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A REVIEW OF 427 CASES OF VARICOCELE

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ABSTRACT

427 patients with varicocele ranging in age from 14 to more than 35 years underwent surgical operation during a 10 year period (1977-1986). 190 (44.5%) were referred for infertility and 365 had left-sided varicoceles (85.5%). No relationship was found between infertility and the grade of varicocele. Clinical features of prostatitis were often present. Semen analyses were performed in 37% of patients and showed abnormalities in motility, morphology, and density. Hormone analyses (in 26 cases) showed elevated FSH, normal LH, and decreased testosterone levels. Complications of high ligation occurred as recurrence of varicocele in 10%, and edema of the scrotum in 12%. In the 32 patients presenting with infertility who were followed-up, there was an improvement in sperm density in 81%, and a fertility rate of 37.8%.

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INTRODUCTION

Varicocele is a common urological disease in young men (8-20%), particularly in those suffering from infertility (up to 40%).[1] The density, motility, and morphology of sperm are almost always altered,[22] and these changes may be corrected by simple ligation using the method of Ivanissevich (1981).[23,24]

PATIENTS AND METHODS

200 patients were studied over a four year period (1982-1986) in one private clinic, and another group consisting of 227 patients who had been admitted to Ghaem University Hospital were reviewed over a ten year period from 1977 to 1986.

Methods of study

The study was based on clinical examination, including palpation, the Valsalva's maneuver, milking the upper portion of the left scrotum and seeking the classic "bag of worms" sign. Palpation of the scrotum is the most convenient and the simplest means of detection of a varicocele,[2] and was the only method of diagnosis used by Herzinger (1981).[3]

Investigation

Semen analysis was performed in only 158 patients (37%); the majority refused on religious grounds. Hormone analyses were performed using radioimmunoassay in 26 patients (6.1%).

Operative technique

High ligation of the testicular veins was performed in 423 patients (99%); in 4 cases the inguinal approach was used.

Follow-up

Follow-up was attempted for 12 months after operation. Among the 190 patients complaining of infertility, 32 (16.8%) were followed-up regularly with a repeated semen analysis.

RESULTS

Age

The age range of the patients is given in Table I.

Side of varicocele

In this series there were more varicoceles on the left than on the right side (Table II).

Table I. Age distribution of 427 patients with varicocele.

Age	No.	Percentage
15	2	0.5
16-25	229	53.6
26-35	170	39.8
› 36	26	6.1
Total	427	100.0

Table II. Side of varicocele.

Side	No.	Percentage
Left	365	85.5
Right	14	3.3
Bilateral	48	11.2
Total	427	100.0

Stage of varicocele

Using the method defined by Steeno, et al (1976), varicocele staging was performed in 83 patients referring to the auther's clinic (Table III).

Table III. Varicocele staging in 83 patients.

Stage	No.	Percentage
I	23	27.8
II	30	36.1
III	30	36.1
Total	83	100.0

Symptoms

The presenting complaints are set out in Table IV.

Physical findings

Testicular atrophy on the effected side was noted in 50 cases (11.7%). In 190 (95%) of the patients referring to the author's clinic there were signs and symptoms of chronic prostatitis, e.g. prostatorrhea, dysuria, low back pain, and a dull ache in the gentalia.

Table IV. The presenting symptoms in 427 patients with varicocele.

Presenting complaint	No.	Percentage
Infertility	190	44.5
Pain	141	33.0
Dull ache in genitalia	49	11.5
No symptoms	47	11.0
Total	427	100.0

Semen analysis

Preoperative semen analysis was performed in 158 patients (Table V). In most of them sperm morphology and motility were below normal limits.

Table V. Preoperative semen analysis in 158 patients.

Sperm density (millions per ml.)	No.	Precentage
› 20	128	81.1
‹ 20	30	18.9
Total	158	100

Effects of varicocele ligation on semen analysis

In the 32 patients who returned for follow-up semen analysis, an improvement in sperm density, morphology, and motility was seen in 26 cases (81.2%); and a deterioration in the remaining 6 (18.8%). Pregnancy occurred in the wives of 12 of these 32 patients (37.5%).

Hormone studies

Radioimmunoassay of plasma follicle stimulating hormone (FSH), luteinizing hormone (LH), and testosterone were performed before operation in 26 patients. The results are shown in Table VI. No hormone studies were performed postoperatively.

Table VI. Results of hormone assays in 26 patients.

Hormone	Results		
FSH	‹ normal	normal	›normal
[normal range 1-20 mu/ml]	-	-	26
LH			
[normal range 1-25 mu/ml]	-	26	-
Testosterone			
[normal ragne 600-1200 ng/100ml]	26	-	-

Complications

Recurrence of varicocele was noted in 42 patients (9.8%), and scrotal edema was seen in 51 cases (11.9%).

DISCUSSION

A varicocele is an abnormal dilatation of the pampiniform plexus. It is not clear why varicoceles occur. There are many theories attributing them to the lack or incompetence of the valves in the internal spermatic vein,[22] the junction between the spermatic vein and left

renal vein,[3] renogonadal bypass,[17] decrease of the activity of the cremaster within the spermatic cord,[5] compression of the left renal vein between the aorta and the inferior mesenteric artery, the so-called "nut-cracker phenomenon,"[6] abdominal tumor,[18] and renal tumor on either side.[19]

It is not clear why they are more common on the left side, although this has been attributed to the pressure caused by the descending[17] or sigmoid colon.

The left spermatic vein is some 4 cm longer than the right, and enters the left renal vein at a right angle rather than the tangential entry of the right.[1,8]

The mechanism by which a varicocele may suppress testicular function is equally unknown. Theories include alteration of the thermoregulatory system of the pampiniform plexus resulting in elevation of the temperature of the testis,[9-11] retrograde reflux of the adrenal metabolites via the spermatic vein, stasis in the peritesticular vessels leading to relative anoxia, and perhaps to impairment of the function of the epididymis.[1] It has been said that a varicocele first alters the testis, thence the pituitary feedback mechanism elevates the FSH titer,[3] but the LH level seldom changes and the serum testosterone may decrease.

Celsus in the first century AD noted testicular atrophy on the side of the varicocele [7] but testicular pathology in cases of unilateral varicocele is believed to be bilateral;[4,22] it has been suggested that there may be tubular atrophy,[3] peritubular fibrosis, vascular destruction, and Leydig cell hyperplasia.[21]

It is believed that a varicocele may be associated with an abnormality in semen, and an altered testis-pituitary-hypothalamic axis, regardless of the individual's fertility status.[14] The most simple method for the diagnosis of a varicocele is by physical examination.[2] It is said that subclinical varicoceles may be disclosed by the additional use of the Doppler stethoscope, gonadal phlebography, radionuclide scan, and thermography. But these are all difficult to interpret,[2] time consuming, and expensive and the significance of these subclinical varicoceles is controversial.[7]

If it is accepted that a varicocele is the single most common surgically remediable cause of male infertility, [12] the importance of correction must be apparent. The methods available include surgical ligation, sclerotherapy, or occlusion of the testicular veins with a balloon catheter.[13] In the present series the classic method of high ligation through a transverse incision just above the internal ring,[22] with the patient in the reverse Trendelenburg position has given the most satisfactory results, i.e. improvement in semen characteristics in 81%-which may be compared with those in the literature of 58-71%, [21] and a fertility rate of 37.8% (compared with 20.2 to 55% in the literature). [1,12,15,16]

Future research may show whether there are relevant biochemical changes in the seminal fluid rather than the spermatozoa, e.g. abnormalities in fructose or vitamin C content. At present it seems that the presence of a varicocele which is causing symptoms, or is associated with abnormalities in semen analysis or atrophy of the ipsilateral testis should be an indication for high ligation.

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