

High incidence of varicocele among young men in Public Police Hospital Denpasar, Bali, Indonesia: A descriptive study



Ryuu Damara Parisudha,^{1,2*} I Gede Suwedagatha³

ABSTRACT

Background: Varicocele is a progressive disease which possibly starts from puberty. When left untreated, it could progress and causes complications such as infertility. Determination on the representative national incidence and characteristic of varicocele has been a hard challenge due to the lack of data on varicocele epidemiological studies, especially in Bali. This study aims to know the characteristic of varicocele patients undergoing varicocelectomy in Bhayangkara Denpasar Hospital from January 2017 to December 2018.

Methods: This research is a descriptive retrospective study with cross sectional approach. The population of the study consists of patients who were diagnosed with varicocele and underwent varicocelectomy in Bhayangkara Denpasar Hospital from January 2017 to December 2018. Total sampling method was used. Research data were retrieved by taking the patient's entire medical record with varicocele in Bhayangkara Denpasar Hospital from January 2017 to December 2018.

Results: Ninety five samples were diagnosed with varicocele and underwent varicocelectomy. The highest percentage among age groups is 15 to 24 years (89.5%), with normal stature (94%), normal weight (86%), asymptomatic (90.5%), left unilateral varicocele (86.6%), grade III varicocele (82.1%) and without comorbid (93.8%). The samples underwent varicocelectomy with Ivanissevich procedure (72.8%), operation time of ≤ 60 minutes (95.8%) and length of stay of ≤ 2 days (95.8%).

Conclusion: The high incidence of varicocele in young adulthood is due to a majority of the samples being young police recruitment participants who were accidentally diagnosed during general medical check-up. Early screening on varicocele in the age group of 15 to 24 years is recommended to consider the need of sperm analysis examination and further deciding on the treatment options. One of the options is surgery.

Keywords: characteristic, varicocele, varicocelectomy.

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¹General Practitioner, Bhayangkara Denpasar Hospital, Bali, Indonesia

²Medical Faculty of Udayana University, Bali, Indonesia

³Department of Surgery, Bhayangkara Denpasar Hospital, Bali, Indonesia

*Correspondence to:
Ryuu Damara Parisudha, General Practitioner, Bhayangkara Denpasar Hospital, Indonesia / Medical Faculty of Udayana University, Bali, Indonesia;
ryuu_haribolo@yahoo.com

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INTRODUCTION

Clinically, varicocele is defined as abnormal dilatation and tortuosity of the vein in the pampiniform plexus of the spermatic cord.¹ Varicocele is diagnosed through physical examination of the scrotum and graded based on the finding of scrotal palpation.² Incidence of varicocele in healthy men was found to be 4.4% to 22.6% with an average of 15%.² On a more recent study towards 7035 military recruits (every sample are > 18 years old) from six European Country, the prevalence of varicocele was reported to be increasing, which is 15.7%.² The aetiology of varicocele is multifactorial. Some of the most used theory is the anatomical difference of vein drainage between the left and right internal spermatic vein, and vein valve incompetence which causes the occurrence of vein blood and increment of hydrostatic pressure.³ Physical activity during puberty can cause development of varicocele and physical activity in elderly can worsen the condition but do not change the prevalence of varicocele.³

Varicoceles were found undetectable in 188 boys aged 6-9 years but were detected with increasing

frequency in boys aged 10-14 years.³ More recent studies were conducted on 4052 boys aged 2-19 years showed varicocele prevalence of $<1\%$ at the age of 2-10 years, 7.8% at 11-14 years of age and 14.1% at 15-19 years of age.³ Based on these epidemiological studies showed that varicoceles began to develop at puberty.³ Varicocele incidence increases by 10% for every decade of life.³ The data suggest that incompetence of testicular veins increases with age, most likely due to aging of venous valves.³ Varicocele is a progressive disease so that if left untreated in the long term it eventually has the potential to cause testicular dysfunction and lead to infertility.⁴

Infertility affects about 15% of partners, and male factors are known to be responsible for almost half of all cases.⁵ Many etiological factors can contribute to male infertility, namely spermatogenesis disorders, sperm obstruction, and sexual dysfunction.⁵ Varicocele is the most common cause of spermatogenesis disorders. Varicoceles are found in up to 45% in men with primary infertility and 80% in secondary infertility.⁵

The aim of the management of varicoceles is to eliminate venous reflux into the scrotum while maintaining the internal spermatic arteries, lymph vessels, and vas deferens so that they will not result in infertility. There are two approaches that can be used to achieve this goal, namely surgical or microsurgical varicocelectomy and percutaneous embolisation.⁵ As many as 80% of male adolescents with left-sided varicocele and ipsilateral testicular hypotrophy show testicular growth that is overtaken after varicocelectomy.⁴

Based on direct experience in the field as an internship doctor at Bhayangkara Hospital in Denpasar, data on the incidence of varicoceles treated at Bhayangkara Hospital in Denpasar was quite high. Based on the above background and experience in the field, as well as the lack of research on varicocele events, especially in Bali, the authors are interested in further researching the general characteristics of varicocele events in police recruitment participants at Bhayangkara Hospital in Denpasar.

METHODS

This research is a descriptive study using a cross sectional retrospective study design that uses secondary data from the medical records of Bhayangkara Hospital in Denpasar.

In this study, data were sourced from the medical records of Bhayangkara Hospital in Denpasar. All varicocele patients undergoing varicocelectomy in Denpasar were the target population of this study. The reachable population in this study were varicocele patients who underwent varicocelectomy at Bhayangkara Hospital in Denpasar. The sample population of this study were all varicocele patients undergoing varicocelectomy at Bhayangkara Hospital in Denpasar who fulfilled the inclusion and exclusion criteria in the period January 2017 to December 2018.

This research was carried from May to June 2019. The sample population obtained in this study were 95 medical records of varicocele patients who underwent varicocelectomy and had met the inclusion and exclusion criteria. Data taken were medical record number, name, age, height, BMI, clinical manifestations, varicocele type, severity, comorbidities, surgical techniques, operating features and length of stay. The inclusion criteria in this study were varicocele patients who underwent varicocelectomy at Bhayangkara Hospital Denpasar in the period January 2017 to December 2018 and had complete data on medical records. Exclusion criteria in this study were varicocele patients with a history of vascular or congenital chromosome

abnormalities and varicocele patients with a history of surgery around the genital area.

The results obtained were further processed and presented in the form of a frequency distribution table, then analysed descriptively to be able to describe the general profile of varicocele patients undergoing varicocelectomy at Bhayangkara Hospital in Denpasar based on several variables.

RESULTS

Descriptive statistical data analysis has been carried out which includes several characteristics including age, height, BMI, clinical manifestations, varicocele type, severity, comorbidities, surgical techniques, duration of operations and length of stay.

Based on [table 1](#), characteristics of varicocele patients undergoing varicocelectomy at Bhayangkara Hospital Denpasar in the period January 2017 to December 2018. The average age of patients is 20 years, with the oldest patient age is 53 years and the youngest is 16 years. Most in the category of young adulthood (15-24 years) as many as 85 samples (89.5%) and at least in the category of older adulthood (45-64 years) as many as 3 samples (3.15%). Most of the patient had a normal stature and body mass index with the normal weight category of 86 patients (90.5%) and no patients with Obesity were found. Based on clinical manifestations of varicocele patients, the highest number of patients without clinical or asymptomatic manifestations was 86 patients (90.5%), and patients with clinical manifestations of Testicular Discomfort were 9 samples (9.5%). The majority of varicocele patients suffered from unilateral type varicoceles of 84 patients (88.4%) and bilateral types of 11 patients (11.6%). The unilateral varicocele type consisted of 82 patients (86.3%) unilateral sinus and 2 patients (2.1%) unilateral dexter. Based on degree of varicocele, the majority of patients, as many as 78 patients (82.1%) of varicoceles who underwent varicocelectomy at Bhayangkara Hospital Denpasar in the period January 2017 to December 2018 had a degree III varicocele. About 16 patients (16.8%) had grade II varicoceles and 1 sample (1%) with grade I varicoceles.

According to existing comorbid data, the majority of varicocele patients who underwent varicocelectomy at Bhayangkara Hospital Denpasar in the period January 2017 to December 2018 without comorbidities or None were 89 patients (93.8%), patients were accompanied by haemorrhoids by 2 patients (2.1%), patients with hydrocele were 2 patients (2.1%), patients with hernias were 1 patient (1%) and patients with phimosis were 1 sample (1%) ([Table 1](#)).

Table 1 Characteristics of Varicocele Patients Undergoing Varicocectomy at Bhayangkara Hospital Denpasar Period January 2017 - December 2018

Variable	Frequency (N=95)	Percentage (%)
Age (Mean = 20 years)		
15-24 years	85	89.5
25-44 years	7	7.35
45-64 years	3	3.15
Stature		
Tall	0	0
Normal	94	99
Short	1	1
BMI		
Obesity	0	0
Over Weight	7	7.4
Normal Weight	86	90.5
Under Weight	2	2.1
Clinical Manifestation		
Asymptomatic	86	90.5
Testicular Discomfort	9	9.5
Varicocele Type		
Unilateral S	82	86.3
Unilateral D	2	2.1
Bilateral	11	11.6
Varicocele Grade		
I	1	1
II	16	16.8
III	78	82.1
Comorbids		
None	89	93.8
Hemorroid	2	2.1
Hernia	1	1
Hidrocele	2	2.1
Phymosis	1	1

Table 2 Characteristics of Varicocelelectomy in Varicocele Patients in Bhayangkara Hospital Denpasar Period January 2017 - December 2018

Variable	Frequency (N=95)	Percentage (%)
Operation Technique		
Ivanissevich	69	72.8
Palomo	21	22.2
Ivanissevich + Hemoroidectomy	1	1
Ivanissevich + Hidrocelectomy	1	1
Ivanissevich + Circumsision	1	1
Palomo + Hemoroidectomy	1	1
Palomo + Herniotomy	1	1
Durante Operation (Mean = 36 minutes)		
≤ 60 minutes	91	95.8
> 60 minutes	4	4.2
Length of Stay (Mean = 2 days)		
≤ 2 days	91	95.8
> 2 days	4	4.2

Table 2. illustrates the characteristics of varicocelelectomy in varicocele patients in Bhayangkara Hospital Denpasar in the period January 2017 to December 2018. According to the surgical technique used, it was found that most patients performed varicocelelectomy with Ivanissevich technique in 69 operations (72.8%), varicocelelectomy using Palomo technique in 21 operations (22.2%), using the Ivanissevich technique with Hemoroidectomy in 1 operation (1%), with the Ivanissevich technique and a Hydrocelectomy in 1 operation (1%), with the Ivanissevich technique and a Circumcision in 1 operation (1%), Palomo technique accompanied by hemorroidectomy in 1 operation (1%), and Palomo technique accompanied by Herniotomy in 1 operation (1%). Based on durante operation, most of the varicocelelectomy at Denpasar Bhayangkara Hospital in the period January 2017 to December 2018 were carried with a durante operation of ≤ 60 minutes in 91 operations (95.8%), and varicocelelectomy with durante operation of > 60 minutes as many as 4 operations (4.2%). The average durante operation is 36 minutes. According to the length of stay, the majority of varicocelelectomy procedures were obtained at Bhayangkara Hospital Denpasar in the period January 2017 to December 2018 with a length of stay ≤ 2 days, in 91 operations (95.8%), and as many as 4 operations (4.2%) with length of stay >2 days. The average length of stay is 2 days.

DISCUSSION

In this study varicocele tend to be higher in teenager subgroup (15-24 year). Zucchi et al. obtained an average age of varicocele patients in Italy of 25.1 years.⁶ Alsaikhan et al. reported varicocele prevalence of <1% at 2-10 years, 7.8% at 11-14 years and 14.1% at age 15-19 years.³ Other studies say the incidence of varicocele in ages 10-17 is between 9-25.8% and 15% in adults.⁷

Nearly all varicocele patients had normal stature of 94 patients (99%), this is estimated because the majority of patients are police recruiting participants and those who have already become members of the police, in general both prospective members and those who have already become police officers are required to have an ideal height (>165 cm).

The majority of varicocele patients 8 had BMI with the normal weight category of 86 patients (90.5%) and no patients with obesity were found. Similar to stature, the BMI results obtained in this study were also estimated because one of the health requirements both for prospective members and police officers is to have a normal BMI.

Based on clinical manifestations of varicocele patients, the highest number of patients without clinical or asymptomatic manifestations was

86 patients (90.5%) and only a few patients with clinical signs of testicular discomfort. These results are not in line with research by Fikri who found the most clinical manifestations were testicular discomfort, which amounted to 88.7%, with asymptomatic clinical manifestations both for prospective police officers and those who have already become police officers.⁸ In contrast to what was done in the study by Fikri et al. the majority of patients who came to the hospital were the general public who did have specific complaints related to varicoceles, namely testicular discomfort and infertility.⁸

The majority of varicocele patients suffered from unilateral type varicoceles. These results are quite in line with studies by Fikiri et al. of 151 patients who received a prevalence of unilateral type varicoceles of 84% and bilateral types 16%.⁸ But the results of this study differ slightly from the literature, which explains the incidence of bilateral varicoceles of <10% of normal people and increases to 20% of the subfertile population.⁷

Based on the degree of varicocele, the majority of patients, had a third-degree varicocele. Kevin et al. got similar results to this study, namely 75% grade III varicoceles, 24% grade II varicoceles and 1% varicoceles degree I.⁹ However, the results of this study are not in line with the results obtained by Fikri et al. which found 55% of patients with varicocele grade II, 28% varicocele grade I and 17% with varicocele grade III.⁸ These differences may be due to differences between our two studies in terms of the majority age and the main reason patients go to the hospital. In a study by Fikri et al. the majority of the sample were people around 20-30 years old with the reason that they came in the form of testicular discomfort or infertility.⁸ Whereas in this study, the majority of patients were recruits of young adulthood (15-24 years old) police officers where most patients arrived without symptoms and were diagnosed varicocele accidentally. In this study, it was found that most patients with grade III varicocele may have been because the police recruiting participants had previously undergone a series of strenuous physical activities in preparing themselves to participate in police selection, where strenuous activity was one of the important risk factors for varicocele events and progression.

According to the surgical technique used, it was found that most patients performed varicocelectomy with Ivanissevich technique. These results are different from the results reported by Fikri et al. whereas all varicocelectomy measures were performed using the Palomo technique (100%).⁸ The difference in the proportion of techniques used in the varicocelectomy procedure may be due to the preferences of each different surgeon and

the comorbid. Based on the results of the study by Omar et al. concluded that the Ivanissevich (open inguinal) procedure is superior to the Palomo (open retroperitoneal) procedure, in terms of its recurrence and the ability of Ivanissevich to facilitate the identification and preservation of the testicular arteries.¹⁰ In another study by Hosseini et al. it was also concluded that the Ivanissevich procedure was more effective in improving sperm concentration, but in terms of postoperative complications, the Palomo procedure was superior.¹¹

Based on durante operation, the average durante operation is 36 minutes. Omar et al. obtained an almost similar durante operation on Ivanissevich and Palomo procedure, which was 26 minutes.¹⁰ Hosseini obtained an average durante operation of approximately 50 minutes.¹¹ This difference may be due to differences in the proportion of varicocele types in each study, where unilateral varicocele types require shorter operating times than bilateral varicocele types. In this study, the proportion of unilateral type varicoceles was very high (88.4%), compared to Omar et al. (90%) and Hosseini et al. (73%), so the data explained the reason for the difference in mean operating durante from the two studies, with the average durante operation by Omar et al. was lowest due to the high proportion of unilateral type varicoceles. In varicocelectomy for unilateral type varicoceles without comorbidities, the range of durante operation is 25-45 minutes, both with Ivanissevich and Palomo procedures. In the varicocelectomy of bilateral varicoceles without comorbidities (11.6%), the range of durante operation was 40-60 minutes. In this study, the majority of varicocelectomy procedures were performed with durante operation of ≤ 60 minutes (95.8%), the reason being none other than the majority of cases of varicocele performed without comorbidities. A small portion of varicocelectomy is accompanied by other operations such as herniotomy, hydrocelectomy, hemorrhoidectomy and circumcision which were performed simultaneously to manage the comorbid definitively. The operations which were carried out simultaneously have impacts on the longer durante operation, namely in the range of 55-90 minutes. This contributed to a small number of varicocelectomy with durante operation of > 60 minutes (4.2%).

According to the length of stay, the average length of stay is 2 days. Omar et al. obtained slightly different average length of stay of 1 day.¹⁰ These differences may be due to differences in the patient's healing rate or consideration and decision making by the surgeon as the physician responsible for the different patients in each study. The majority of varicocelectomy procedures were obtained with a

length of stay ≤ 2 days after the procedure, probably because most varicocelectomies were performed without comorbidities (93.8%) therefore, there were no other definitive operations carried out simultaneously with varicocelectomy for the management of these comorbidities. Conversely, if compared with 4.2% of the operations that require length of stay of >2 days after the operation, may be caused by the completion of varicocelectomy with other definitive management of comorbidities simultaneously. This can be related to the level of bleeding during surgery and post-surgery, post-operative pain, the location of multiple incisions and the greater post-operative healing time in terms of quantity.

CONCLUSION

In conclusion, the high incidence of varicocele in young adulthood is due to a majority of the samples being young police recruitment participants who were accidentally diagnosed during general medical check-up. Early screening on varicocele in the age group of 15 to 24 years is recommended to consider the need of sperm analysis examination and further deciding on the treatment options. One of the options is surgery.

ETHICAL CLEARANCE

This research has been approved by the local ethical committee of Bhayangkara Hospital Denpasar.

CONFLICT OF INTEREST

The author declares there is no conflict of interest.

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