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LAPAROSCOPIC VARICOCELECTOMY

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ABSTRACT

The aim of this work is to determine the efficacy and safety of laparoscopic ligation of the internal spermatic vein(s) cephalad to the internal inguinal ring for symptomatic varicocele.

10 men with unilateral varicocele in 8 cases and bilateral in 2 cases. Diagnosis was based on the history, physical examination and scrotal ultrasound. Laparoscopic ligation was done for sub-fertility in 6 patients, testicular pain in 2 patients and testicular atrophy in 2 cases. The spermatic artery was preserved in all cases. The procedure was done on a day surgery basis.

The procedure was completed successfully with preservation of the testicular artery in all cases. The average operative time was 50 minutes. No mortality. The morbidity was low and minor; pneumoscrotum in a case. Follow up for 3-6 months showed improvement of the varicoceles with disappearance of pain. Seminal analysis was improved in density by more than 17 millions per ml and motility by more than 33%. No secondary hydroceles were observed.

We conclude that, laparoscopic varicocele ablation is simple, safe, and effective with brief convalescence.

Keywords, male, infertility, varicocele, laparoscopy.

INTRODUCTION

Varicocele is an abnormal dilatation and tortuosity of the pampiniform plexus of veins within the spermatic cord and have been found in about 15% of the general male population [Belman (1991)]. It is asymptomatic in 9.5% and coexists with subfertility in up to 40% of men (Dubin et al., 1977). Varicoceles, typically develop during adolescence and they are left - sided in 90% and in cases of subfertility they

are bilateral in up to 60% (McClure et al., 1986 and Hagood et al., 1992). Varicocele formation is commonly held to be dependent upon incompetence or abscence of the testicular vein valves and / or increased hydrostatic pressure with persistent retrograde flow through the left renal vein to the testicular vein (McClure et al., 1986). In some cases, especially right sided varicocele, there is an increased inflow with circuitous flow; retrograde down the testicular and antegrade to the cremastric, pudendal and iliac vein (Coolsaet, 1980 and Marks et al., 1986).

The ideal method for varicocele ablation is still a matter of controbersy. It should completely decompress the dilated veins (often bilaterally), minimize injury to the collateral arterial supply among testicular, cremastric and vasal arteries, preserve testicular venous and lymphatic outflow and be minimally invasive (Hagood et al., 1992 and Tan et al., 1995). Transvenous embolotherapy done under local anaesthesia has a primary failure rate up to 15% and risks migration of the occlusion device, perforation of the vessel wall and recurrence rate of 52% (Hagood et al., 1992 & Tan et al., 1995). The open inguinal and high retroperitoneal ligation had proved to be successful but they had suffered because of the attendant morbidity (Hagood et al., 1992) and cannot deal with collateral, renal, spermatic, lumbar, capsular and deferential veins which, often, feed the internal spermatic vein just proximal to the internal ring causing operative failure (Tan et al., 1995).

Palomo (1949) first reported on open high "mass" ligation of the internal vessels at varicocelectomy based on the vascular communication among the testicular, cremasteric and vasal arteries so, making the procedure more simple and reported good results, with no subsequent testicular atrophy (Matusuda et al., 1992).

Laparoscopic varix ligation is a useful alternative to open "access" in terms of visual, microscopic capabilities, thus allowing accurate identification, effective venous ligation and preservation of the testicular artery and accommodation of both sides with brief convalescence (Hagood et al., 1992 and Donovan and Winfield 1992). Matusuda et al., (1992) advocated mass ligation of the spermatic vessels using the 2 puncture laparoscopic technique, under local anaesthesia, making, the procedure more simple and effective, depending on Palomo's findings of vascular communication.

The authors report their experience in the first 10 cases of laparoscopic varicocele ligation.

PATIENTS AND METHODS

Laparoscopic varicocelectomy was performed in 10 men, their ages ranged between 18 and 42 years. The varicocele was unilateral in 8 cases and bilateral in 2 cases. The diagnosis and grading were made on physical examination in the standing position and when required, scrotal ultrasound study to confirm the diagnosis. The varicoceles were of the grade 2 or 3 (Lyon et al., 1982). The indication for the operation included subfertility in 6 cases, ipsilateral testicular atrophy in 2 cases and scrotal pain in 2 cases. Cases with expected extensive abdominal scarring and inguinal hernia are excluded. The procedures were done under general anaesthesia using the three ports techniques with the preservation of the testicular artery (Hagood et al., 1992 and Tan et al., 1995). The patients were discharged within 24 hours with a routine postoperative care. Seminal analysis was repeated and compared to the preoperative analysis in patients with subfertility during the 3 to 6 months of follow up.

RESULTS

The procedure was completed successfully in all cases. The average operative time was 50 minutes (ranged from 30 to 90 minutes). The testicular artery was identified and preserved in all cases. Pneumoscrotum occurred in a case due to dissection of the carbon dioxide through the inguinal canal. This was of no consequence, as the scrotum was compressed at the end of the procedure, expelling the gas back into the peritoneal cavity, from where, it was released through the ports. Postoperative transient shoulder pain and mild abdominal discomfort occurred in 3 patients, and responded well to 1 or 2 tablets of acetyl salicylic acid 300 mg, paracetamol 200 mg and codeine phosphate 10 mg (Vegaskine, Alex.) during the first postoperative week.

Postoperative physical and ultrasonographic examination revealed resolution of the varicoceles in all patients, disappearance of pain and no change of the testicular size. No hydroceles were noted. Seminal analysis in patients with subfertility revealed an average improvement in the sperm density from $18x10^6$/ml to 35 x 10^6/ml and sperm motility from 16 to 49% and fall in the abnormal forms from 65 to 40%.

DISCUSSION

Laparoscopic varicocelectomy offers a useful alternative to the open "access" for varicocele ablation. Selection criteria remain unchanged, that is a clinically certain varicocele with pain and / or infertility. While the left and right spermatic veins are accessible through the laparoscope, only the clinically apparent varicoceles are ligated (Donovan and Winfield 1992).

Most studies reported that; 78-95% of varicoceles are left sided (Dennison and Tibbs 1986). In this small selected series, varicoceles were left sided in 80% and of higher grades than the right sided varicoceles. Bilateral varicoceles are now detected more frequently and they were present in 20% which is higher than the 15% reported by Brown et al., (1967).

Laparoscopic varicocelectomy not only has the advantage of wide accessibility to the both sides via the same ports, but it does allow accurate identification and ligation of the collateral veins which often feed into the spermatic veins proximal to the internal inguinal ring, preservation of the spermatic artery and vas deferens and hence preserving the testicular function (Donovan and Winfield 1992). In this series, the testicular artery was preserved in all cases; the number of veins ligated, ranged from 2 to 4 veins. The operative time in this study is comparable with that reported in the literature (Donovan and Winfield 1992, Hagood et al., 1992) and including that of laparoscopic "mass" ligation of the spermatic vessels (Matusuda 1992).

The varicocele can cause a marked impairment of spermatogenesis is now generally accepted and it is due to an increased intrascrotal heat and / or retrograde flow of blood from the left adrenal and renal veins carrying a relatively high concentration of spermatogenic inhibitors such as undetoxified steroids and catecholamines which reach both testes through the rich vascular anastomosis between both sides (Cockett et al., 1979, Dubin et al., 1977 and Tan et al., 1995). Laparoscopic varicocelectomy in previously subfertile patients resulted in an improvement of sperm counts by more than 20 x 10^6 / ml and motility by more than 20% which is greater than that of open high ligation and embolotherapy (Hagood et al., 1992 and Tan et al., 1995). Postoperative seminal analysis, in this series after 3-6 months, revealed improvement in the sperm density from 18 x 10^6 / ml to 35 x 10^6 / ml and sperm motility increased from 16% to 49%. Similar improvement in the semen of men with subfertility after laparoscopic ligation was reported (Donovan and Winfield 1992 and Hagood et al., 1992).

In conclusion; laparoscopic varicocelectomy is a safe, simple and effective procedure with low morbidity and brief convalescence in the hands of a trained laparoscopic surgeon.

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