarily occluded structure is the testicular artery which is preserved. The vein is doubly clipped with tetanium clips, after squeezing the varicocele at the neck of the scrotum so that the engorged vein is clipped.

The clinical material of the present work involved 20 patients with varicoceles. In twelve patients, the main presentation was infertility whereas the remaining eight unmarried patients presented with dragging pain. Three among the latter patients were harboring bilateral varicocele.

All patients were subjected to thorough clinical examination and doppler ultrasound using eight mhz transducer with the probe applied to the neck of the scrotum. Whether there is reflux of blood flow in the auscultated venous signals, the following manouvre is used:

a) The patient performs a Valsalva Manouvre raising the venous pressure in the testicular vein causing reversal of blood flow (Reflux) in patients with incompetence of the valvular system. In normal vein, no such phenomenon is recorded.

b) After relaxing the Valsalva Manouvre, the blood pooled in the pampiniform plexus will return by a centripetal efflux which is clearly accentuated in patients with varicoceles.

Results

The median age of the patients presenting with infertility was 29 years while the

Table (1): The Clinical Grading And Venous Reflux in The Studied Patients.

Presentaion	Infertility (N = 12)			Pain or Venous Distension (N = 8)		
Grade	I	II	III	I	II	III
No. of Patients (%)	5 (41.6)	3 (25)	4 (33.3)	-	5 (62.5)	3 (37.5)
Venous Reflux	Positive	Positive	Positive	-	Negative	Positive

median age of unmarried adolescent patients was 18 years. The clinical grading of varicoceles into grades I, II, and III was adopted according to Uehling 2. Preoperative venous reflux was detected by doppler ultrasound in 15 patients; 75%, (Table 1). The testicular artery could not be identified in three patients. In three patients the main trunk of the left testicular vein was short (21 cm.) branching immediately above the internal ring into two divisions necessitating clipping of both divisions (Fig. 1). One left testicular vein has been visualized in 18 patients (Fig. 2), whereas in 2 patients two veins could be seen (Fig. 3).

Follow-up after one month by clinical and doppler ultrasound examination revealed absence of clinical recurrence and disappearance of pre-operative venous signals at the neck of the scrotum.

Discussion

A varicocele first develops in early adolescence [3], rarely in the pediatric age group [4]. The progressive adverse effects on testicular function and growth explain why in adults normal fertility returns following varicocele ligation in only 20 to 50% of patients [5]. Therefore, we have included adolescent patients with varicoceles in our clinical material for prophylactic varicocele ligation as proposed by other workers [6].

Among the various modalities of treatment of varicoceles, most authorities adopt either high ligation or embolisation of the left testicular vein [7, 8]. The latter approach did not gain wide acceptance due to the high rate of recurrence [9] and complications [10]. In a comparative study between high ligation and embolisation, the later procedure yielded inferior results in seminograms [8].

Several reports concluded that high retroperitoneal ligation of the left testicular vein exhibits certain merits; the improvement in sperm quality, the absence of testicular atrophy and the low recurrence and morbidity [3, 5].

Laparoscopic ligation of the left testicular vein with or without preservation of the testicular artery has been increasingly used in recent years [1, 11, 12, 13, 14].

In Addition to the low morbidity of laparoscopic surgery, an excellent view of the testicular vein displaying variations in number and branches, is visualized [1]. Anatomical variations in the number and branches of the left testicular vein are not uncommon [15, 16]. Bifurcation of the left testicular vein into medial and lateral branches at the lumbar level was a constant finding in the study of Wishahi [15] but occurred in 45% of cases of Sofikitis et al [16]. It occurred in 3 of our patients; 15%. The presence of more than one left testicular vein; up to 5 in the lumbar region is previously reported [16]. The presence of such variations constitutes a strong argument in favor of the laparoscopic ap-

Fig. (1): Early branching of the left testicular vein into two divisions just above the internal ring.

Fig. (2): One large left testicular vein ready for clipping.

Fig. (3): Two testicular veins (one has been dissected) emerging from the internal ring.

proach as the excellent visualization of the anatomy precludes ligation of one of the branches in mistake of the testicular vein or missing another testicular vein; both are causes of recurrence of the varicocele after conventional retroperitoneal high ligations [9, 12].

Identification of the testicular artery by intra-operative doppler ultrasound in the present work was also used by alberg et al [1]. Flushing the testicular vein-artery complex with papaverine solution during laparoscopy was used by Clayman et al [13] to dilate the artery helping its identification and preservation. However, Kass and Marcol [3] pertain that it is unnecessary to spare the artery as this will miss ligation of collateral veins intimately associated with the artery which may later dilate causing recurrence. In addition, mass retroperitoneal ligation did not lead to testicular atrophy in several studies [17, 18] although we failed to identify the artery in 3 patients, no recurrence occurred in the one month follow-up period whether the artery was preserved or not.

In the present study, as well as in other studies, doppler ultrasound has been used as an aid to the clinical diagnosis of varicocele and to verify whether venous reflux is present or not [19]. The disappearance of the venous signals after laparoscopic ligation in the present study is considered a more accurate parameter for success of venous ligation than clinical judgment alone. The persistence of post-operative venous reflux with centrifugal flow denotes missing of significant venous tributaries with failure of complete venous interruption; a situation which did not occur in our study during the follow-up period.

Laparoscopic ligation proved to be of definite value in the treatment of bilateral varicocele [1]. The condition occurred in three of our patients (15%) and in 30% of patients in other reports [3]. The manoever of clipping the testicular vein while the varicocele is firmly squeezed at the neck of the scrotum helped us to identify the vein by the venous distention. The manoever helps also to decongest the testis encouraging venous collateral circulation.

In conclusion, laparoscopic clipping of the testicular vein is feasible on outpatient basis. Excellent vision allows identification of the vein and its anatomical variations as well as preservation of the testicular artery. Intra-operative doppler ultrasound allowed identification, hence preservation of the artery and its post-operative use allowed objective assessment in the follow-up period.

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