

## CASE REPORT

# Varicocele: a Case Report

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### Abstract

#### Background

Varicocele is a condition with abnormality in growth and dilatation of veins that drains blood from the testicle, the scrotal venous pampiniform plexus. Although commonly painless, varicocele is the most prevalent cause that resulted in low count of sperm, poor sperm morphology, abnormal analysis of semen, and reduced sperm motility.

#### Case presentation

A 28-year-old man seeking infertility assessment presented to the hospital with an unremarkable urological history. He has been married for four years, but they have not yet had any children. Analysis of the sperm revealed teratozoospermia. The left testis has a grade 2 varicocele, according to ultrasound, whereas the right testis is normal. There was no evidence of epididymitis or other abnormalities.

#### Conclusion

Based on the incidence of altered sperm motility and morphology, varicocele is a key factor in fertility. For sperm quality and quantity to be improved or restored, early detection and surgery are crucial.

**Keywords:** Varicocele, infertility, teratozoospermia, sperm, surgery

## Background

Varicocele is known as the condition when the scrotal venous pampiniform plexus abnormally dilates and enlarges. As being the most prevalent cause of low count of sperm and motility and also sperm morphology, around 15-20% men have varicoceles with 40% being infertile. Varicoceles are typically painless. The precise mechanism of how varicocele affected the function, shape, and production of sperm remains unknown. However, the literatures found the possibility of an association between sperm function and varicocele. A British physician, Barfield, noticed the connection between clinically severe varicoceles and male infertility in the late 1800s and followed by others in the early 1900s.

## Case presentation

A 28 years-old male after spermiogram evaluation showed teratozoospermia was referred for scrotal ultrasonography. The patient denied experiencing any discomfort or swelling in the scrotum during normal activities or sexual activity. The patient has no prior history of genital issues, particularly scrotal issues.

There were no comorbidities or haematological anomalies identified in the medical history. There was no previous history of any surgical procedures. The patient had no prior history of weather, food, or medication allergies.

Physical examination results revealed normal physiological functions, including pulse rates of 88 beats per minute (BPM), 130/80 mmHg blood pressure, respiration rate of 20 BPM, 36.4 oC temperature, 172 cm height, and 31.11 kg/m<sup>2</sup> body mass index (BMI).

Ultrasound imaging revealed grade two ipsilateral extra testicular varicocele and aberrant hypoechoic tubular formations in the left testis. Reflux venous flow increased in the left intratesticular tubular structures during the Valsalva maneuver, according to colour doppler ultrasound. Both kidneys were deemed normal by abdominal ultrasonography, which also revealed no additional abnormalities. The patient received non-invasive intervention advice.

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## Discussion

A varicocele is a condition that is characterized by enlargement of the internal spermatic vein and pampiniform venous plexus. The common cause of impaired testicular physiology, varicocele, affects 40% of infertile men and 15–25% of all males. A brief examination of the background, history, and current notions of functional anatomy and the procedures and outcomes of surgical repair. Repair is recommended and it is important to comprehend the relevance of this anatomic anomaly in the infertile patient.

Varicocele is hypothesized to have several etiological factors. The most frequently cited theories for varicocele development include the anatomical differences in the venous drainage between the left and right internal spermatic and the ability of venous valves to increased hydrostatic pressure and leading to blood reflux.<sup>5,6</sup> Varicocele may occur as a result of physical activity during puberty, although the intensity of physical activity may exacerbate the condition without changing the prevalence of varicocele.<sup>6</sup>

Varicoceles often have no symptoms. If the varicocele is significant enough, the patient could report a "bag of worms." These findings are commonly found as left scrotum soft lumps above the testicle. The soft lumps on both the right and left sides are also possible. Patients may occasionally report scrotal discomfort or heaviness. They are frequently discovered during an examination for infertility.

The existence of initially aberrant semen quality in men with a varicocele may be a major factor in further declines in semen quality. Studies show that in 28 subjects (87.5%) of the men in a clinical prospective study of males with five years mean follow-up there is degradation in semen quality, although only six patients (20%) of the men with initially normal semen quality experienced degraded quality during follow-up.<sup>(10)</sup>

Large varicoceles can be diagnosed by visual inspection and typically resemble a "bag of worms." The term "medium varicoceles" refers to a condition that may be distinguished by 90 degrees of physical examination (palpation) without the patient bearing down. Varicoceles that still small in size can only be detected through a powerful Valsalva maneuver.

Varicoceles that go untreated may progress, although even when they do, they seldom cause pain. Some proposed mechanisms for this pain include hypoxia, hormonal imbalances, increased venous pressure, dilated varicocele complex which caused spermatic cords nerve fibers' stretching, elevated testicular temperatures, oxidative stress,

and kidneys' or adrenals' toxic metabolite reflux. Orchialgia caused by varicoceles is also can manifested and commonly described as dull, aching, or throbbing, but can also occasionally be strong, stabbing, or acute.<sup>11</sup>

After a physical examination, a high-resolution color-flow Doppler ultrasonography can be used to confirm the presence of varicocele. This ultrasound will show dilated pampiniform plexus vessels, often more than three mm in diameter. Venography is unnecessary. Another painless, non-contact, non-invasive method for assessing and confirming a potential varicocele is thermal imaging. The potential use of testicular strain elastography in locating varicocele patients who would benefit from therapy is being investigated.

Any single right-sided varicocele should always be suspected to be caused by renal cell cancer. A right-sided varicocele and venous blockage caused by a tumor thrombus in the right renal vein that can extend into the vena cava. CT scan is advised if this is thought to be feasible.

With a varicocele, infertility is frequently the major cause of worry. Although varicoceles are also frequently found in fertile men, some of them can suffer from sperm that is insufficient, shaped, motile, or otherwise dysfunctional. Researchers postulate that the sperm may suffer damage due to elevated oxidated stress caused by blood pooling and resulted in direct hydrostatic pressure injury effects on the testis, decreased oxygenation, toxin production, autoimmunity, hypoxia, with an increase in adrenal steroids concentrations that delivered to the testicle. This is due to the fact that practically right opposite from where the internal spermatic vein enters, the adrenal veins drain into the left renal vein. According to the most accepted theory, the main cause of the varicocele is the elevation of intratesticular temperatures due to blood flow increase.<sup>12</sup>

The possibility of testicular failure by large varicoceles which subsequently causes a reduction in hormone production, testicular atrophy, and oligospermia must be prevented. Varicoceles can also compromise the DNA integrity of the sperm nucleus, which is linked to diminished quantity, motility, and viability of sperm, and morphology abnormality.<sup>13</sup>

## Conclusion

In conclusion, varicocele is one of the key factors that contributed in decreased of motility and morphology sperm. To diagnosis, the patient must undergo a thorough examination. Imaging is crucial for both determining the differential diagnosis and identifying varicocele.

Doppler ultrasonography appears to be enough in the majority of cases, but if an MRI scan is necessary, the procedure can be completed. The type of treatment will depend on the patient's health and the precision of the diagnosis. Despite the fact that conservative therapy seems to work well for the varicocele, the safest plan of action in situations of uncertain diagnosis is surgical investigation.

## List of abbreviations

BMI - Body Mass Index

## Declarations

### Ethics approval and consent to participate

Informed consent from the patient has been obtained before the study.

### Consent for publication

Consent for publication regarding patient data has been obtained before the study. All the patient identity has been kept secret

### Availability of data and materials

Not Applicable

### Competing interests

The authors declare that they have no competing interests.

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