Scrotal Pain After Varicocelectomy Causes and Management: A Retrospective Study

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KEYWORDS

infertility, varicocelectomy, chronic scrotal pain, and postoperative pain.

ABSTRACT

Inactive males have a frequency of varicocele, a common urological condition that ranges from 8 to 15%. In male patients with primary or secondary infertility, the prevalence is higher; in fact, this demographic accounts for 35 to 80% of varicocele occurrences. The Varicocele usually presents itself clinically as an asymptomatic mass resembling a "bag of worms," along with infertility, chronic scrotal pain, and the appearance of an apparent lump. Conservative therapies for varicocele often fail before the patient is considered for varicocele. Unfortunately, nutcracker syndrome, referred pain, neuralgia, ureteral lesions, recurrence of varicocele, hydrocele, or neuralgia can all lead to prolonged scrotal pain in some people. As a result, doctors should consider these issues as possible causes of scrotal pain after surgery and treat them accordingly. By considering a number of variables, we can better predict the success rate of varicocele surgery. Clinicians should take these considerations into account when determining the need for surgery and the best course of intervention. There will be less chance of problems like postoperative scrotal soreness and more chance of a favorable surgical outcome if they do this.Material and methods 212 patients received a varicocele diagnosis between July 2021 and July 2023. By surgeons from baquba teaching hospital's urology department performed the varicocelectomy. In order to conduct a retrospective study .Aim to show prevalense of Scrotal Pain after Varicocelectomy

1. Introduction

The pampiniform plexus's scrotal section and the internal spermatic venous system dilate, a condition known as varicocele.About two percent to ten percent of men who experience scrotal varicocele pain report it to their doctor. There are several possible causes for this pain. The condition is caused by the dilated venous complex compressing the nearby neural fibers and a high testicular temperature. These factors include low blood oxygen levels, hormonal disruptions, elevated intravascular pressure, and the backflow of harmful substances produced by the adrenal glands or the kidneys. Testicular pain associated with varicoceles is defined as a dull, agonizing, or throbbing pain in the testicle, scrotum, or both. or the groin; on rare occasions, the pain may be intense, jagged, or piercing. First, we treat varicocele-induced testicular pain. We employ a cautious and non-invasive method, along with a period of monitoring, to perform endoscopic varicocelectomy in carefully chosen individuals. When a varicocele is palpable, treatment for testicular discomfort alleviates approximately 80% of cases. Performing varicocelectomy using microsurgical methods .These procedures have gained popularity because of their good results and low rate of complications. Varcocele severity and characteristics .Variables that can be used as indicators include the amount of time that pain has persisted, the patient's weight, the success of previous conservative treatments, and the surgical approach taken. so that varicocelectomy goes well.

Etiology

Exactly what causes varicocele pain is still a mystery. But varicocele-related infertility It has the potential to impact spermatogenesis and Leydig cell function by elevating testicular temperature and venous pressure, hypoxia, oxidative stress, hormonal imbalances, and/or the reflux of harmful compounds from the adrenals or the kidneys [6–11]. In addition to causing pain, these testicular injuries can also cause infertility. One more thing that makes varicocele painful is when the dilated venous complex compresses the nerve fibers in the area [12].

Presentation and assessment

When a woman has varicocele, she may feel a dull, aching, or throbbing pain in her testicles, scrotum, or groin. On rare occasions, the discomfort may be more intense and piercing. Varicocele is another name for the scrotal heaviness that comes with standing for long periods of time, exercising, or engaging in other physically demanding activities. In addition to the time and place of the pain, the patient's medical history should include specifics about its intensity, where it started, how it has changed over time, and whether or not it has spread to other areas. Talking about things like sexual and physical activity, as well as how the patient's urine and bowel habits affect their symptoms, can help identify both aggravating and relieving aspects. Few men report testicular pain, but varicocele typically presents with no symptoms. Adult men typically diagnose varicocele during infertility evaluations, while adolescents often discover it accidentally during physical examinations. A physical examination, therefore, is the most important diagnostic tool for varicocele. While palpating and inspecting the scrotum, place the patient in either a standing or supine position. Examine the patient in a warm environment to aid in relaxing the cremaster and dartos muscle fibers, and decide whether to use the Valsalva maneuver during the examination. The norm Only the Valsalva maneuver, while grade 2 varicocele is easily palpable but not visible, and grade 3 varicocele is easily visible [13]. While not palpable, Doppler ultrasonography can reveal grade 0 (subclinical) varicocele. When a varicocele patient experiences testicular pain, it is not always necessary to have an imaging workup. In cases where a physical examination is unable to reveal the condition or is too challenging, an imaging investigation can provide a numerical evaluation and an unambiguous diagnosis of varicocele. Not only that, the exam allows you to accurately measure both testicles and rule out any other possible intrascrotal or abdominopelvic diseases. There is no more significant or prevalent imaging procedure for males than pelvic doppler ultrasonography.

discomfort in the testicles. The outpatient room is an ideal setting for this cost-effective, non-invasive, highly sensitive device. Furthermore, magnetic resonance imaging (MRI) or computed tomography (CT) scans of the pelvis and abdomen provide detailed anatomical images of regions associated with linked conditions. discomfort in the testicles. Any discomfort in the testicles requires an accurate diagnosis. A person experiencing testicular pain must determine the underlying source of their pain, regardless of whether a clinically detectable varicocele is present during a physical examination. A wide gap .Chronic testicular pain may arise from referred pain, pain after a procedure, or discomfort from the scrotum (Table 1) [14]. Fluid retention, testicular tumors, varicocele, spermatocele, and hydrocele are all scrotal issues that can lead to painful testicles. After a vasectomy or hernia repair, you could feel some testicular pain. This could be because of iatrogenic damage. When ruling out other possible sources of referred pain, the differential diagnosis of orchalgia takes into account conditions like indirect inguinal hernia and mid-ureteral stones.

Classification and evaluation

Section 2.1: Comprehensive Medical Evaluation

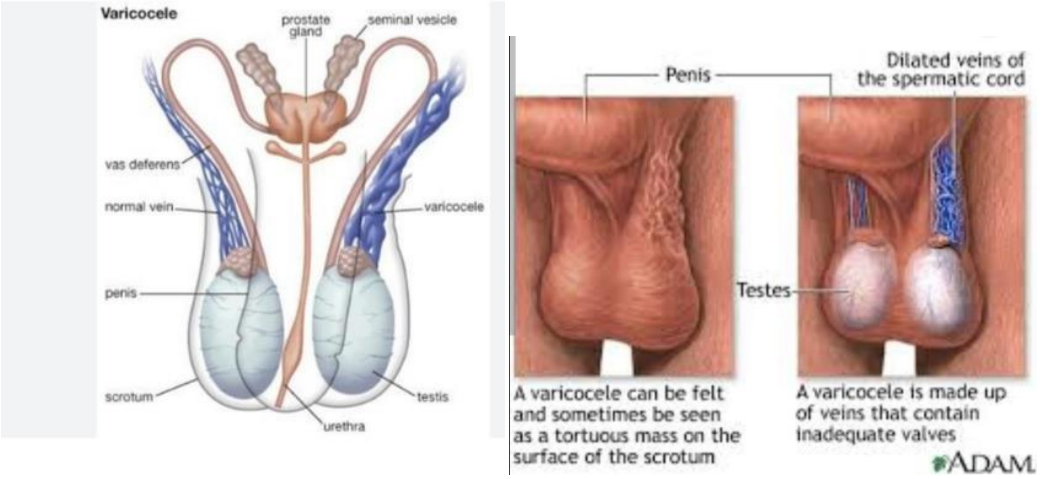
The diagnosis of varicocele primarily depends on a comprehensive physical examination, which encompasses .The testicles and their contents undergo a thorough examination. To ensure the test's success, Generally, we place the patient in a warm room to reduce the strain on the dartos and cremaster muscles. On the other hand, scrotal retractions may make it difficult to see blood vessels. It is standard practice to examine the patient while standing and reclining positions. The examiner places their fingertips on the exposed scrotum and palpates the area. Ensure the consistency and smoothness of the umbilical chord. For varicocele instances, the Ventilated and curving veins in the pampiniform plexus create the illusion of Regarding a "bag of worms," Many doctors use the Valsalva maneuver to make the varicocele easier to see. Each patient must take a deep breath and hold it as they press down. This is analogous to the process of defecating. Accordingly, the intraabdominal and intrathoracic.The reduced pressure encourages the return of peripheral venous blood to the heart.The varicocele should stand out more. Besides the standard medical checkup, We might use additional imaging studies, such as venography or ultrasound, to confirm the diagnosis. particularly if a physical examination reveals no obvious symptoms of the condition or when.The patient is overweight. The most significant method for I assist in the diagnosis of varicocele and provide direction for the course of treatment. When diagnosing varicocele, it is critical to assess the illness's severity. Identify the optimal course of treatment. This is due to the lack of widely accepted treatment protocols. There have been numerous proposals for categorization systems. Around the year 1970, Dubin .Using an upright patient as an example, Amelar and colleagues outlined the following material for a grading scale: duty [18]. Only a Valsalva maneuver can detect the minuscule varicoceles of Grade 1, which measure less than 1 cm. Grade 2 Varicoceles, which are large (1-2 cm) and noticeable when feeling the skin, are not visible. plainly visible. When a varicocele is in grade 3, it is large (>2 cm) and noticeable even without a microscope. sense of touch. Following in the footsteps of Dubin and Amelar, Tauber brought forth a taxonomy in 1994 that was Doppler also identified subclinical, non-palpable varicoceles. Table 1 demonstrates how Doppler ultrasonography can detect it [19]. Imaging studies, in addition to a physical examination, can provide a more accurate diagnosis. assessing varicocele. Ultrasonography is a popular and noninvasive imaging method. It is capable of reliably identifying varicoceles and assigning a grade to them. Using ultrasonography, Sarteschi Classify varicoceles from 1 to 5 based on the intensity of reflux, varicosities, and CT and MRI scans can diagnose male pattern baldness. Modern imaging methods, such as magnetic resonance imaging (MRI), can enhance the clarity of anatomical images significantly. The pelvic region helps to identify varicocele and any underlying conditions. conditions. Venography is a diagnostic procedure that involves injecting a contrast dye intravenously. This method is less intrusive, more reliable for detecting varicoceles, and even better for organizing most effective method of surgery. For the most accurate diagnosis, a physical exam in conjunction with imaging studies is ideal. We need to determine the best course of treatment for varicocele.

Table 1. Classification of varicocele.

	Grade	Clinical	Vein Convolution	Nomenclature
Dubin and Amelar; Tauber	0	Not palpable but can be detected under Doppler ultrasonography	0	Subclinical
	1	Palpable only during a Valsalva maneuver	0–1 cm	Small
	2	Easily palpable but not visible	1–2 cm	Moderate
	3	Easily visible without the need for palpation	>2 cm	Large
	Grade	**Reflux**	**Varicosities**	**Testicular Hypotrophy**
Sarteschi	1	During a Valsalva maneuver	None	No
	2	During a Valsalva maneuver	Small	No
	3	Obvious during a Valsalva maneuver	Apparent	No
	4	Spontaneous reflux and increase during a Valsalva maneuver or standing	Present in all positions	Common
	5	Spontaneous reflux at rest without increases during a Valsalva maneuver	Venous dilatation in all positions	Yes

Table 12.4 Varicocele grading system

Grade	Size	Definition
0	Subclinical	Detected only on USS
1	Small	Palpable only with Valsalva manoeuvre
2	Moderate	Palpable without Valsalva
3	Large	Visible through the scrotal skin



Section 2.2. Possible Varicocele Treatments, Surgical Options, and Outcomes

Section 2.2.1. Methods that are less aggressive

Patients with chronic pain may first benefit from more conservative approaches to management. For example, during bed rest, with the scrotum elevated or supported, and with perineal pelvic floor exercises [21], restrictions may apply. on exercise and NSAIDs.

Additionally, just like Research has shown that phlebotrophic medicines, such as the micronized pure A flavonoid fraction (MPFF) is one way to improve venous tone and suppleness while decreasing vein size. fluid retention. Meanwhile, conservatives did not recommend using MPFF. therapy, because there are currently no trials that employ a randomized placebo design. Surgery may be necessary when other, less drastic methods of treatment have failed. must be considered. A sperminogram is the primary tool for recommending surgical surgery. limitations, as well as individuals coping with testicular atrophy, persistent scrotal pain, and. I am unable to conceive even after undergoing conservative treatment. A number of sources support this suggestion: The findings from a retrospective study demonstrate the efficacy of varicocele ligation [16].

Section 2.2.2. Surgical Procedures

Varicoceles are surgically removed. The retroperitoneal high-ligation technique is also known as the Palomo method. A varicocelectomy involves surgically binding the enlarged testicles together. vessels to alleviate the discomfort caused by varicocele (Table 2). In the Palomo method, the initial In 1949 [23], Palomo recommended a commonly used method to carry out this operation. Laparoscopy is an open procedure performed under a surgical microscope. While the During the surgery, ligating the testicular veins occurs after accessing the retroperitoneal cavity. Possibly without avoiding the testicular artery, but in front of the internal inguinal ring, a Unfortunately, the retroperitoneal route cannot reach the collateral. The presence of pampiniform plexus veins may increase the likelihood of recurrence [24, 25]. As a result, microsurgical subinguinal varicocelectomy enables the detection and preservation of An increasingly common substitute is ligation of all dilated veins in the pampiniform plexus. The Palomo technique carries a few potential risks, including .Remission rates for discomfort are lower than those of microsurgical subinguinal varicocelectomy .

Causes of persistent scrotal pain after treatment:1. recurrent,2. neuralgia, 3.refer pain,

4.hydrocele, 5.ureteral lesion,6. nutcracker syndrome,.and unknown.

1.Recurrence

Surgical advancements have not eliminated the prevalence of recurrent varicoceles. There are several reasons why pain persists even after treatment ends, and the frequency of its return can vary greatly. from a variety of surgical techniques. Some have suggested that there may be a connection between During subsequent procedures, such as those involving the patient's collateral veins and internal spermatic veins, To accurately assess varicocele recurrence and determine the most appropriate course of action We recommend ultrasonography for diagnosis and treatment. As an example, when dealing with Repeat angiographic embolization is a possible treatment for recurrent varicoceles. operating room. Scientific literature suggests that a microscope can aid in a subinguinal varicocelectomy. The best treatment for recurrent varicocele is delivery to the testis, which has a substantial effect. The incidence of recurrence is declining . According to reports, a microscopic subinguinal varicocelectomy can be performed. Compared to other methods, their ability to identify and ligate results in a reduced recurrence rate. Larger veins become visible under higher surgical magnification . In addition, The subinguinal approach benefits from preserving the external oblique aponeurosis. This reduces the risk of prolapse and weakens the abdominal wall after surgery. Regardless, though It is crucial to tailor surgical approaches to each unique patient [17], taking into account The surgeon's previous experience, the patient's unique anatomy, and their health background are all important factors to consider. To effectively manage recurrent varicoceles, a thorough assessment is necessary. a personalized treatment strategy. Assessment using ultrasonography is advised. In the event of a return, a microscopic subinguinal varicocelectomy that includes testicular delivery is necessary. A therapy option that effectively reduces the likelihood of

recurrence is available. Nonetheless, before deciding on surgical

Customizing one's approach to each patient is essential, and further research is required. Further research on the long-term effects of various surgical alternatives is necessary. varicoceles that come back.

2. Neuralgia

Patients whose scrotal pain persists for more than three months and who have undergone both scans are eligible for consideration. A negative result from an upper urinary tract survey was considered to indicate chronic scrotal content anguish [18]. The hypothesis was that Wallerian fractures cause chronic scrotal pain. The cremaster muscle, the vasal sheath, and the perivasal tissue are all supplied by nerve deterioration. The investigation concentrates on lipomatous tissue from a posterior cord spermatic cord biopsy [12]. Potential Less-invasive therapeutic options include pelvic floor exercises and tricyclic antidepressants. These medications include opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), and tranquilizers [21]. A topical anesthetic injection is a potential short-term solution for spermatic cord obstruction. The patient is experiencing scrotal discomfort, has undergone microsurgical spermatic cord denervation (MDSC), and requires customized treatment. Other methods include transcutaneous magnetic stimulation of the spermatic cord (TMDSC) and subinguinal approaches. in order to manage surgery. Performing an audit is required prior to MDSC or TMDSC. A pain relief evaluation and a prediction of the outcome of these treatments using spermatic cord blocks have been conducted [21]. To do MDSC, you must ligate every structure of the spermatic cord except the arteries. The subinguinal pathway, which encompasses lymphatics and veins, connects these systems. This stands in stark contrast to the TMDSC, a simplified system. MDSC, a region of Wallenian degeneration, involves ligation Tissue surrounding veins and arteries, the space between them, and the spinal cord back are involved. This results in a shorter surgical time and keeps the internal spermatic cord intact. An analysis The operating time for MDSC was longer than that of the other denervation procedure. After 53 minutes of MDSC, compared to 21 minutes of TMDSC, the pain relief was comparable and effective. rates (Table 3 shows that in TMDSC it ranges from 83% to 93%, while in MDSC it ranges from 82.1 to 32.1%.). The process involves stimulating or removing neurons or spinal cords [16]. Researchers have discovered that the spermatic cord's surrounding tissues can provide relief from persistent scrotal pain.

3.Referred Pain

Urinary tract infections (UTIs) can cause discomfort in the scrotal region, including .These conditions may include orchitis and chronic prostatitis [65, 66]. The scrotum receives innervation from the anterior .The ilioinguinal nerve's vaginal branch and the anterior scrotal nerve both originate from the same source. The pain originates from the genitofemoral nerve on the back, the posterior scrotal nerve on the side, and the inferior The posterior cutaneous nerve of the thigh is located in the perineal division [17]. This means that .This includes the intervertebral disc, urolithiasis, abdominal aortic aneurysm, and other painful conditions. The symptoms include back pain, retrocecal appendicitis, nerve root impingement, pudendal neuropathy, and knee pain. The same nerves connect to a retroperitoneal neoplasm through the same channel [18]. This could cause pain to radiate to the scrotum. Because the kidney, testis, and prostate all receive autonomic nerve supplies, Radiation can cause discomfort in conditions such as neuropathy, chronic prostatitis, orchitis, and urologic lesions. throughout the genital area. The autonomic plexuses are where urinary tract innervation begins. The renal, aortic, superior hypogastric, and inferior hypogastric regions are located in close proximity to one another. Neural fibers form intricate networks that carry both sympathetic and parasympathetic impulses. Urinary tract discomfort is Sympathetic nerve fibers arrive in the

T10-L2 spinal cord via a retrograde path. manner. Neoplasms and ureteric calculi are two examples of ureteral lesions that can induce colicky symptoms. The lower belly area is experiencing discomfort due to a section of the ureter located above the blocked area. the block. Urinary tract discomfort can sometimes radiate to the opposite side of the body, specifically the flank. The low back area is connected to the T10-L2 dermatome. Therefore, ureteral .Possible sources of scrotal discomfort include lesions. Skeletal discomfort following surgery may be due to chronic inflammatory epididymitis. The outcome of a prior infection, whether it be bacterial or viral, or an infection that occurred after surgery, is significant. Space between acondition that could lead to cystitis is the bladder discomfort syndrome of undetermined etiology. Patients may experience scrotal discomfort, pelvic ache, and symptoms related to the lower urinary system [19].

4.. Hydrocele

One potential side effect of varicocelectomy is the disruption of testicular lymphatic outflow. used to induce hydroceles following surgery. In 2018, a thorough investigation revealed that On average, 0.6% of microsurgical subinguinal patients developed a hydrocele following surgery. Then, 5.3% used an open inguinal, 6.7% used a laparoscopic, and 7.5% used a transvaginal approach. There are techniques that involve the retroperitoneum, which is the back of the abdomen [16]. Hydroceles appear as a collection of stained tissue. There is a passageway between the visceral and parietal layers of the tunica vaginalis. Potentially, hydroceles could emerge. The body's ability to absorb and produce fluids is mismatched. The stomata is located on the parietal lymph nodes. Researchers have documented changes in the tunica vaginalis [17]. This means that the space alymphatic vessel in the tunica vaginalis leads to the testicles.

The stomata and testicular lymphatic drainage transport the fluid to the lumbar and para-aortic nodes. This could account for the leak that develops after varicocelectomy surgery. Considering the expanding lymphatic channels is possible through microsurgery and lymphatic staining. observed, thereby reducing the probability of hydrocele development[24].

5. Nutcracker Syndrome

This condition, commonly referred to as anterior nutcracker syndrome or nutcracker syndrome, typically presents as **.**This condition, also known as left renal vein entrapment syndrome, occurs when the left renal vein becomes trapped. It is located next to the abdominal aorta and the superior mesenteric artery (SMA). Originating from at the T1 level of the abdominal aorta, and at the angle between the SMA and the abdominal wall In individuals with Nutcracker syndrome, sometimes the aorta is less than 35. Due to this acute angle, An increase in pressure within the left renal vein widens the left gonadal vein, which in turn communicates lumbar spine! The patient has anterior nutcracker syndrome, which has a prevalence of 0.1-3.2%. [12]

Velocular abnormalities can cause the retroaortic or circumaortic left renal vein to form. Squeeze the left renal vein located between the abdominal muscles. The condition known as posterior nutcracker syndrome affects the spinal cord and aorta. Blood pressure in the veins .This condition also has the potential to cause a small vein rupture in the renal fornix. There may be blood in the urine, causing discomfort on the left side of the body. Varicocele, varicocele, and another abnormality frequently accompany nutcracker syndrome [13]. Other symptoms and signs may manifest as scrotal pain, orthostatic proteinuria, left loin pain, stomach pain, and more. tachycardia, dysuria, and renal dysfunction [14]. All things considered, nutcracker.Syndrome often goes undiagnosed. Individuals with a slim build are at a higher risk of nutcracker injuries. The condition occurs when the SMA and abdominal aorta form a sharper angle, leading to a syndrome [25]. Gradients in pressure greater than 2 mmHg are diagnostic of nutcracker syndrome [16]. Retrograde venography from the renal vein leads to the inferior

vena cava. Due to its significance Computerized tomography angiography (CTA) permits noninvasiveness and improved accessibility. When assessing veins and arteries, we use "the beak sign" instead of "at." An axial CT shows constriction of the left renal vein [17]. Controversy surrounds Nutcracker syndrome treatments. A conservative approach to management encompasses.Medication, including angiotensin-converting enzyme medications, can lead to weight gain. Orthostatic proteinuria and increasing renal perfusion, respectively, are associated with aspirin use [18]. When patients exhibit severe symptoms while undergoing conservative vein treatment, including extensive hemorrhagia, In order to treat it, surgical intervention is necessary. Possible open methods are mesoaortic transposition, left renal vein transposition, and renal autotransplantation [17]. These methods include laparoscopic left renal vein transposition, left renal vein endovascular stenting, and gonadocavage. Transluminal balloon angioplasty, bypass grafting, and minimally invasive surgical procedures are all options. During the process, it is critical to consider nutcracker syndrome. I found blood in my urine from an unknown source.

Predictors of Treatment Outcome

Symptoms, such as a higher varicocele grade, are present before surgery. The duration of pain before surgery, the surgical method, and the number of ligations We have identified varicose veins [19], enlarged vein diameter, younger age, and body mass index (BMI). The goal is to improve the results of surgery for patients with painful varicocele. In 2020, a retrospective analysis examined factors that contributed to the recurrence. The study revealed that 34 patients with varicocele underwent microscopic subinguinal varicocelectomy. There was a smaller diameter of enlarged varicocele and a more severe case of varicocele on the left side ($p = 0.024$). Prior to surgery, the presence of veins was strongly associated with an increased risk of recurrence ($p = 0.002$) [14]. According to research, mild discomfort indicates a higher likelihood of positive outcomes. The group experiencing mild discomfort has achieved absolute triumph [24]. Earlier this year, Park et al. reported There was a significant improvement in the time span between the onset of varicocele pain and surgery, which was less than six months. relief from discomfort ($p = 0.004$) [39]. But other research found no differences at all. There is a period of discomfort both before and after surgery [24]. Researchers also discovered a significant correlation between a higher body mass index and relief from pain [18]. However, distinct surgical methods may potentially impact the outcomes. We are comparing a retrospective cohort study with a comprehensive analysis of 36 studies [12], as well as another study. We conclude that inguinal or subinguinal microsurgical varicocelectomy is an open procedure. rate of recurrence of 1.05% (0.00–3.57%). Urologists should be aware of these signs. Be mindful of these considerations and thoroughly assess patients both prior to varicocelectomy and during the procedure. continuation of the process.

2. Materials And Methods

212 patients received a varicocele diagnosis between July 2021 and July 2023. By surgeons from baquba teaching hospital's urology department performed the varicocelectomy. In order to conduct a retrospective study, we looked over the patients' medical data. As a means of alleviating discomfort, 53 (51.0%) of the 104 individuals studied had a varicocelectomy. The study excluded patients with a history of inguinal surgery, epididymitis, orchitis, STI, UTI, urolithiasis, prostatitis, inguinal hernia, testicular torsion, tumor, injury, or any other condition that could cause scrotal pain. All 106 patients received conservative treatment prior to surgery, which included scrotal support, non-steroidal anti-inflammatory medicine, and restrictions on physical activity, including not lifting heavy objects or engaging in intense physical activity for at least three weeks (up to five, on average four). However, none of the patients reported any improvement in their pain levels. When ligating varicocele, it was common practice to use a surgical microscope and an inguinal or subinguinal approach. When evaluating each patient, we

took their age, BMI, varicocele grade, varicocele location, testicular hypotrophy, pain duration, pain quality, surgical technique, and overall condition into consideration. Please see the appendix for more information on the brief self-administered questionnaire we created to measure scrotal pain (length and features) and treatment efficacy.

Methods

Based on their age at surgery (20, 21–29, or 30 years) and body mass index (18.0, 18.0–22.9, or 23.0 kg/m2), the study divided the patients into groups. According to Lyon et al. (2011), Grade I varicocele was palpable only with the Valsalva maneuver; Grade II was palpable without the Valsalva maneuver; and Grade III was apparent from a distance. We determined the placement of either a unilateral or bilateral varicocele. We determined the length of time the pain persisted by adding up the months from when it first started until the surgery, usually around six months. Tumor volume difference (.3 or o3 ml), surgical approach (inguinal vs. subinguinal), and pain quality (dull, dragging, throbbing, or severe) were additional criteria for patient classification. We used a Prader orchidometer to measure the volume of the testicles. A 0.3 ml width disparity between the two testicles was considered indicative of ipsilateral testicular hypotrophy. 12 We classified the level of pain alleviation in each group as fully resolved, partially resolved, or failed. The following criteria determined complete or partial pain remission: complete ablation, a 70% reduction of symptoms like pain, or the absence of the need for additional treatment. Persistent symptoms and/or a 70% decrease were considered failure criteria.

Statistical analysis

We used SPSS for Windows version 15.0 (SPSS Inc., Chicago, IL, USA) to perform multivariate linear regression analysis and univariate analysis of the general linear model. Any value below 0.05 was deemed statistically significant.

3. Results

Table 1 Patient characteristics

Characteristics	Total (n=106)
Age (years)	
Mean (range)	25.7 (12–67) ,
< 20	34 (32.1%)
20–29	42 (39.6%)
>30	30 (28.3%)
BMI (kg m –2)	
Mean (range)	21.9 (16.0–27.2) ,
< 18.0 4 (7.5%)	8 (7.5%)

18.0–22.9	62 (58.5%)
>23.0	36 (34.0%)
Varicocele grade	
I	2 (1.9%)
II	16 (15.1%)
III	88 (83.0%)
Varicocele Location	
Unilateral	96 (90.6%)
Bilateral	10 (9.4%)
Testis volume difference (ml)a	
<3	42 (43.8)
>3	54 (56.2)
Quality of pain	
Dull	46 (43.4%)
Dragging	46 (43.4%)
Throbbing	4 (3.8%)
Sharp	10 (9.4%)
Surgical technique	
Inguinal	88 (83.0%)
Subinguinal	18 (17.0%)

Abbreviation: BMI, body mass index.
a Unilateral varicocele

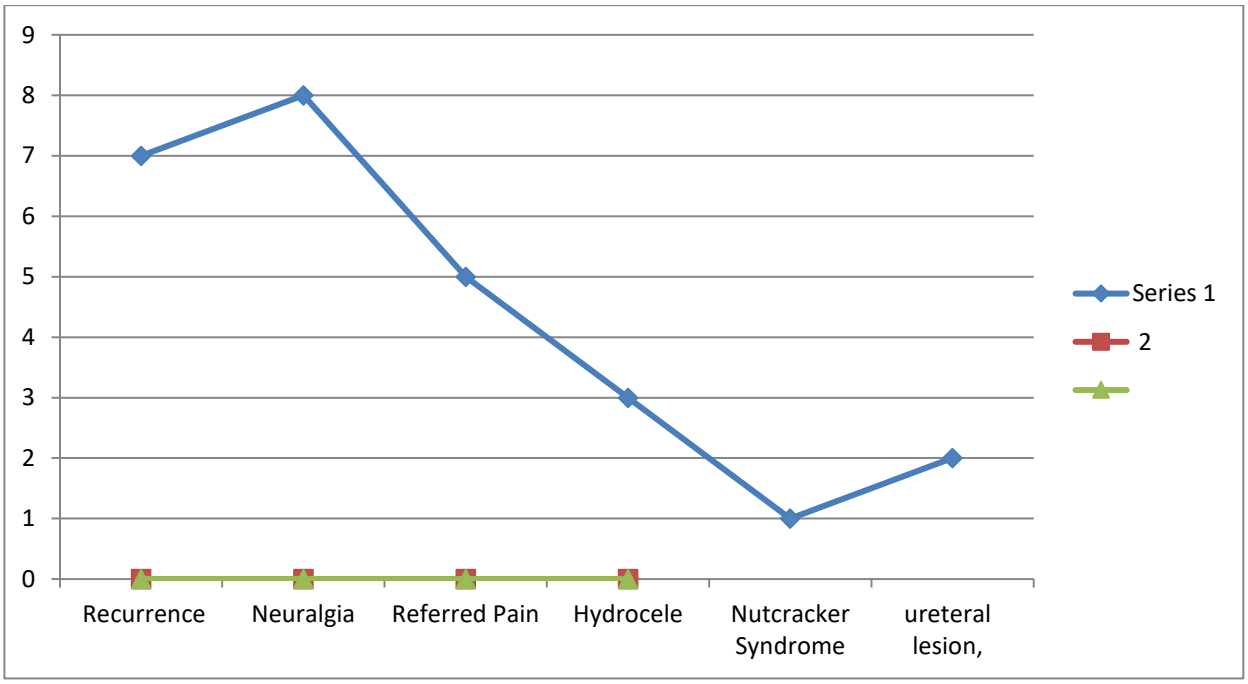
Table 2 Relationships between preoperative characteristics and postoperative improvements in pain according to univariate and multivariate analyses

Factors	Complete resolution (n (%))	Partial resolution (n (%))	Failure (n (%))	P value	Multivariate analysis.... P value
Age (years)				0.366a	0.762b
Mean (range)					,
< 20	14 (41.2)	18 (52.9)	2 (5.9)		
20–29	26(61.9)	14 (33.3)	2 (4.8)		
>30	16 (53.3)	12(40)	2 (6.7)		
BMI (kg m –2)				0.243a	0.043b
< 18.0	2 (25)	6 (75)	0 (0)		
18.0–22.9	34(54.8)	28 (45.2)	0 (0)		
>23.0	20 (55.5)	10(27.8)	6 (16.7)		
Varicocele grade				0.677a	0.983b
I	2(100)	0 (0)	0 (0)		
II	8 (50)	6 (37.5)	2(12.5)		
III	46(52.3)	38 (43.2)	4 (4.5)		
Varicocele Location				0.716a	0.872b
Unilateral	50(52.1)	42 (43.7)	4 (4.2)		
Bilateral	6 (60)	2 (20)	2 (20)		
Testis volume difference (ml)a				0.723a	0.881b
<3	18 (42.8)	22 (52.4)	2(4.8)		

>3	32(59.3)	20 (37.0)	2 (3.7)		
Quality of pain				0.872a	0.923b
Dull	26 (56.5)	18 (39.1)	2 (4.4)		
Dragging	24(52.2)	18 (39.1)	4 (8.7)		
Throbbing	2 (50)	2 (50)	0 (0)		
Sharp	4 (40)	6 (60)	0 (0)		
Surgical technique				0.169b	0.169b
Inguinal	48 (54.4)	36 (40.9)	4 (4.6)		
Subinguinal	8 (44.5)	8 (44.5)	2 (11.0)		

BMI, body mass index.
a Univariate analysis of the general linear model.
b Multivariate linear regression analysis

Table.3.Causes of persistent scrotal pain after treatment, number of patients 106



Discussion

When patients experience scrotal pain, it can lead to significant worry.
What causes varicocele, and one of We still don't know what causes scrotal discomfort. Adults with varicocele often experience scrotal pain or discomfort. If the only pathology is pain, we initiate conservative measures. But, as noted by Peterson et al. (1998) and Yaman et al. (2000), conservative treatme

nt does have some practical limits due to the lifestyle modifications that are required.
When non. invasive methods,including scrotal elevation, pain medication, and bed rest, fail to alleviate symptoms, varicocelectomy becomes an option to explore. Varcocelectomy allows for testicular venous drainage by ligating all internal branches of the spermatic vein while protecting the vas deferens, lymph vessels, and spermatic cord arteries (Goldstein, 2002). Laparoscopic surgery, radiologic techniques (sclerotherapy or embolization), or open surgery (high retroperitoneal, inguinal, subinguinal, or scrotal) can treat varicocele. Goldstein et al. (1992) found that using microscopic techniques results in the lowest rates of complications and recurrenceSo, in every patient, we performed microdissection using a subinguinal method.
Nowadays, we only use varicocelectomy in specific cases. If subclinical varicoceles are visible through imaging, there is no need to treat them. When problems with the semen parameters and infertility coexist with a palpable varicocele, we suggest a varicocelectomy (Schlesinger et al., 1994).
According to Schlesinger et al., who reviewed 12 studies,varicocelectomy decreased sperm mob ility. Five investigations after the procedure observed an increase in sperm motility, while the remaining seven studies did not show any such improvement (Lund & Larsen, 1998). Eight years after treatment ended, Lund and Larsen re-assessed patients with and without varicocele. There was a discernible drop in sperm count in the control group, but no change in the varicoce le group.There was also no statistically significant difference in sperm motility between the two groups (Yeniyol et al., 2003). Upon examining individuals who underwent pain-relieving operations, we observed an increase in their sperm count. This study also revealed an improvement in sperm motility.
Subsequent infertility occurred in individuals who had surgery primarily to alleviate discomfor t rather than because of infertility, according to the Lund and Larsen study.
In this light, we believe that individuals whose sole symptom is discomfort should still have sur gery to prevent further complications associated with varicocele. Research on varicocele typically focuses on the infertility it can cause. The number of researchers investigating varicocele-related pain is relatively low.
Results for individuals experiencing scrotal pain after varicocelectomy range from 73 to 86% fo r full success, 3 to 17% for partial response, and 7 to 11% for nonresponding discomfort, according to the literature.
Our research showed a success rate of 79.2% and a failure rate of 20.8% (including those with partial failures). The reported discomfort significantly decreased after the operation. Yaman et al. (2000) discovered a connection between the failure rate and the grade of the varicocele prior to surgery.
According to several authors, surgical complications, epididymitis, pain duration and features, v aricocele recurrence, and pain characteristics are associated with post-
operative success rates.(Peterson et al., 1998; Yaman et al., 2000; Chawla et al., 2005; Al-Buheissi et al., 2007; Altunoluk et al., 2010). We did not find recurring reflux in the patients whose treatments failed. During our investigation, one patient developed hydrocele. He was, however, part of the group that experienced no postoperative pain. It was unable to determine how long the pain had been before surgery; however, there was no statistically significant difference in the severity, quality, or varicocele grade between the success and failure groups following surgery. Some histological alterations in the structure of the spermatic veins may be the source of discomfort, while others may have unidentified consequences for the nerves. It was not possible to draw firm conclusions from,the histological results in the spermatic veins of varicocele patients.
This matter calls for histopathological and immunohistochemical analysis of spermatic veins, w hich can yield fresh information in cases of varicocele accompanied by scrotal pain.While some

studies have shown a higher failure rate according to certain surgical techniques, others have s hown no such difference. 3, 7, and 13 total There is limited evidence about the effectiveness of external spermatic vein ligation in reducing postoperative complications; nevertheless, one study,found a statistically significant difference between the two groups, indicating that cremasteric muscle ischemia could play a substantial r ole in varicocele pain. However, no evidence in the published literature supports this notion. Although we looked for a correlation between inguinal and subinguinal methods and su rgical success rates, we found none.

Surprisingly, though, just nine individuals actually had a subinguinal operation done. Therefore, further research is required to investigate the impact of surgical treatment on pain remission. According to Yaman et al.6 and Altunoluk et al.9, we did not find any recurring or lon g-lasting varicocele in the patients whose pain did not go away. Many people believe that pain endurance has little to do with the likelihood of varicocele recurrence. We should note several significant caveats regarding this investigation.

First, there is a problem with the sample size and the fact that it is not a randomized trial.Also, t here may have been bias due to an uneven distribution of patients in terms of grade, varicocele site, and surgical approach (subinguinal versus inguinal). We can tell that varicocele ligation is an effective pain treatment option for carefully chosen patients when conservative methods have failed. Beyond that, a short duration of discomfort before surgery was significantly associated with improved symptoms.

Causes of persistent scrotal pain after treatment:	number of patients 106 %
1.Recurrence	6–8 %
2. Neuralgia	5–10%
3.Referred Pain	5–6%
4.. Hydrocele	2–3%
5. Nutcracker Syndrome	1%
6.ureteral lesion,	1–2%
7. unknown	4–5%

Conclusions

The goal of this study is to compare the success rates of different surgical pain treatments and identify the variables that influence the outcome of the operation. There are a couple of reasons why varicoceles could lead to persistent pain in the scrotum. One possible limitation of this paper is the absence of standardized databases and systematic procedures to examine data and

obtain studies pertinent to varicocele for this review. It is possible that the examined publications did not address all of the possible reasons for postoperative scrotal pain. This article does not address the pathogenesis of varicocele. The surgical approach taken to treat varicocele, which can alleviate pain and improve fertility, should be based on the specific patient's circumstances. When choosing a treatment for postoperative pain, it is critical to consider the known factors that influence surgical outcomes. A comprehensive evaluation is necessary to identify the cause of the discomfort and devise a solution. Constant discomfort may indicate problems, so it's important that there is little chance of recurrence or complications after varicocelectomy. A large-scale prospective randomized trial with an extensive follow-up duration and random assignment is required to support the present results.

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